ThreeBond

General Catalog
Products Guide

Sealants / Adhesives / Maintenance / Automobile Aftermarket Products / Energy-Saving Devices

ThreeBond Products Market

ThreeBond products can be applied to various fields including automobile related products, transportation equipment, industrial materials and public works, construction and building materials, as well as electrical / electronics and automotive aftermarket fields. ThreeBond products have become essential to the production process of various products in various fields.

Transportation Equipment Sector

Used for vehicle powertrains and electrical components, construction machines, and marine vessels.

Electrical and Electronics Sector

Used for electrical appliances such as mobile phones and computers.

Industrial Materials and Public Works Sector

Used for infrastructure, construction, and general machines.

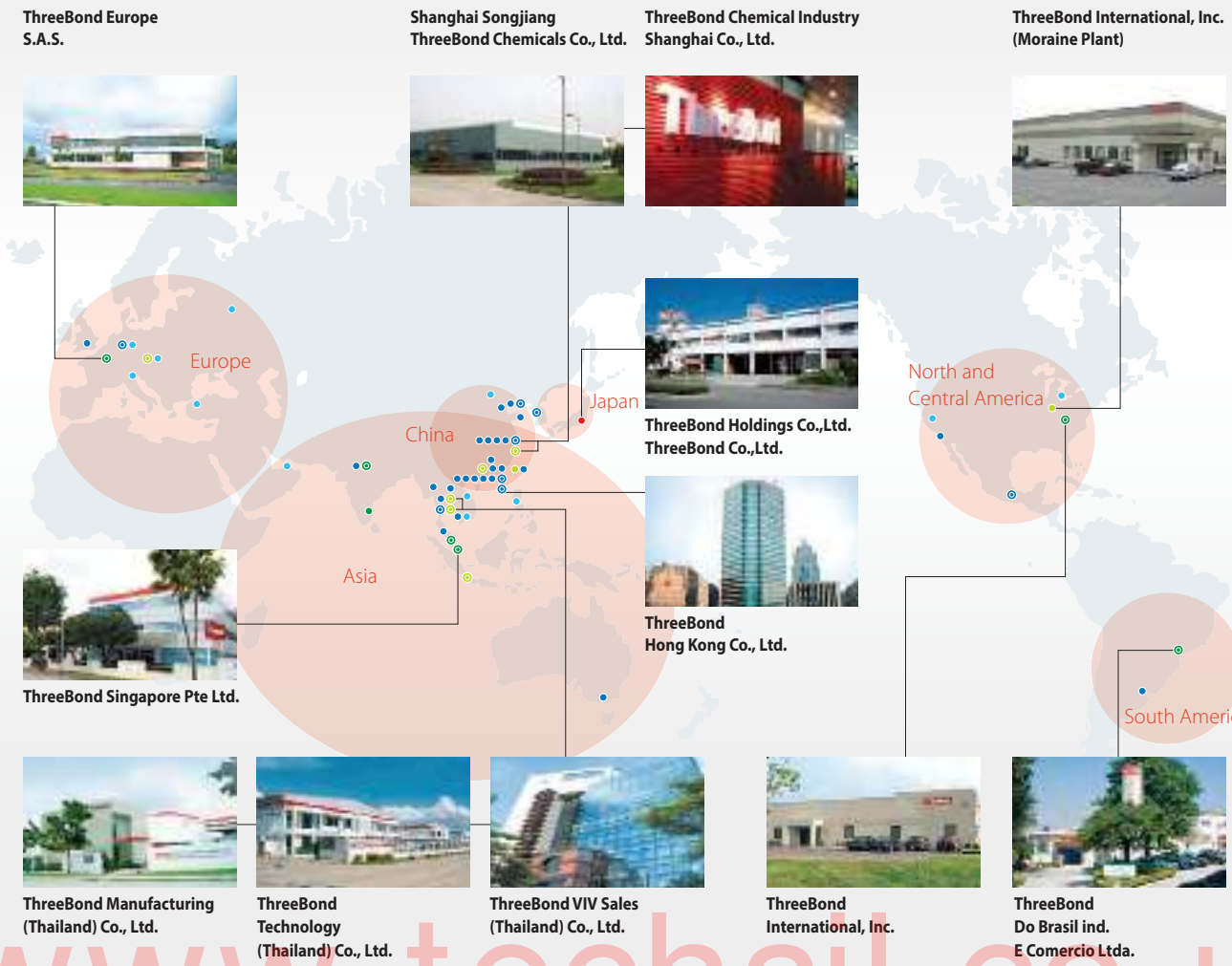
Automotive Aftermarket Sector

Used for automobile aftermarket products.

ThreeBond Network

We at ThreeBond have established ourself as a top provider of sealants and adhesives for industrial use, and we have gained the trust of our customers through our production and sales systems in Japan, North and Central America, South America, Europe, Asia, and China.

Worldwide Network



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* Be sure to check the laws and regulations in your country or region before using any of these products.

Sealants (Sorted by Sealant Category)

Sealing refers to the "action on joint surfaces of equipment or pipes to prevent leakage of inner fluids".
Sealants are sorted as either solid (solid gasket or solid packing) or liquid (liquid gaskets). Their performance is a combination of adhesion between the sealant and joint surface (interface), resistance of the sealant itself to the inner fluid, and conformability to the joint surface, etc.
Based on this, when selecting a sealant, it is important to consider, among other things, the type of joint surface, compatibility between the sealant and inner fluid, the required pressure resistance, and environmental conditions, in addition to the priority of considering "what will be sealed and in what position". By considering whether the joint will be disconnected and considering workability during use, it is possible to select the optimal sealant.

* By referencing the sealant selection flow chart on the opposite page, it is possible to narrow down the optimal sealant system according to the following "Sealant Property Comparison Table".

Sealant Property Comparison Table

Sealant type		Sealing function	Sealant lineup	Curing method	Cured material characteristic	Main usages
Reaction type		The sealing function works by forming an elastic adhesion layer on the joint surface due to condensation or polymerization reaction. Excellent sealability is achieved even on joint surfaces with large clearances.	Silicone-based	Moisture-curing * Condensation reaction by moisture in the air	Rubber-like	Vehicle oil pan and gear case FIPG[*1] Sealing of general use machines and general pipes * Special grade for sealing water supply pipes available
			Modified silicone-based	Moisture-curing * Condensation reaction by moisture in the air	Rubber-like	Agricultural machine oil pan and gear case FIPG[*1] Sealing of general use machines and general pipes
			Moisture-curing acrylate-based	Moisture-curing * Condensation reaction by moisture in the air	Rubber-like	Vehicle oil pan FIPG[*1] Sealing of general use machines
			Anaerobic curing acrylate-based	Anaerobic curing * Radical polymerization reaction by oxygen isolation and metal contacts	Rubber-like	Vehicle gear case FIPG[*1] Sealing of plugs and general pipes
			Curing under UV light acryl rubber-based	Curing under UV light * Radical polymerization reaction by UV light irradiation	Rubber-like	Vehicle electrical component CIPG[*2]
			Two-component fluororubber-based	Two-component mixture * Condensation reaction by mixing Agents A and B	Rubber-like	Transportation equipment fuel system, seal plants, sealing of pipes
			Heat-curing olefin-based	Heat-curing * Polymerization reaction by heating	Rubber-like	FIPG and CIPG for fuel cell batteries[*1 *2] Gas seal, methanol seal
			Moisture-curing olefin-based	Moisture-curing * Condensation reaction by moisture in the air	Putty (mastic type)	Sealing of city gas and LPG piping
Non-reactive type	Solventless (non-drying) type	Sealability works by adhesion to the joint surface and by its fluid resistance. It is easy to remove because it does not cure.	Solventless, synthetic resin-based	Non-drying * Initial status is maintained	Putty	Sealing of general use machines and general pipes Supplementary sealing used with solid packing Sealing of city gas and LPG piping
	Solvent type	Sealability works by forming an elastic adhesion layer on the joint surface due to vaporization of the solvent (including water). Curing shrinkage is large due to vaporization of the contained solvent.	Organic solvent, synthetic resin-based	Solvent vaporization * Volatilization and drying of contained solvent	Solid to rubber-like	Sealing for vehicles, general use machines, and general pipes * Special grade for sealing water supply pipes available
			Organic solvent, synthetic rubber-based	Solvent vaporization * Volatilization and drying of contained solvent	Rubber-like	Sealing for vehicles, general use machines, and general pipes Sealing of city gas and LPG piping
	Aqueous type		Acrylic emulsion-based (water-based)	Vaporization * Volatilization and drying of contained moisture	Rubber-like	Sealing for vehicles and general use machines Supplementary sealing used with solid packing
	Solid packing	Sealability works by adhesion to the joint surface due to the repulsive force that occurs from the fastening contact pressure.	Fiber impregnated with synthetic resin	-	Sheet-like (solid)	Sealing for vehicles and general use machines
	Solid packing	Sealability works by adhesion to the joint surface due to the repulsive force that occurs from the fastening contact pressure.	Unbaked fluororesin	-	Tape-like (solid)	Sealing of general pipe screws

Sealant Selection Flow Chart

Confirm that it matches the **"Main usage"** according to the parts used and the inner fluid that will be sealed. >> Confirm the adequacy with the inner fluid that will be sealed according to the **"Main usage"**, **"Chemical resistance"** and **"Heat resistance"**. >> Confirm the **"Clearance applicability"** according to the clearance at the usage location. >> Confirm the **"Adhesion"** and **"Displacement Conformability"** according to whether there is movement at the usage location. >> If sealability is required immediately after assembly to the used portion, confirm the **"Initial pressure resistance"**. >> If it is necessary to remove the portion where it is used regularly, confirm the **"Removability"**. >> Select a sealant and then select a product from the detailed description pages of the corresponding representative grade.

◎ Highly suitable ○ Suitable △ Not very suitable × Unsuitable

Chemical resistance				Heat resistance	Clearance applicability	Adhesion	Displacement Conformability	Pressure resistance		Removability	Representative grade
Oil	Water	Acid	Inorganic bases					Initial	After curing		
○	○	△	△	◎	◎	○	◎	○	◎	△ to ○	1200 Series
○	△	△	△	△	◎	○	◎	○	◎	△ to ○	1206 Series
○	○	○	○	○	◎	○	◎	○	◎	△ to ○	1158
○	○	○	○	○	○	○	○	○	◎	△	1133J
○	○	○	○	○	○	○	△	○	○	○	3081J
◎	◎	◎	◎	◎	◎	○	◎	○	◎	△ to ○	1119
○	○	○	○	○	○	△	○	-	○	○	1152C, 1153C
○	○	○	○	○	◎	△	◎	○	○	○	4333B
○	○	○	○	△	△	-	△	○	○	◎	4320B
○	○	○	○	○	△	○	○	△	○	△ to ○	1102, 1103B
○	○	○	○	○	△	○	○	△	○	△ to ○	1184 Series
○	○	○	○	○	△	○	○	△	○	△ to ○	1141 Series
○	○	○	○	○	△	-	△	○	○	○	Solid Sheet Packing Series
◎	◎	◎	◎	◎	△	-	△	○	○	◎	ThreeBond Tape

*1 FIPG: Formed In Place Gasket — Liquid gasket that is applied on one surface and forms a seal by reactive curing after joining the other surface.
*2 CIPG: Cured In Place Gasket — Liquid gasket that is applied on one surface as a bead and forms a seal by curing before joining the other surface (sealing by surface pressure of the joint surface).

Property Comparison Table According to Sealant Application

Applications	Sealant lineup	Curing method	Cured material characteristic	
Vehicle, agricultural machine, construction machine, general use machine, and other FIPG*	Silicone-based	Moisture-curing * Condensation reaction by moisture in the air	Rubber-like	
	Modified silicone-based	Moisture-curing * Condensation reaction by moisture in the air	Rubber-like	
	Moisture-curing acrylate-based	Moisture-curing * Condensation reaction by moisture in the air	Rubber-like	
	Anaerobic curing acrylate-based	Anaerobic curing * Radical polymerization reaction by oxygen isolation and metal contacts	Rubber-like	
	Heat-curing olefin-based	Heat-curing * Polymerization reaction by heating	Rubber-like	
General-purpose sealing for vehicles, agricultural machines, construction machines and general use machines, etc.	Silicone-based	Moisture-curing * Condensation reaction by moisture in the air	Rubber-like	
	Solventless synthetic resin-based	Non-drying * Initial status is maintained	Putty	
	Organic solvent, synthetic resin-based	Solvent vaporization * Volatilization and drying of contained solvent	Solid to rubber-like	
	Organic solvent, synthetic rubber-based	Solvent vaporization * Volatilization and drying of contained solvent	Rubber-like	
	Acrylic emulsion-based (water-based)	Vaporization * Volatilization and drying of contained moisture	Rubber-like	
	Fiber impregnated with synthetic resin	-	Sheet-like (solid)	
High-temperature sealing of mufflers for vehicles, agricultural machines, construction machines and general use machines, etc.	Organic solvent, synthetic resin-based	Solvent vaporization * Volatilization and drying of contained solvent	Solid to putty	
Highly chemical-resistant sealant for vehicles, agricultural machines, construction machines and general use machine plants, etc.	Two-component fluororubber-based	Two-component mixture * Condensation reaction by mixing Agents A and B	Rubber-like	
Sealing of general pipes	Silicone-based	Moisture-curing * Condensation reaction by moisture in the air	Rubber-like	
	Organic solvent, synthetic resin-based	Solvent vaporization * Volatilization and drying of contained solvent	Dry adhesion	
	Organic solvent, synthetic rubber-based	Solvent vaporization * Volatilization and drying of contained solvent	Rubber-like	
	Anaerobic curing acrylate-based	Anaerobic curing * Radical polymerization reaction by oxygen isolation and metal contacts	Solid	
	Unbaked fluororesin	-	Tape-like (solid)	
Sealing of city gas and LPG piping	Moisture-curing olefin-based	Moisture-curing * Condensation reaction by moisture in the air	Putty (mastic type)	
	Silicone-based	Moisture-curing * Condensation reaction by moisture in the air	Rubber-like	
	Solventless, synthetic resin-based	Non-drying * Initial status is maintained	Putty	
	Organic solvent, synthetic rubber-based	Solvent vaporization * Volatilization and drying of contained solvent	Rubber-like	
Sealing of hot water supply pipes	Organic solvent, synthetic resin-based	Solvent vaporization * Volatilization and drying of contained solvent	Dry adhesion	
	Silicone-based	Moisture-curing * Condensation reaction by moisture in the air	Rubber-like	

◎ Highly suitable ○ Suitable △ Not very suitable × Unsuitable

Chemical resistance				Heat resistance	Clearance applicability	Adhesion	Displacement Conformability	Pressure resistance		Removability	Representative grade
Oil	Water	Acid	Inorganic bases					Initial	After curing		
○	○	△	△	◎	◎	○	◎	○	◎	△ to ○	1200 Series
○	△	△	△	△	◎	○	◎	○	◎	△ to ○	1206 Series
○	○	○	○	○	◎	○	◎	○	◎	△ to ○	1158
○	○	○	○	○	○	○	○	○	◎	△	1133J
○	○	○	○	○	○	△	○	-	○	○	1152C, 1153C
○	○	△	△	◎	◎	○	◎	○	◎	△ to ○	1211, 1212, 1215
○	○	○	○	△	△	-	△	○	○	◎	1101, 1121
○	○	○	○	○	△	○	○	△	○	△ to ○	1102, 1103B
○	○	○	○	○	△	○	○	△	○	△ to ○	1184 Series
○	○	○	○	○	△	○	○	△	○	△ to ○	1141 Series
○	○	○	○	○	△	-	△	○	○	○	Solid Sheet Packing Series
○	○	○	○	◎	△	○	○	△	○	△ to ○	1107D
◎	◎	◎	◎	◎	◎	○	◎	○	◎	△ to ○	1119
○	○	△	△	◎	◎	○	◎	○	◎	△ to ○	1211, 1212, 1215
○	○	○	○	○	△	○	△	△	○	△ to ○	4002
○	○	○	○	○	△	○	○	△	○	△ to ○	1184 Series
○	○	○	○	○	○	○	○	○	◎	△	1110 Series
◎	◎	◎	◎	◎	△	-	△	○	○	◎	ThreeBond Tape
○	○	○	○	○	◎	△	◎	△	○	○	4333B
○	○	△	△	◎	◎	○	◎	○	◎	△ to ○	4332C
○	○	○	○	△	△	-	△	○	○	◎	4320B
○	○	○	○	○	△	○	○	△	○	△ to ○	4004D, 4314D
○	○	○	○	○	△	○	△	△	○	△ to ○	4221, 4221B
○	○	△	△	◎	◎	○	◎	○	◎	△ to ○	4230

* FIPG: Formed In Place Gasket Liquid gasket that is applied on one surface and forms a seal by reactive curing after joining the other surface.

Liquid Gaskets

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

These are liquid sealants used for sealing inner fluids by applying them to the joint surfaces of various flanges, screws, etc., in transportation equipment and industrial equipment.
Highly reliable sealing is achieved by filling in and adhering to the minute clearance on the joint surface.
Also, they are a liquid when applied, so metal joint surfaces touch each other, and there is almost no decrease in surface pressure due to vibration, etc. Therefore, they are durable and have excellent sealability.
Products with various material bases are available including synthetic resin-based, synthetic rubber-based, acrylate-based, acrylic emulsion-based, and silicone-based.
There are also various reaction system grades including solvent vaporization, anaerobic curing, and moisture-curing.
Products include general-purpose types, and products for FIPG and CIPG.

* FIPG: Formed In Place Gasket
  Liquid gasket that is applied on one surface and forms a seal by reactive curing after joining the other surface.
* CIPG: Cured In Place Gasket
  Liquid gasket that is applied on one surface as a bead and forms a seal by curing before joining the other surface (sealing by surface pressure of the joint surface).

1101

This is a non-drying type solventless liquid gasket.
It has excellent water resistance and seawater resistance.
It is possible to use it together with solid sheet gaskets because there is almost no effect on rubber.
It is easy to remove, so it is optimal for sealing joints that require periodic disassembly and overhauling.

1102

This is a non-drying type, solvent-type liquid gasket.
It has excellent water resistance and oil resistance.
There are variations such as different colors.

1107D

This is a sealant for hot materials that contain metal powder and silicone oil as main components.
It is good for sealing joint surfaces and bolts that are exposed to high temperatures.
It has a heat resistance of approximately 300°C.

1119

This is a room-temperature curing type two-component fluorine-based liquid gasket.
It forms fluororubber quickly by mixing the Agent A and Agent B liquids.
It has excellent heat resistance and chemical resistance, and in addition to oil resistance, it also has excellent resistance to gasoline, gas oil, organic solvents, acid, and inorganic bases.
In addition to transportation equipment, it can also be used for sealing plant piping.

1121

This is a non-drying type solventless liquid gasket.
It has excellent water resistance and oil resistance.
It is possible to use it together with solid sheet gaskets because there is almost no effect on rubber.
It is easy to remove, so it is optimal for sealing joints that require periodic disassembly and overhauling. There is also a low-viscosity type available.

1130

This is a low-reaction, anaerobic-curing liquid gasket for tapered plugs.
It is a slow-curing type, so it is possible to apply it to many plugs using a tumbler, etc., and blocking between plugs does not occur for approximately 8 hours.
It has excellent oil resistance and coolant resistance. It is a low adhesive type.

1133J

This is an anaerobic curing type liquid gasket for flanges.
It conforms to flange movement because it is flexible after curing.
It has excellent oil resistance.

1141G

This is a water-based type liquid gasket for better working environment. Acrylic resin is the main component.
It has excellent chemical resistance. It is possible to use it together with solid sheet gaskets because there is almost no effect on rubber.
There are grades with different viscosities.

1152C, 1152D, 1153C

This is an olefin-based heat-curing liquid gasket for fuel cell batteries.
The cured material has rubber elasticity with excellent chemical resistance.
It has rubber elasticity, but also has excellent gas barrier property with hydrogen barrier property and low moisture permeability.
In addition to being used as a gas seal for fuel cell batteries, it can also be used for sealing water, coolants, methanol, etc.

1158

This is an alcohol-releasing single-component, moisture-curing, acrylic resin-based liquid gasket for FIPG.
It has excellent oil resistance, and is used for sealing AT and CVT transmissions and gear cases.
It can also be used for high-grade oil.

1171D, 1171E, 1171F

This is a volatile solvent-type liquid gasket for batteries.
Special synthetic rubber is the main component, and it forms a rubber-like elastic body with low moisture permeability.
It has excellent heat resistance and reflow soldering durability. In addition to resistance to nonaqueous electrolytic solution, it also has resistance to acid and inorganic bases. It is used for lithium-ion batteries, capacitors, etc.

1184

This is a solvent-vaporizing type all-purpose liquid gasket.
It has rubber elasticity after curing. It has excellent padding ability during application, making it effective for joint surfaces with large clearances and poor flatness.
It has excellent water resistance and oil resistance.
There are grades with different colors and viscosities.

1206D

This is an alcohol type single-component, moisture-curing, modified silicone-based liquid gasket.
It is paintable, making it an optimal sealant for portions where painting is required after assembly.
There are grades with different colors and flowabilities.

1207B

This is an acetone type single-component, moisture-curing, silicone-based liquid gasket for FIPG.
It has a fast curing speed, and it becomes a flexible cured material, so it has excellent displacement conformability on joint surfaces.
In addition to engine oil pans, it can also be used for sealing coolants such as for water pumps.

1211

This is an oxime type single-component, moisture-curing, silicone-based liquid gasket.
It has low viscosity, so it is easy to apply.
It has excellent oil resistance and can be used together with solid sheet packings for engine oil pans in addition to general-purpose sealing applications.
There is also a high-viscosity type available.

1215

This is an oxime type single-component, moisture-curing, silicone-based liquid gasket.
It has relatively low viscosity, so it is easy to apply.
It has excellent chemical resistance and can be used as an FIPG for engine oil pans and gear cases, etc., in addition to general-purpose sealing applications.

1216

This is an oxime type single-component, moisture-curing, silicone-based liquid gasket for FIPG.
It has excellent chemical resistance, and in addition to engine oil pans and gear cases, it can also be used for sealing coolants such as for water pumps.
There are variations such as different functions.

1217G

This is an oxime type single-component, moisture-curing, silicone-based liquid gasket for FIPG.
It is a high elasticity type with excellent conformability to vibration.
It is a grade with high viscosity and excellent initial pressure resistance.

1217H

This is an oxime type single-component, moisture-curing, silicone-based liquid gasket for FIPG.
It is a high elasticity type with excellent conformability for vibration.
It is a grade with high viscosity and excellent initial pressure resistance.

1217M

This is an oxime type single-component, moisture-curing, silicone-based liquid gasket for FIPG.
It has excellent oily surface adhesiveness.
It has oil resistance, and it is used for sealing engine oil pans, chain cases, etc.

1217N

This is an oxime type single-component, moisture-curing, silicone-based liquid gasket for FIPG.
It has excellent adhesion to magnesium alloys.
It has oil resistance, and it is used for sealing engine oil pans and chain cases, etc.

* About the single-component, moisture-curing, silicone-based liquid gasket reaction types
All single-component, moisture-curing, silicone-based liquid gaskets become rubber-like elastic bodies due to reaction with moisture in the air, but they are sorted into the following three types according to their reaction types.

- **Oxime type:** Gaskets that generate a small amount of oxime gas as a reactive byproduct. These are corrosive to copper alloys, so these are not suitable for electronic devices. They may cause cracks, etc., on thermoplastics. They have excellent adhesion with various materials.
- **Acetone type:** Gaskets that generate a small amount of acetone gas as a reactive byproduct. There is no corrosion on metals and no influence on most plastics. They have a fast curing speed and have excellent airtightness and heat resistance.
- **Alcohol type:** Gaskets that generate a small amount of methanol gas as a reactive byproduct. They have no influence on metals or plastics, but have weaker adhesion.

Liquid Gaskets

Property Table

Characteristics		Unit	1101	1102	1102D	1102G	1103B	1105	1105B	1107D
Main component			Vegetable oil	Alkyd-based resin	Alkyd-based resin	Alkyd-based resin	Cellulose-based acetate	NBR	NBR	Silicone
Curing method			Non-drying	Non-drying	Non-drying	Non-drying	Solvent vaporization	Solvent vaporization	Solvent vaporization	Non-drying
Features			Seawater resistance	Water resistance Oil resistance	Water resistance Oil resistance	Water resistance Oil resistance	Dry Peelable	Dry Peelable	Dry Peelable	Sealant for hot materials
Appearance			Reddish brown	Yellow	Silver	Yellow	Black	Black	Silver	Gray
Viscosity		Pa-s	850	7.0	6.9	6.9	3.4	3.5	3.5	25.0
Specific gravity			1.50	1.32	1.33	1.33	0.88	0.92	0.92	1.80
Non-Volatile Content		%	99.0	77.0	79.0	79.0	26.6	25.0	26.0	57.0
Tack free time		min	Non-drying	Non-drying	Non-drying	Non-drying	-	-	-	-
Physical characteristics after curing	State		Non-drying	Non-drying	Non-drying	Non-drying	Dry Peelable film	Dry Peelable film	Dry Peelable film	Non-drying
	Hardness		-	-	-	-	-	-	-	-
	Elongation rate	%	-	-	-	-	-	-	-	-
	Tensile strength	MPa	-	-	-	-	-	-	-	-
	Tensile shear bond strength (Iron)	MPa	-	-	-	-	-	-	-	-
	Tensile shear bond strength (Aluminum)	MPa	-	-	-	-	-	-	-	-
Pressure resistance	Room temperature	MPa	7.0	9.5	9.5	9.0	6.5	8.5	8.5	9.5
	80°C	MPa	3.5	7.5	7.5	7.0	2.5	6.5	6.5	-
	150°C	MPa	0.5	6.5	6.0	4.0	2.0	5.5	5.5	-
Chemical resistance Mass change rate	Water*1	%	-4.2	+1.0	+1.0	+1.0	-2.3	+0.3	+0.3	+1.2
	Gasoline*2	%	-36.4	-2.4	-2.4	-2.4	-38.6	-5.2	-5.2	-
	Lubricating oil No. 2*3	%	-	-	-	-	-23.4	-	-	-
Removability			Good	Difficult	Difficult	Difficult	Good	Good	Good	Good
Operating temperature range (Est.)		°C	-40 to 80	-40 to 150	-40 to 150	-40 to 150	-40 to 150	-40 to 150	-40 to 150	-40 to 400
Remark(s)			Good plastic resistance		Different color from 1102					

*1 : Immersion conditions 90°C×24h
*2 : Immersion conditions 50°C×24h
*3 : Immersion conditions 100°C×24h

	1119		1121	1121C	1130	1133J	1141G	1141H	1141J	1184	1184D	1184E
	Fluorine-based resin		Saturated polyester resin	Saturated polyester resin	Acrylate	Acrylate	Acrylic emulsion	Acrylic emulsion	Acrylic emulsion	Special synthetic rubber	Special synthetic rubber	Special synthetic rubber
	Mixture of two fluids (alcohol-releasing type)		Non-drying	Non-drying	Anaerobic curing	Anaerobic curing	Vaporization	Vaporization	Vaporization	Solvent vaporization	Solvent vaporization	Solvent vaporization
	Chemical resistance		Solventless	1121 Low viscosity	For tapered plugs	For flanges	Water-based type Nonflammable	Water-based type Nonflammable	Water-based type Nonflammable	All-purpose type Chemical resistance	All-purpose type Chemical resistance	All-purpose type Chemical resistance
	Agent A	Agent B										
	Black	White	Gray	Gray	White	Blue	Gray	Gray	Gray	Gray	Cream	Black
	150	260	330	11.0	50.0	100	15.0	0.9	10.0	9.5	29.0	8.5
	1.76	1.80	1.35	1.27	1.15	1.10	1.26	1.22	1.26	1.26	1.32	1.20
	99.3	93.5	100	87.3	100	-	68.0	60.0	68.0	57.5	63.0	55.0
	10 (Pot life)		Non-drying	Non-drying	-	-	-	-	-	12	12	12
	Rubber-like		Non-drying	Non-drying	Rubber-like	Rubber-like	-	-	-	Rubber-like	Rubber-like	Rubber-like
	A39		-	-	-	-	-	-	-	A23	A22	A28
	97		-	-	-	-	-	-	-	1720	1000	700
	1.03		-	-	-	-	-	-	-	0.17	0.15	0.21
	0.54		-	-	-	11.0	-	-	-	3.3	-	-
	0.59		-	-	-	10.0	-	-	-	2.7	-	-
	-		9.0	9.0	11.0	-	10 or higher	10 or higher	10 or higher	10.0	10.0	10.0
	-		7.0	7.0	11.5	-	10 or higher	9.5	10 or higher	8.5	8.0	8.5
	-		6.5	6.5	4.0	-	9.5	8.5	9.0	8.5	8.0	8.0
	-		-5.5	-5.5	+0.25	-	-2.3	-2.1	-2.5	-1.9	-1.9	-2.5
	-3		-4.4	-4.4	-0.85	-	-7.5	-7.0	-7.2	-2.8	-1.8	-3.8
	-		-	-	-	-	-	-	-	-3.6	-1.1	-1.9
	Normal		Good	Good	Normal	Difficult	Good	Good	Good	Normal	Normal	Normal
	-30 to 150		-40 to 130	-40 to 130	-40 to 130	-40 to 130	-40 to 140	-40 to 140	-40 to 140	-40 to 150	-40 to 150	-40 to 150
				Contains alcohol			pH: 9.0	pH: 9.0	pH: 9.0			

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Liquid Gaskets

Property Table

Product name			1184J
Characteristics		Unit	
Main component			Special synthetic rubber
Curing method			Solvent vaporization
Features			All-purpose type Chemical resistance
Appearance			Gray
Viscosity		Pa-s	6.5
Specific gravity			1.23
Non-Volatile Content		%	54.0
Tack free time		min	12
Physical characteristics after curing	State		Rubber-like
	Hardness		A22
	Elongation rate	%	1200
	Tensile strength	MPa	0.13
	Tensile shear bond strength (Iron)	MPa	-
	Tensile shear bond strength (Aluminum)	MPa	-
Pressure resistance	Room temperature	MPa	10.0
	80°C	MPa	8.0
	150°C	MPa	8.0
Chemical resistance (Mass change rate)	Water*1	%	-3.0
	Gasoline*2	%	-3.7
	Lubricating oil No. 2*3	%	-
Removability			Normal
Operating temperature range (Est.)		°C	-40 to 150
Remark(s)			

*1 : Immersion conditions 90°C×24h
*2 : Immersion conditions 50°C×24h
*3 : Immersion conditions 100°C×24h

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Product name			1152C	1152D	
Characteristics		Unit			
Main component			Olefin-based resin	Olefin-based resin	
Curing method			Heat-curing	Two-component heat-curing	
Features			Gas barrier property Low moisture permeability	Gas barrier property Chemical resistance Low moisture permeability	
Appearance			Milky white	White	Black
Viscosity		Pa-s	650	390	230
Specific gravity			0.97	0.97	0.97
Standard curing conditions			100°C×30 min	90°C×30 min	
Physical characteristics after curing	Hardness		A30	A 28	
	Elongation rate	%	280	230	
	Tensile strength	MPa	2.6	1.7	
	Moisture permeability (40°C×95%RH)	$g/m^2/24h$	5.56	0.5	
Removability			Difficult	Difficult	
Operating temperature range (Est.)		°C	-30 to 120		
Remark(s)			For FIPG	For FIPG	

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

	1153C	1156B	1156C	1158
	Olefin-based resin	Acryl rubber	Acryl rubber	Acryl rubber
	Heat-curing	Heat-curing	Heat-curing	Moisture-curing Alcohol-releasing type
	Gas barrier property Low moisture permeability	Heat resistance Chemical resistance	Heat resistance Chemical resistance	Oil resistance
	Gray	Black	Black	Black
	1700	180	380	200
	1.03	1.2	1.24	1.35
	100°C× 30 min	150°C× 30 min	150°C× 30 min	-
	A41	A6	A15	A20
	221	275	300	300
	3.0	1. 2	1.7	1.8
	3.43	-	-	-
	Difficult	Normal	Normal	Normal
	-30 to 120	-30 to 150	-30 to 150	-30 to 150
	For CIPG		High-viscosity and high-thixotropic type of TB1156B	

Product name / Characteristics		Unit	1171D	1171E	1171F
Main component			Special synthetic rubber	Special synthetic rubber	Special synthetic rubber
Curing method			Solvent vaporization	Solvent vaporization	Solvent vaporization
Features			Low moisture permeability	Low moisture permeability	Chemical resistance
Appearance			Colorless	Colorless	Black
Viscosity		mPa-s	440	600	1800
Specific gravity			0.87	0.79	0.91
Non-Volatile Content		%	6.3	6.0	14.5
Physical characteristics after curing	State		Rubber-like adhesive film	Rubber-like adhesive film	Rubber-like elastic film
	Moisture permeability (40°C×95%RH)	g/m²/24h	4.12	4.12	-
	Moisture permeability (60°C×95%RH)	g/m²/24h	-	-	-
Chemical resistance (Mass change rate)	Polyprene carbonate	%	-1.5	-1.5	0.5
	Gamma-Butyrolactone	%	-0.2	-0.2	0.6
	Dimethoxyethane	%	-3.2	-3.2	-0.8
	Potassium hydroxide (10%)	%	-	-	-
	Hydrochloric acid (10%)	%	-	-	-
Remark(s)			For Batteries	For Batteries	For Batteries

* -: Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Liquid Gaskets

Property Table

Product name			1206C	1206D	1206E	1206G	1207B	1207C	1207D	1207F
Characteristics		Unit								
Main component			Modified Silicone	Modified Silicone	Modified Silicone	Modified Silicone	Silicone	Silicone	Silicone	Silicone
Curing method			Alcohol	Alcohol	Alcohol	Alcohol	Acetone	Acetone	Acetone	Acetone
Features			Paintable Oil resistance	Paintable Oil resistance	Paintable Oil resistance	Paintable Oil resistance	Fast-curing Chemical resistance	Fast-curing Chemical resistance	Fast-curing Chemical resistance	Fast-curing Chemical resistance
Appearance			Black	Gray	Gray	White	Black	Reddish brown	Aluminum color	Aluminum color
Viscosity		Pa-s	-	-	72.0	-	250	200	200	-
Apparent viscosity (SOD)		Pa-s	90	80	-	80	100	70	70	170
Specific gravity			1.45	1.46	1.43	1.45	1.01	1.50	1.50	1.50
Tack free time		min	30	5	16	5	3	5	5	5
Physical characteristics after curing	Hardness		A45	A41	A33	A45	A30	A60	A60	A56
	Elongation rate	%	400	470	350	450	400	170	170	190
	Tensile strength	MPa	2.0	2.2	1.8	2.2	1.9	4.3	4.0	3.7
	Tensile shear bond strength (Iron)	MPa	2.3	-	-	-	1.6	2.0	2.0	2.3
	Tensile shear bond strength (Aluminum)	MPa	-	2.3	1.7	2.2	1.1	2.0	2.0	2.2
Pressure resistance	Initial (When uncured) clearance: 0.2mm	MPa	-	0.14	0.14	0.14	0.18	0.14	0.14	0.23
	Initial (When uncured) clearance: 0.5mm	MPa	0.11	-	-	-	0.07	0.05	0.05	0.12
	After curing (Room temperature)	MPa	-	-	-	-	10 or higher	10 or higher	10 or higher	10 or higher
Chemical resistance	Appropriateness: Engine oil		△ (Lower heat resistance)	△ (Lower heat resistance)	△ (Lower heat resistance)	△ (Lower heat resistance)	○	○	○	○
	Appropriateness: Gear oil		△ (for agricultural equipment)	△ (for agricultural equipment)	△ (for agricultural equipment)	△ (for agricultural equipment)	×	×	×	×
	Appropriateness: AT oil		×	×	×	×	×	×	×	×
	Appropriateness: MT oil		×	×	×	×	×	×	×	×
	Appropriateness: Coolant		×	×	×	×	○	○	○	○
	Mass change rate: Water*1	%	-	-	-	-	-0.6	-0.4	-	-
	Mass change rate: Gasoline*2	%	-	-	-	-	+5.0	-0.3	-	-
	Mass change rate: Lubricating oil No. 2*3	%	-	-	-	-	-6.0	+5.8	-	-
Removability			Normal	Normal	Normal	Normal	Relatively difficult	Good	Good	Normal
Operating temperature range (Est.)		℃	-40 to 120	-40 to 120	-40 to 120	-40 to 120	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)
Remark(s)			FIPG (for agricultural equipment)	FIPG (for agricultural equipment)	FIPG (for agricultural equipment)	FIPG (for agricultural equipment)	FIPG Engine oil for coolant	FIPG Engine oil for coolant	FIPG Engine oil for coolant 1207C Color difference	FIPG Engine oil for coolant

*1: Immersion conditions 90℃×24h
*2: Immersion conditions 50℃×24h
*3: Immersion conditions 100℃×24h

	1207H	1211	1211E	1211F	1211G	1211H	1212	1212D	1212E	1215	1215B
	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone
	Acetone	Oxime	Oxime	Oxime	Oxime	Oxime	Oxime	Oxime	Oxime	Oxime	Oxime
	Fast-curing Chemical resistance	For general use Low viscosity	For general use Low viscosity	For general use Low viscosity	For general use Low viscosity	For general use Low viscosity	For general use High viscosity	For general use High viscosity	For general use High viscosity	For general use Chemical resistance	For general use Chemical resistance
	Gray	White	White	Colorless	White	White	White	Aluminum color	Black	Gray	Black
	-	68.0	5.0	70.0	4.3	63.0	300	300	-	75.0	85.0
	200	-	-	-	-	-	100	100	100	20	20
	1.47	1.01	1.05	1.04	1.04	1.03	1.04	1.05	1.55	1.50	1.45
	3	40	60	40	35	16	7	7	5	60	60
	A57	A26	A25	A24	A20	A21	A30	A30	A28	A50	A40
	228	303	200	300	250	280	300	300	380	320	320
	3.0	2.5	1.0	2.5	1.8	1.9	2.0	2.0	1.7	1.2	2.1
	1.1	-	0.8	-	-	-	-	1.7	1.8	0.9	-
	1.2	1.4	0.8	1.2	0.8	1.0	1.0	1.5	1.5	0.8	0.8
	-	0.04	0.01	0.04	0.01	0.04	0.15	0.1	0.15	0.05	0.05
	0.10	0.01	-	0.01	-	0.01	0.06	0.03	0.06	0.01	0.01
	-	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher
	○	○	○	○	○	○	○	○	○	○	○
	×	×	×	×	×	×	×	×	×	○	○
	×	×	×	×	×	×	×	×	×	×	×
	×	×	×	×	×	×	×	×	×	○	○
	○	×	×	×	×	×	×	×	×	×	×
	-	-0.5	-	-	-	-	+1.3	+1.3	-	-0.4	-0.4
	-	-20.2	-	-	-	-	-15.1	-15.1	-	-4.7	-4.7
	-	+5.0	-	-	-	-	+5.0	+5.0	-	+4.9	+4.9
	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)
	FIPG Engine oil for coolant	For general use Engine oil pan Used with packing	1211 Low viscosity	1211 Color difference	Better nylon adhesion than 1211E	Better nylon adhesion than 1211	For general use Engine oil pan	For general use Engine oil pan 1212 Color difference	For general use Engine oil pan 1212 Color difference	FIPG Engine oil pan Gear case	FIPG Engine oil pan Gear case

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Liquid Gaskets

Property Table

Product name / Characteristics		Unit	1216	1216B	1216C	1216D	1216E	1217	1217B	1217C
Main component			Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone
Curing method			Oxime	Oxime	Oxime	Oxime	Oxime	Oxime	Oxime	Oxime
Features			Multi-grade	Mission oil resistance	Mission oil resistance	Mission oil resistance High elasticity	Multi-grade Fast-curing	Chemical resistance ATF resistance	Chemical resistance ATF resistance	Chemical resistance ATF resistance
Appearance			Gray	Black	Light reddish brown	Gray	Gray	Gray	Reddish brown	Black
Viscosity		Pa-s	-	-	-	-	-	-	-	-
Apparent viscosity (SOD)		Pa-s	120	120	170	140	215	140	150	150
Specific gravity			1.40	1.50	1.48	1.48	1. 36	1.47	1.45	1.50
Tack free time		min	5	20	5	15	6	20	20	20
Physical characteristics after curing	Hardness		A60	A50	A48	A50	A57	A57	A56	A52
	Elongation rate	%	240	500	470	500	300	400	350	320
	Tensile strength	MPa	3.0	2.0	2.1	2.0	3.3	2.1	1.9	2.0
	Tensile shear bond strength (Iron)	MPa	2.3	-	1.1	-	-	-	-	-
	Tensile shear bond strength (Aluminum)	MPa	2.2	1.7	1.3	1.7	2.5	2.3	1.7	1.7
Pressure resistance	Initial (When uncured) clearance: 0.2mm	MPa	0.21	0.17	0.18	0.17	0.25	0.18	0.20	0.21
	Initial (When uncured) clearance: 0.5mm	MPa	0.10	0.07	0.06	-	0.10	0.07	0.10	0.10
	After curing (Room temperature)	MPa	10 or higher	10 or higher	-	-	10 or higher	10 or higher	10 or higher	10 or higher
Chemical resistance	Appropriateness: Engine oil		○	○	○	○	○	○	○	○
	Appropriateness: Gear oil		○	△	△	△	○	△	△	△
	Appropriateness: AT oil		△	○	○	○	△	△	○	○
	Appropriateness: MT oil		○	○	○	○	○	○	×	×
	Appropriateness: Coolant		△	×	×	×	△	×	×	×
	Mass change rate: Water*1	%	-	-	-	-	-	-	-	-
	Mass change rate: Gasoline*2	%	-	-	-	-	-	-	-	-
	Mass change rate: Lubricating oil No. 2*3	%	-	-	-	-	-	-	-	-
Removability			Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Operating temperature range (Est.)		℃	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)
Remark(s)			FIPG	FIPG 1215B High viscosity AT case CVT case	FIPG 1216B Color difference AT case, CVT case	FIPG AT case, CVT case	FIPG Engine oil pan AT case Gear case for coolant	FIPG Engine oil pan AT case Gear case	FIPG Engine oil pan AT case Gear case	FIPG Engine oil pan AT case Gear case

*1: Immersion conditions 90℃×24h
*2: Immersion conditions 50℃×24h
*3: Immersion conditions 100℃×24h

	1217D	1217E	1217G	1217H	1217M	1217N	1227D	1281B	1282B
	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone
	Oxime	Oxime	Oxime	Oxime	Oxime	Oxime	Alcohol	Oxime	Acetone
	Engine oil Low foamability	ATF resistance Low foamability	High elasticity High-grade engine oil	High elasticity High-grade engine oil	High elasticity Oily surface adhesiveness	High elasticity Magnesium adhesion	Compliant with MEKO regulations Coolant resistance	ATF resistance	Initial pressure resistance Liquid coolant resistance
	Gray	Reddish brown	Gray	Gray	Black	Gray	Black	Reddish brown	Black
	-	-	-	-	-	-	-	-	-
	120	140	301	330	280	280	200	115	200
	1.51	1.50	1.37	1.36	1.37	1.45	1.46	1.45	1.07
	10	5	5	5	7	6	90	10	3
	A52	A53	A60	A51	A45	A35	A33	A60	A46
	400	260	430	470	500	440	410	220	330
	1.8	1.6	2.6	2.6	2.5	3.1	2.3	4.8	3.3
	-	1.3	2.1	2.3	-	2.6	2.3	2.0	1.8
	1.7	1.4	2.0	2.3	1.6	2.7	2.2	2.0	1.7
	0.17	0.20	-	-	-	-	0.19	0.15	0.11
	0.09	0.10	0.10	0.15	-	0.15	-	0.06	0.06
	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	-	10 or higher	10 or higher
	○	○	○	○	○	○	○	△	△
	×	×	×	×	×	×	×	×	×
	×	○	×	×	×	×	×	○	×
	×	○	×	×	×	×	×	×	×
	×	×	×	×	×	×	○	×	○
	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	Normal	Normal	Relatively difficult	Relatively difficult	Normal	Normal	Normal	Normal	Normal
	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)	-60 to 200 (250)
	FIPG Engine oil pan Engine oil Low-foaming ability	FIPG Engine oil pan AT case AT oil Low-foaming ability	FIPG Engine oil pan Excellent initial pressure resistance	FIPG Engine oil pan Excellent initial pressure resistance	FIPG Engine oil pan	FIPG Engine oil pan	FIPG Engine oil pan for coolant	FIPG AT case	FIPG Engine oil pan for coolant

* - : Unmeasured
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Threelock and Sealock Processes to Prevent Leaks and Loosening of Screws

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

This is the process for coating the sealant and locking agent to the thread portion of screws, bolts, pipes, etc. to add sealing and locking functions to screws themselves.
Pre-coated screws maintain stability, and have sealing or locking functions when tightened.
Pre-coating of bolts includes bolts pre-coated by MEC Processing where a microencapsulated reactive adhesive is applied, Threelock Processing where nylon is fused, and Sealock Processing where a sealing function is added.

■ Threelock Processing

Fusion processing of nylon resin with excellent elastic modulus, wear resistance, chemical resistance, lubricity, and weather resistance.
When processed screws are tightened, excellent loosening prevention is achieved by the nylon resin elastic force generated in the screw clearance. Because of the nylon resin's excellent elastic modulus, wear resistance, and adhesion to the screw, it is possible to use them more than five times with compliance to JIS (JIS B 1056).
They can be used in a wide temperature range from -50°C to 120°C (approx.).

■ Sealock Processing

This is a baked-on processing of special synthetic resin.
When processed screws are tightened, the screw clearance receives deformed filling by the special synthetic resin and sealing is achieved immediately.
The heat-resistant type can achieve sealing with hydraulic pressure at approximately 170°C.

2358

Sealock Processing / Heat-Resistant Type

This is a sealing process that uses fluoropolymer as the main component.
Because it is a baked-on type, the sealing function can be achieved by simply tightening the screw.
It has excellent heat resistance, and the sealing function works up to approximately 170°C.
It has excellent chemical resistance.

2365B, 2365C

Threelock Processing / Standard Type

Prevailing type loosening prevention coating for small screws using nylon as the main component.
Because it is a fusion type, the loosening prevention function and drop-preventing function can be achieved by simply tightening the screw.
Functions are maintained even at 120°C (approx.).
It has excellent repeatability.
The applied nut diameter is M1.6 to M40, allowing it to be used for a wide range of applications.

Property Table

Product name					2358
Characteristics				Unit	
Main component					Fluoropolymer
Features					For sealing
Appearance					White
Applied nut diameter					-
Sealability	Air tight*1	25°C	M10 bolt	MPa	2 or higher
			1/8 PT plug	MPa	2 or higher
			3/4 PT plug	MPa	2 or higher
	Water tight*1	25°C	M10 bolt	MPa	2 or higher
			1/8 PT plug	MPa	2 or higher
			3/4 PT plug	MPa	2 or higher
	Oil tight*2	80°C	M10 bolt	MPa	12 or higher
			1/8 PT plug	MPa	12 or higher
			3/4 PT plug	MPa	12 or higher
		150°C	M10 bolt	MPa	12 or higher
			1/8 PT plug	MPa	12 or higher
			3/4 PT plug	MPa	12 or higher
		170°C	M10 bolt	MPa	12 or higher
			1/8 PT plug	MPa	12 or higher
			3/4 PT plug	MPa	12 or higher
Operating temperature range (Est.)				℃	Seal 170
Remark(s)					Sealock processing

*1: Iron seal block / Tightening torque M10 bolt: 30N/m, 1/8 plug: 4N/m, 3/4 plug: 44N/m, Maximum applied pressure 2MPa
*2: Iron seal block / Tightening torque M10 bolt: 30N/m, 1/8 plug: 4N/m, 3/4 plug: 44N/m, Maximum applied pressure 12MPa

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Product name				2365B	2365C
Characteristics			Unit		
Main component				Nylon resin	Nylon resin
Features				Repeated usage	Repeated usage
Appearance				Green	Red
Applied nut diameter				M1.6 to 40	M1.6 to 40
Repetitive torque	M1.6×P0.35 (0.05N/m tightening)	Screw torque	N/m	0.017	0.017
		Loosening torque First rotation	N/m	0.012	0.012
		Loosening torque Fifth rotation	N/m	0.007	0.007
	M4×P0.7 (2N/m tightening)	Screw torque	N/m	0.47	0.47
		Loosening torque First rotation	N/m	0.40	0.40
		Loosening torque Fifth rotation	N/m	0.22	0.22
	M10×P1.5 (30N/m tightening)	Screw torque	N/m	8.1	8.1
		Loosening torque First rotation	N/m	6.5	6.5
		Loosening torque Fifth rotation	N/m	4.3	4.3
Torque by temperature	Screw torque		N/m	4.7 to 6.5	4.7 to 6.5
	25°C	Unwinding torque	N/m	24.0	24.0
		Loosening torque	N/m	4.9	4.9
	80°C	Unwinding torque	N/m	21.5	21.5
		Loosening torque	N/m	3.5	3.5
	100°C	Unwinding torque	N/m	23.6	23.6
		Loosening torque	N/m	2.8	2.8
	120°C	Unwinding torque	N/m	20.8	20.8
		Loosening torque	N/m	2.1	2.1
	150°C	Unwinding torque	N/m	20.1	20.1
		Loosening torque	N/m	1.7	1.7
Operating temperature range (Est.)			℃	-50 to 120	-50 to 120
Remark(s)				Threelock Processing	Threelock Processing

* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Pipe Sealants

Industrial Materials and Public Works

These are liquid sealants that can seal inner fluids when applied to the threaded portion of piping.
Highly reliable sealing can be achieved by completely filling in and adhering to the minute clearance of the screw interlocking surface.
Products with various material bases are available including synthetic resin-based, synthetic rubber-based, acrylate-based, silicone-based, olefin resin-based, and acrylic emulsion-based products. There are also various reaction system grades including solvent vaporization, anaerobic curing, and moisture-curing.
There are various types available including a general-purpose type, a type for water supply pipes, and a type for gas pipes. There is also a gas leak repair spray for repairing gas leaks from the threaded portions of gas pipes installed in buildings.

1110F, 1110G

This is an anaerobic curing acrylate-based sealant for general pipes.
It does not cure while contacting the air, but quickly cures when the threaded portion is tightened.
Sealability is effective immediately, and it can prevent pipe galling due to its lubricity from the fluorine powder.
It can be used as a general use sealant or for preventing loosening with metallic pipes such as cold and hot water pipes, oil pipes, air pipes, and conduit.

4230

This is an alcohol type silicone-based sealant for water supply pipes.
It is compliant with the Japan Water Works Association standard JWWA K146 and K142.
It can be used for water supply pipes and for hot water supply pipes.
It is a mold-resistant type, so it can also be used as a joint sealant or adhesive around water.

4320B

This is a solventless sealant for gas piping that uses alkyd resin as the main component.
Sealability is effective immediately, and it is also a half dry type, so it has excellent vibration resistance and impact strength.
It uses tubes with a rotating nozzle, and the nozzle itself rotates so that it is easy to apply to the whole pipe circumference.
It is an exclusive product for city gas.
It has excellent lubricity, and as for the applicable diameter, up to around 80A can be used.

4221, 4221B

This is a volatile solvent type sealant for water supply pipes that uses synthetic resin as the main component.
It is compliant with the Japan Water Works Association standard JWWA K146.
It can be used for prevention of corrosion of the end faces of steel pipes for water supply, as a sealant, and for hot water supply pipes.
As for the applicable diameter, up to around 80A can be used.

4314D

This is a volatile solvent type sealant for gas piping that uses special synthetic rubber as the main component.
After drying, it becomes a rubber-like elastic body with excellent vibration resistance and impact strength.
It can be used for both city gas and LP gas.
The applicable diameter is 15A to 50A.

4325, 4325B

This is a solventless sealant for gas piping that uses alkyd resin as the main component.
It is a non-drying type with excellent vibration resistance and impact strength.
It can be used for both city gas and LP gas.
The applicable diameter is 15A to 40A.

4333B

This is a solventless sealant for gas piping that uses silicone-modified olefin-based resin as the main component.
It is a mastic type, so putty state is maintained after curing resulting in excellent vibration resistance and impact strength.
Sealability is effective immediately, and it can prevent pipe galling due to its lubricity.
It can be used for both city gas and LP gas.

4370

This is an aerosol type sealant that uses acrylic emulsion as the main component for repairing small leaks at the threaded joint portions of gas pipes (interior gas piping).
It is possible to repair leaks at the threaded portions of gas pipes in existing buildings by setting the aerosol can and pressure-filling the sealant inside using the aerosol pressure.
It can be used for both city gas and LP gas.
Principally, the applicable diameter is up to 25A.

Pipe Sealants

Property Table

Product name / Characteristics			Unit	1110F	1110G	4002	4004D
Main component				Acrylate	Acrylate	Synthetic resin	Special synthetic rubber
Curing method				Anaerobic curing	Anaerobic curing	Solvent vaporization	Solvent vaporization
Features				Lubricity High strength	Lubricity Low strength	For general use	Propane gas City gas for anti-freeze
Appearance				White	Milky white	Gray	Gray
Viscosity			Pa-s	50.0	25.0	4.5	9.5
Specific gravity				1.08	1.12	1.30	1.26
Non-Volatile Content			%	Solventless	Solventless	77.0	58.0
State after curing				Solid	Solid	Dry adhesion	Rubber-like
Pipe pressure resistance	Initial	20A	MPa	3.4 or higher	3.4 or higher	-	-
		25A	MPa	-	-	-	0.49 or higher
		50A	MPa	-	-	-	0.49 or higher
	25°C/ 24h	20A	MPa	3.4 or higher	3.4 or higher	-	-
		25A	MPa	-	-	2.0 or higher	0.49 or higher
		50A	MPa	-	-	2.0 or higher	0.49 or higher
Chemical resistance	Mass change rate	Water*1	%	-	-	-	-2.6
		Anti-freeze*1	%	-	-	-	-3.2
	Gas resistance	4°C	%	-	-	-	0.1
		20°C	%	-	-	-	0.1
Removability				Difficult	Excellent	Relatively difficult	Normal
Operating temperature range (Est.)			°C	-	-	-30 to 150	-
Remark(s)				For metallic pipes	For metallic pipes	For metallic pipes	Applicable diameter 15A to 50A

*1: Immersion conditions 85°C×24h

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Product name / Characteristics	Unit	4221	4221B	4230
Main component		Synthetic resin	Synthetic resin	Silicone
Curing method		Solvent vaporization	Solvent vaporization	Moisture-curing alcohol type
Features		For hot water supply	For hot water supply	For hot water supply
Appearance		Gray	White	White
Viscosity	Pa-s	5.5	5.5	Paste
Specific gravity		1.26	1.26	1.45
Non-Volatile Content	%	67.0	67.0	Solventless
Tack free time	min	-	-	15
Physical characteristics after curing – State		Dry adhesion	Dry adhesion	Rubber-like
Physical characteristics after curing – Hardness		-	-	A30
Physical characteristics after curing – Elongation rate	%	-	-	700
Physical characteristics after curing – Tensile strength	MPa	-	-	2.5
Water pressure resistance (20A)	MPa	2.5 or higher	2.5 or higher	2.5 or higher
Removability		Relatively difficult	Relatively difficult	Normal
Operating temperature range (Est.)	℃	-	-	120
Remark(s)		JWWA-K-146 compliant	JWWA-K-146 compliant	JWWA-K-146K-142 compliant

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Pipe Sealants

Property Table

Product name / Characteristics			Unit	4314D	4320B	4325	4325B	4332C	4333B	4370
Main component				Special synthetic rubber	Alkyd resins	Alkyd resins	Alkyd resins	Silicone	Silicone-modified olefin-based resin	Acrylic emulsion
Curing method				Solvent vaporization	Half dried	Non-drying	Non-drying	Moisture-curing deamidation	Moisture-curing alcohol type	Vaporization
Features				For city gas and LP gas	For city gas	For city gas and LP gas	For city gas and LP gas	For city gas and LP gas	For city gas and LP gas	Interior gas piping gas leakage repair
Appearance				Gray	Ivory	Gray	Ivory	Ivory	Green-gray	Milky white
Viscosity			Pa-s	9.5	110	40.0	40.0	600	265	7.0 (mPa-s)
Specific gravity				1.26	1.46	1.67	1.67	1.23	1.35	1.01
Non-Volatile Content			%	58.0	96.3	98 or higher	98 or higher	96.2	Solventless	33.0
State after curing				Rubber-like	Half dried	Non-drying	Non-drying	Mastic	Mastic	Flexible
Pipe pressure resistance	Initial	20A	MPa	-	-	-	-	0.49 or higher	0.1 or higher	-
		25A	MPa	0.49 or higher	0.5 or higher	-	-	-	-	-
		50A	MPa	0.49 or higher	-	-	-	-	0.1 or higher	-
	25°C/24h	20A	MPa	-	-	0.49 or higher	0.49 or higher	-	-	-
		25A	MPa	0.49 or higher	0.5 or higher	-	-	-	-	-
		50A	MPa	0.49 or higher	-	-	-	-	-	-
Chemical resistance	Mass change rate	Water	%	-1.9	-0.4	-	-	-	-	-
		Gas resistance 4°C[*1]	%	+0.10	+0.7	-	-	-	-	-
		Gas resistance 20°C[*1]	%	+0.10	+0.2	-	-	-	*3	(Excellent)
		Benzene[*2]	%	-	-33.1	-	-	-	-	(Excellent)
		Benzene vapor phase[*2]	%	-	-	-4.2	-4.2	-	*4	-
		n-hexane[*2]	%	-	+3.8	-7.9	-7.9	-	-	-
		n-pentane[*2]	%	-	-	-10.1	-10.1	-	-	-
Removability				Normal	Excellent	Excellent	Excellent	Excellent	Excellent	-
Operating temperature range (Est.)			°C	-40 to 150	-40 to 80	-40 to 80	-40 to 80	-40 to 100	-40 to 100	-20 to 80
Remark(s)				Applicable diameter 15A to 50A	Applicable diameter 15A to 80A	Applicable diameter 15A to 40A	Applicable diameter 15A to 40A			Applicable diameter 25A or less

*1: Immersion for 1h
*2: Immersion at 25°C×24h
*3: Rubber physical properties evaluation for city gas (7 days), elongation change 0%, change in strength -4%
Rubber physical properties evaluation for LP gas (7 days), elongation change -9%, change in strength -21%
*4: Rubber physical properties evaluation (20°C/7 days), elongation change 0%, change in strength -8%

* - : Unmeasured
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* Before using, confirm the adequacy and safety for the relevant application.

Sealants for Construction

Transportation Equipment | Industrial Materials and Public Works | Automotive Aftermarket

This is a caulking agent that can be used for various purposes including joints for mortar and concrete, concrete blocks, U-shaped gutters, metal framed glass sliding doors and windows, and for bonding and sealing of pools, water tanks, sinks, etc.
It is a single component that cures by simply squeezing it from the container and forms a rubber-like elastic body.
There are various grades of different materials available including synthetic rubber-based, urethane-based, silicone-based, and modified silicone based products.
Various primers for silicone are available, and it is possible to gain optimal adhesion for various materials at any work location.

4101

This is a caulking agent that uses chloroprene rubber as the main component.
It maintains its rubber elasticity after curing, which is different from oil-based caulking agents, so it does not crack. It can be used as general use joint caulk.

4102

This is a caulking agent that uses modified isobutylene-isoprene rubber as the main component.
It has some tackiness, so it can be used for manhole catch basin joints, sheet metal seems, and for container joints.

4108

This is a caulking agent that uses urethane resin as the main component.
After curing, it becomes a rubber elastic body with low modulus and high elongation, so it can be used for cured materials.
It can be used as a sealant for automobiles, vehicles, and containers, etc., and as a sealant for various joints.

5211 Series

This is a caulking agent with silicone resin as the main component that has good adhesion, weather resistance, freeze resistance, and heat resistance.
Rubber elasticity is maintained over a wide temperature range from -60°C to 250°C (approx.).
These can be used for various purposes including joints for mortar and concrete, concrete blocks, U-shaped gutters, metal framed glass sliding doors and windows, and for bonding and sealing of pools, water tanks, sinks, etc. There are seven different colors available; White, Clear, Gray, Ivory, Black, Aluminum, and Amber.

5222 Series

This is a caulking agent that uses modified silicone resin as the main component.
It has excellent heat resistance and freeze resistance, and rubber elasticity is maintained over a temperature range from -40°C to 100°C (approx.).
It is paintable, so it can be applied to cured materials.
It can be used as joint sealing for construction and civil engineering, vehicle window joint seals, and sealing and bonding of electric parts. There are four different colors available; White, Gray, Ivory, and Black.

5223

This is a low-odor caulking agent that uses alcohol type silicone resin as the main component. There is no corrosiveness with metal.
Rubber elasticity is maintained over a wide temperature range from -60°C to 250°C (approx.).
It has excellent adhesion for various materials including metals, glass, tile, and plastic.
It is used for sealing locations where glass is used, for repairs, for sealing resin panels, and for filling.

5264B

This is a primer for improved adhesion for silicone and modified silicone.
By coating and drying it to a substrate in advance, adhesion can be further improved.
Various primers are available for different materials.

Caulking Agent

Property Table

Product name		4101	4102	4108	5211	5222M	5223
Characteristics	Unit						
Main component		Chloroprene rubber	Modified isobutylene-isoprene rubber	Urethane resin	Silicone	Modified Silicone	Silicone
Curing method		Solvent vaporization	Solvent vaporization	Moisture-curing	Moisture-curing oxime type	Moisture-curing alcohol type	Moisture-curing alcohol type
Features		Rubber elasticity	For catch basins	Low modulus	Weather resistance	Paintable	Excellent plastic adhesiveness
Appearance		White	Gray	Gray	Various*1	Various*2	Ivory
Viscosity	Pa-s	400	300	800	Paste	450	Paste
Specific gravity		1.30	1.40	1.30	1.04	1.40	1.45 (Cured)
Tack free time	min	8 to 10	3	8	20	60	15
Physical characteristics after curing	Hardness	-	-	A7	A23	A28	A30
	Elongation rate	%	-	-	900	500	400	700
	Tensile strength	MPa	-	-	1.5	2.5	0.9	2.5
Tensile shear bond strength	Iron	MPa	-	-	-	1.1	1.2	-
	Aluminum	MPa	-	-	-	1.3	1.2	1.8
	Acrylic	MPa	-	-	-	1.1	0.5	-
	ABS	MPa	-	-	-	-	-	1.1
	Hard PVC	MPa	0.3	-	-	1.1	1.1	-
	Glass	MPa	-	-	-	1.3	-	1.8
	Tiles	MPa	-	-	-	1.2	-	-
	Concrete/Tiles	MPa	0.6	-	-	-	-	-
	Concrete	MPa	1.2	-	-	-	-	-
	Wood	MPa	0.6	-	-	0.9	-	-
Operating temperature range (Est.)	°C	-	-	-	-60 to 200 (250)	-40 to 100	-60 to 200 (250)
Remark(s)					Different colors available	Different colors available	

*1: White, Gray, Clear, Ivory, Black, Aluminum, Amber
*2: White, Gray, Ivory, Black

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Product name / Characteristics	Unit	5262	5263	5264B	5268
Features		Primer for silicone	Primer for silicone	Primer for silicone	Primer for silicone
Applications		Concrete Wood	Plastic(s)	Metal coated surface	Stainless steel Acrylic resin
Appearance		Light yellow	Light yellow	Colorless	Colorless
Specific gravity		0.97	0.90	0.69	0.89
Non-Volatile Content	%	40.0	5.0	4.7	14.5
Drying time	min	30 or higher	15 or higher	-	-
Standard coating weight	g/m^2	200	50	38	-

* - : Unmeasured
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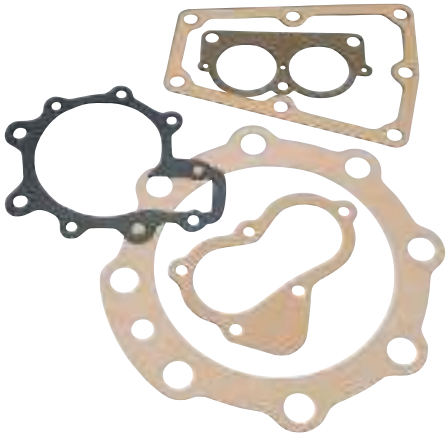
* Before using, confirm the adequacy and safety for the relevant application.



Solid Sheet Packing

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

These are sheet-like gaskets that have the good points of both solid sheet gaskets and liquid gaskets.
A special viscous material is impregnated to a strong, long-fibered material so that penetration leakage and leakage from contact surfaces can be prevented, resulting in a highly reliable seal.
They have excellent oil resistance, and can be used in temperatures up to approximately 150°C (high surface pressure type).
There are four types available for different tightening surface pressures; a type for ultra-low contact pressure, for low contact pressure, for medium contact pressure, and a type for high surface pressure. Different thicknesses are also available for each type, making it possible to select the optimal product according to the usage.
The Solid Sheet Packing's optimum compression ratio is designed to be about 20%.
Two dimensions are available; roll products (25m, 50m) and 1m cut products (1m×1m). Punched out products can be manufactured by request.

202F, 204F, 206F, 210F

This is Solid Sheet Packing for ultra-low contact pressure.
Sheets are available in four thicknesses; 0.2mm, 0.4mm, 0.6mm and 1.0mm.
The operating temperature range is -40°C to 100°C (approx.).

203T, 206T, 210T

This is Solid Sheet Packing for low contact pressure.
Sheets are available in three thicknesses; 0.3mm, 0.6mm and 1.0mm.
The operating temperature range is -40°C to 100°C (approx.).

203S, 206S, 210S

This is Solid Sheet Packing for medium contact pressure.
Sheets are available in three thicknesses; 0.3mm, 0.6mm and 1.0mm.
The operating temperature range is -40°C to 130°C (approx.).

203H, 206H, 210H

This is Solid Sheet Packing for high surface pressure.
Sheets are available in three thicknesses; 0.3mm, 0.6mm and 1.0mm.
The operating temperature range is -40°C to 150°C (approx.).

Solid Sheet Packing

Property Table

Product name				202F	204F	206F	210F	203T	206T	210T	203S
Characteristics			Unit								
Features				For ultra-low contact pressure	For ultra-low contact pressure	For ultra-low contact pressure	For ultra-low contact pressure	For low contact pressure	For low contact pressure	For low contact pressure	For medium contact pressure
Logo printing color				Without logo	Without logo	Without logo	Without logo	Orange	Orange	Orange	Navy blue
Thickness			mm	0.2	0.4	0.6	1.2	0.3	0.6	1.0	0.3
Apparent density			g/m^3	0.65	0.75	0.78	0.80	0.84	0.85	0.79	0.84
Contact pressure standard			MPa	2.9 to 7.8	2.9 to 7.8	2.9 to 7.8	2.9 to 7.8	3.9 to 7.8	3.9 to 7.8	3.9 to 7.8	7.8 to 15.7
Chemical resistance	Mass change rate	ASTM No. 3 oil	%	+26	+75	+75	+80	+9	+11	+18	+9
		ASTM Fuel B	%	+22	+81	+81	+58	+16	+21	+25	+18
		Distilled water	%	+25	+45	+45	+36	+46	+52	+50	+48
		Ethylene glycol (50%, 80°C)	%	+33	+61	+61	+50	+56	+64	+70	+3
	Extraction rate	ASTM No. 3 oil	%	-	-5	-3	-9	-6	+0.4	+2	+0.6
		ASTM Fuel B	%	-	-6	-5	-11	+3	+3	+3	+5
		Distilled water	%	-	-6	-6	-2	+11	+10	+15	+21
		Ethylene glycol (50%, 80°C)	%	-	-7	-5	-1	+18	+18	+20	+20
	Thickness variability rate	ASTM No. 3 oil	%	-	+55	+55	+68	-3	-2	+4	-3
		ASTM Fuel B	%	-	+60	+70	+88	-2	-3	+2	-1
		Distilled water	%	-	+13	+16	+21	+10	+17	+8	+10
		Ethylene glycol (50%, 80°C)	%	-	+15	+17	+20	+15	+0.4	-	+15
Physical properties	Compressibility		%	25	35	26	25	17	19	24	18
	Recovery		%	61	78	75	77	49	48	44	49
	Stress relaxation percentage		%	14	44	48	68	15	35	55	19
Pressure resistance	Contact pressure: 3.9MPa		MPa	1.1	1.4	1.5	1.2	-	-	-	-
	Contact pressure: 7.8MPa		MPa	1.5	2.2	2.3	1.9	-	-	-	-
Operating temperature range (approx.)			°C	-40 to 100	-40 to 100	-40 to 100	-40 to 100	-40 to 100	-40 to 100	-40 to 100	-40 to 130
Remark(s)											

	206S	210S	203H	206H	210H
	For medium contact pressure	For medium contact pressure	For high surface pressure	For high surface pressure	For high surface pressure
	Navy blue	Navy blue	Green	Green	Green
	0.6	1.0	0.3	0.6	1.0
	0.85	0.79	0.84	0.85	0.79
	7.8 to 15.7	7.8 to 15.7	15.7 to 24.5	15.7 to 24.5	15.7 to 24.5
	+14	+19	+13	+18	+23
	+25	+29	+18	+31	+35
	+58	+55	+51	+64	+62
	+69	+78	+60	+71	+85
	+0.6	+0.4	-0.1	-1	+5
	+2	+2	+3	-2	+3
	+10	+13	+14	-	+15
	+18	+18	+20	-1	+20
	-1	+2	-3	+0.1	0
	-2	+5	-2	+6	+10
	+19	+10	+8	+17	+14
	-0.7	+22	+13	-0.3	+18
	20	22	16	17	19
	47	50	41	41	41
	38	59	24	45	64
	-	-	-	-	-
	-	-	-	-	-
	-40 to 130	-40 to 130	-40 to 150	-40 to 150	-40 to 150

* - : Unmeasured
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* Before using, confirm the adequacy and safety for the relevant application.

Adhesion refers to the "phenomenon where two solids (substrates) are combined by an adhesive". Adhesion strength is related to the bonding strength between the adhesive and the adhered material surfaces (interface), and to the strength of the cured adhesive itself.
When selecting an adhesive, keeping these things in mind, it is important to consider the compatibility between the substrate and adhesive, the physical force required for the adhesive itself, the environmental conditions to which it will be exposed, etc. By considering workability when using, it is possible to select the optimal adhesive.

* By referencing the adhesive selection flow chart on the opposite page, it is possible to narrow down the optimal adhesive system according to the following "Adhesive Property Comparison Table".

Adhesive Property Comparison Table

Adhesive lineup	Main applications	Curing method	Curability	Thermal properties	Adhesion to materials		
					Metal(s)	Plastic*1	Rubber*2
Silicone-based	Bonding for electric and electronic parts, insulation, sealing, general bonding for dampproof coating, etc.	Moisture-curing * Condensation reaction by moisture in the air	Skin formation time: 5 to 10 minutes Curing speed: Approx. 3mm/day	Rubber elasticity is maintained over a wide temperature range Can be used from approximately -60°C to 250°C (heat-resistant type upto 300°C)	◎	◎	△
Anaerobic	Bonding of general screws, interlocking adhesion with sealed metal parts, surface adhesion, and bonding of motor magnets	Anaerobic curing * Radical polymerization reaction by cutting oxygen and providing metal contact * Adhesives also curable under UV light are available	Set time: From approximately a few seconds to 5 min Practical strength: 30 to 60 min Final strength: 12 to 24 hours	Can be used from approximately -40°C to 150°C (heat-resistant type upto 200°C)	◎	×	×
Rubber-based	General bonding for a wide range of substrates such as rubber, leather, and metal	Solvent vaporization * Volatilization and drying of contained solvent	Surface drying: 5 to 10 min Set time: Clamping after surface drying, and bonding after that allows for immediate fixing, and practical strength is from 10 to 24 hours or longer	Strength maintained from approximately -40°C to 80°C	◎	△	◎
Elastomeric adhesive	Bonding to various materials such as metals, plastics, rubber, wood, and inorganic materials	Moisture-curing * Condensation reaction by moisture in the air	Skin formation time: 5 to 10 minutes Practical strength: 24 hours Final strength: 3 to 5 days	Rubber elasticity is maintained over a wide temperature range Can be used from approximately -50°C to 150°C	◎	◎	◎
Water-based adhesive	General bonding of urethane foam, polystyrene foam, wood, paper, leather, etc., and metals, plastics, rubber, etc.	Solvent vaporization * Volatilization and drying of contained solvent	Practical strength: 1 to 2 hours* Final strength: 1 to 2 days* Open time (Drying time before bonding): 20 min	Can be used from approximately -30°C to 60°C * Strength is maintained up to about 80°C	◎	◎	◎
Tacky Adhesive	Adhesive for screen printing to plastic nameplates, labels, stickers, etc.	Solvent vaporization * Volatilization and drying of contained moisture or contained solvent	50°C to 60°C ×15 to 20 min	Heat resistance strength maintained from approximately 60°C to 80°C	◎	◎	◎
Heat-bonding sheet adhesive	Laminated-type sheet for heat-activated thermal bonding for aluminum nameplates, labels, etc.	Thermofusion, resolidification * Melt by heat, pressed onto a surface, then cooled to solidify	Laminate on nameplate and then perform thermal pressure bonding at 100°C or higher for no more than 10 seconds	Can be used from approximately -40°C to 100°C	◎	×	×
Instant adhesive	Bonding to various materials such as metals, plastics, rubber, and wood	Anionic polymerization by moisture * Curing in several seconds by moisture of the adhered material surface	Set time: From approximately a few seconds to a few minutes Practical strength: 30 min to 2 hours Final strength: 12 to 24 hours	Can be used from approximately -40°C to 100°C (heat-resistant type can be used at approximately 120°C)	◎	◎	◎
Epoxy resin-based	Bonding, sealing, casting, impregnation, and coating for various usages including for electric and electronic parts and for construction materials	Addition polymerization * Room-temperature curing by mixing the main agent and curing agent, or thermal curing of single-component	Various types including two-component type with room-temperature curing in 24 hours, and single-component type with heat-curing in a few minutes to a few hours	Can be used from approximately -60°C to 150°C (heat-resistant type can be used at approximately 200°C)	◎	○	○
UV-curable resin-based	Bonding, sealing, casting, and coating for various usages including for electric and electronic parts and for general parts	Radical polymerization / cationic polymerization * Curing in several seconds by UV light * Many types with additional curing property such as anaerobic, humidity, heating, and primer are available	Curing in a few second to under a minute by UV light irradiation from UV light irradiation equipment	Can be used from approximately -40°C to 120°C (heat-resistant type can be used at approximately 150°C)	◎	◎	○
Ceramic-based	Filling solidification for ceramics, glass, and metal requiring high heat resistance, filling adhesion for sensors and elements, and coatings	Condensation reaction, reaction with binder	Heat-curing at 150°C, leave at room temperature +100°C×30 min	Heat resistance of 1300°C or higher	○	×	×
SGA (two-component acrylic resin-based structural adhesive)	Adhesion of structures for various materials such as metal, plastic, rubber, wood, and inorganic materials	Honeymoon type (contact) curing * Radical polymerization by contact between Agent A and Agent B	Set time: 4 to 7 min Practical strength: 15 to 30 min Final strength: 12 hours	Can be used from approximately -40°C to 130°C	◎	◎	◎

Adhesive Selection Flow Chart

Confirm items that are compatible with the type of adhered material from the **"Adhesion to materials"**. >> Confirm the **"Thermal Properties"** according to the operating temperature range. >> If there are other conditions such as exposure to chemicals, confirm the **"Chemical resistance"** and **"Electric insulation"**. >> If plastics such as ABS and polycarbonates will be nearby, which are easily damaged by solvents, confirm the **"Influence on plastic"**. >> Confirm the **"Adhesive strength"** and **"Cured material characteristic"** according to the force applied to the portion where it is used. >> Select an adhesive and then select a product from the detailed description page.

◎ Highly suitable ○ Suitable △ Not very suitable × Unsuitable

Durability		Chemical resistance					Electric insulation	Influence on plastic*3	Adhesive strength		Cured material characteristic	Representative grade
Continuous heat resistance	Moisture resistance	Water	Acid	Inorganic bases	Oil	Solvent			Tensile shear bond strength	Peel strength		
180°C	◎	◎	△	△	○	×	◎	None	○	○	Rubber-like Maximum elongation of about 500%	1200 Series
150°C	◎	◎	◎	◎	◎	○	◎	Yes	○	△	Hard and solid with excellent chemical resistance	1300 Series
80°C	○	○	○	○	△	×	○	Yes	○	◎	Rubber-like	1500 Series
120°C	○	○	△	△	×	×	○	None	○	◎	Rubber-like Maximum elongation of about 400%	1530 Series
100°C	△	△	△	△	×	×	○	None	○	◎	Elastic film with tackiness	1541C
80 to 100°C	△	△	△	△	×	×	○	None	○	◎	Highly sticky paste	1549
60 to 80°C	○	○	○	○	△	×	○	None	○	○	Sheet-like dry film (with core)	1600 Series
100 to 120°C	△	△	○	○	◎	◎	◎	Partially affecting	◎	○	Hard and Solid * Various grades are available including high heat resistance, high moisture resistance, and high peelability * Primers for adhesion-difficult materials available	1700 Series 7700 Series
120 to 150°C	◎	◎	◎	◎	◎	◎	◎	None	◎	△	Hard and Solid, tough	2000 Series 2100 Series 2200 Series
120°C	○	◎	◎	◎	◎	◎	◎	Partially affecting	◎	○	Various, from hard and solid to soft and flexible * Acrylic resin-based, acryl rubber-based, epoxy-based, and silicone-based types are available	3000 Series 3100 Series
1400°C	○	◎	◎	◎	◎	◎	◎	None	○	×	Solid and ceramic-like	3732
80 to 100°C	◎	◎	◎	◎	◎	◎	◎	Partially affecting	◎	◎	Tough	3921, 3926

*1) There are materials that are difficult to bond to such as polyethylene, polypropylene, silicone resin, and fluoropolymers.
*2) There are materials that are difficult to bond to such as silicone rubber, fluororubber, and urethane rubber.
*3) ABS, polycarbonate, polysulfone, polystyrene, and other materials that are easily damaged by solvents may dissolve or crack on the surface.

Silicone-Based Adhesives, Sealants and Potting Agents

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

These are single-component type silicone adhesives and sealants. They can be used for various purposes including bonding, sealing, and dampproof coatings for different fields such as for electric and electronic devices.
The curing reaction occurs from the moisture in the air when it is squeezed from the container, and it becomes a rubber-like elastic body.
They have a fast curing speed, the surface cures at room temperature and normal humidity (25°C / 50%RH) after ten minutes (tack free), and they reach a cured thickness of 1mm or greater after 2 to 3 hours.
The rubber elasticity of the cured material is maintained over a wide temperature range from -60°C to 250°C (approx.) (300°C for heat-resistant type). They have excellent adhesion, so they can bond to most materials.
There are two reaction types; the alcohol type (generates a small amount of methanol gas as a reactive byproduct) and the acetone type (generates acetone gas). Neither type is corrosive to metals such as electric-contact metals. They also do not dissolve or cause cracks on most plastics.
All grades of the 1220 Series are low-molecular siloxane-reduced products, so they do not cause electrical contact failures.

1220G, 1220H

This is a paste-like fluid type product.
It is the alcohol type, so there is no influence such as corrosion on metals and plastics.
It has excellent adhesion with metals, glass, and plastics.
It can be used at a temperature range of -60°C to 250°C (approx.), and for continuous use, the heat resistance is about 180°C.
It has excellent electric insulation.
1220G is milky white (translucent), and 1220H is white.

1221G, 1221H

This is a paste-like non-fluid type with excellent padding ability due to its non-fluidity during application.
It is the alcohol type, so there is no influence such as corrosion on metals and plastics.
It has excellent adhesion with metals, glass, and plastics.
It can be used at a temperature range of -60°C to 250°C (approx.), and for continuous use, the heat resistance is about 180°C.
It has excellent electric insulation.
1221G is milky white (translucent), and 1221H is white.

1222C

This is an incombustible type certified according to incombustibility standard UL94V-0.
It is a gray non-fluid paste with excellent padding ability due to its non-fluidity during application.
It is the alcohol type, so there is no influence such as corrosion on metals and plastics.
It has excellent adhesion with metals, glass, and plastics.
It can be used at a temperature range of -60°C to 250°C (approx.), and for continuous use, the heat resistance is about 180°C.
It has excellent electric insulation.

1224G

This is milky white (translucent) ultra-fluid type with excellent flowability and leveling ability during application.
It is the alcohol type, so there is no influence such as corrosion on metals and plastics.
It has excellent adhesion with metals, glass, and plastics.
It can be used at a temperature range of -60°C to 250°C (approx.), and for continuous use, the heat resistance is about 180°C.
It has excellent electric insulation.

1225B

This has high thermal conductivity and excellent heat dissipation.
It is a white fluid paste.
It can be used for heat dissipation and insulation of various electronic devices such as switching power supplies, power ICs, and lighting inverters.
It is the alcohol type, so there is no influence such as corrosion on metals and plastics.
It can be used at a temperature range of -60°C to 250°C (approx.), and for continuous use, the heat resistance is about 180°C.
It has excellent electric insulation.

1207B

It is a black non-fluid type.
It is the acetone type, so there is no corrosiveness with metals, and almost no influence on plastics.
It has excellent adhesion with metals and plastics.
It can be used at a temperature range of -60°C to 250°C (approx.), and for continuous use, the heat resistance is about 180°C.
The cured material is soft and it can conform to the movement of the substrate. It has excellent heat resistance and moisture resistance.

1208, 1208B, 1208C

This is a white type adhesive sealant for electric and electronic devices.
It is the acetone type, so there is no corrosiveness with metals, and almost no influence on plastics.
It has excellent adhesion with metals, glass, and plastics.
It can be used at a temperature range of -60°C to 250°C (approx.), and for continuous use, the heat resistance is about 180°C.
It has excellent electric insulation.
1208 is a medium-viscosity fluid paste, 1208B is a low-viscosity fluid paste, and 1208C is a non-fluid paste.
* It is not a low-molecular siloxane-reduced product.

1209

It is a highly heat-resistant type with excellent heat resistance.
It is a black non-fluid type with excellent padding ability due to its non-fluidity during application.
It is the acetone type, so there is no corrosiveness with metals, and almost no influence on plastics.
It has excellent adhesion with metals, glass, and plastics.
It can be used at a temperature range of -60°C to 300°C (approx.), and for continuous use, the heat resistance is about 250°C.
* It does not have high electrical resistivity, so it cannot be used for insulation.

1226

This is a tin-free product.
It is the alcohol type, so there is no influence such as corrosion on metals and plastics.
It exhibits excellent adhesion for various kinds of substrates, including metals and resin materials such as engineering plastics.
It can be used at a temperature range of -60°C to 250°C (approx.), and for continuous use, the heat resistance is about 180°C.
It has excellent electric insulation.

1234B

This is a heat-curing type with excellent resistance to heat, moisture, and water.
It reaches practical strength in 1 hour after being heated at 100°C.
It exhibits excellent adhesion for various kinds of substrates, including metals and resin materials such as engineering plastics.
It can be used at a temperature range of -60°C to 250°C (approx.), and for continuous use, the heat resistance is about 180°C.
The cured material is soft and it can conform to the movement of the substrate.

Silicone-Based Adhesives, Sealants and Potting Agents

Property Table

Characteristics		Unit	1207B	1208	1208B	1208C	1209	1220G	1220H	1221G
Main component			Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone
Reaction type			Acetone	Acetone	Acetone	Acetone	Acetone	Alcohol	Alcohol	Alcohol
Features			Standard Type	Standard Type	Standard Type	Standard Type	Highly heat-resistant type	Standard Type	Standard Type	Standard Type
Appearance			Black	White	White	White	Black	Milky white (Translucent)	White	Milky white (Translucent)
Viscosity		Pa-s	100	55.0	3.3	-	140	65.0	65.0	-
Flowability			None	Yes	Yes	None	None	Yes	Yes	None
Tack free time		min	3	3	3	3	5	10	10	10
Content of low-molecular siloxane			-	-	-	-	Reduced product	Reduced product	Reduced product	Reduced product
Physical characteristics after curing	Specific gravity		1.01	1.04 (Liquid specific gravity)	1.04 (Liquid specific gravity)	1.04 (Liquid specific gravity)	1.05 (Liquid specific gravity)	1.04	1.03	1.04
	Hardness		A30	A30	A20	A30	A42	A20	A20	A28
	Elongation	%	400	300	200	450	270	500	500	500
	Tensile strength	MPa	1.9	2.0	0.7	2.5	2.1	2.2	2.2	2.5
	Volume resistivity	Ω/m	-	5.2×10^{12}	1.0×10^{12}	1.0×10^{12}	Not good for insulation	2.0×10^{13}	2.0×10^{13}	3.0×10^{14}
	Dielectric breakdown strength	kV/mm	-	25	22	23	Not good for insulation	25	25	22
	Thermal conductivity	W/m-K	-	-	-	-	-	-	-	-
Tensile shear bond strength	Aluminum	MPa	1.1	1.4	2.5	0.5	1.7	1.0	1.0	1.0
	Glass	MPa	-	-	-	-	1.3	1.2	1.2	1.0
	Acrylic	MPa	-	-	-	-	-	1.3	1.3	1.2
	Polycarbonate	MPa	-	-	-	-	-	1.4	1.4	1.2
Remark(s)							Heat resistance of approx. 300°C			

	1221H	1222C	1224G	1225B	1226	1234B
	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone
	Alcohol	Alcohol	Alcohol	Alcohol	Alcohol	Heat-curing
	Standard Type	Incombus-tible type	Ultra-fluid type	For heat dissipation	Tin-free type	Highly resistant type
	White	Gray	Milky white (Translucent)	White	Gray	Gray
	-	-	1.2	18.0	97	400
	None	None	Yes	Yes	None	None
	10	5	7	5	7	-
	Reduced product	Reduced product	Reduced product	Reduced product	Reduced product	-
	1.04	1.32	1.00	2.6	1.37	1.18
	A28	A45	A24	A74	A27	A11
	500	250	150	48	460	700
	2.5	4.0	0.5	3.9	2.4	2.3
	3.0×10^{14}	4.0×10^{12}	5×10^{13}	2.0×10^{14}	4.3×10^{12}	7.8×10^{11}
	22	30	28	20	19	21
	-	-	-	1.59	-	-
	1.0	1.0	0.6	0.9	2.2	1.7
	1.0	1.7	0.6	1.3	1.9	1.9
	1.2	2.2	0.5	-	2.1	-
	1.2	1.4	0.6	-	1.7	-
		UL94 V-0 Certified Product				Standard curing conditions: 100°C×1h

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Anaerobic Adhesives and Sealants

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These are single-component type acrylic anaerobic adhesives and sealants. In addition to bonding and sealing of screws and interlocking parts, they can also be used for magnet surface adhesion, and bonding and sealing of metal materials.
When air (oxygen) supply is cut between metal materials such as when a screw is tightened and the gaps of the threads are minimized, curing reaction begins due to the metal ions, and curing by polymerization occurs rapidly.
For screws, after around 20 seconds to a few minutes, it cures to where it cannot be moved (set time), and from 30 minutes to 2 hours it reaches 1/2 of final strength (practical strength). After 12 to 24 hours, it reaches final strength, and it forms a tough cured material with excellent oil resistance, chemical resistance, heat resistance, and weather resistance.
It can be used in a temperature range from -40°Cto 150°C (approx.) (200°C for heat-resistant type).
There are also types with UV curability and primer curability in addition to anaerobic curing property.
A halogen-free type is also available.

1303N, 1305N

High strength / Fast Curing Type

This is good for permanent adhesion and sealing of screws.
It can be used in a temperature range from below -40°C to 150°C (approx.).
It can be used with bolts of any size, but 1303N is a low-viscosity type suitable for M10 bolts and smaller, and 1305N is a medium viscosity, lubricating ability type suitable for M10 bolts and larger.

1322N, 1324N

Medium strength / Fast Curing Type

It is good for bonding and sealing screws that may need to be removed.
It can be used in a temperature range from below -40°C to 150°C (approx.).
It can be used with bolts of any size, but 1322N is a low-viscosity type suitable for M10 bolts and smaller, and 1324N is a medium viscosity type suitable for M10 bolts and larger.

1342J, 1344J

Low strength / Fast Curing Type

It is good for bonding and sealing screws that will be removed.
It can be used in a temperature range from below -40°C to 150°C (approx.).
It can be used with bolts of any size, but 1342J is a low-viscosity type suitable for M10 bolts and smaller, and 1344J is a medium viscosity type suitable for M10 bolts and larger.
It is a DOP-free product.

1307N, 1360G

With lubricating ability, medium-high strength, medium-high-viscosity type

This is good for bonding and sealing large-diameter bolts and high tensile bolts.
It can be used in a temperature range from below -40°C to 150°C (approx.) (200°C for heat-resistant type).
1307N is a standard type and 1360G is a fast-curing/heat-resistant type. There is also 1360K, which is a slow curing, heat-resistant type, and 1374, which is a standard, high-strength type.

1373N, 1375N, 1377N

For interlocking, High-strength type

It is good for adhesion and sealing of interlocking portions such as pins, bushes, shafts, and bearings.
It can be used in a temperature range from below -40°C to 120°C (150°C) (approx.).
1373N is a low-viscosity type (heat resistance: 150°C), and 1375N is a medium-viscosity type. 1377N is a medium-high viscosity, lubricating ability type that can be used for press fitting portions.

1360F

Heat resistant / High strength / Fast curing type

It can be used in a temperature range from below -40°C to 200°C (approx.).
It is good for screws and fixing interlocking portion and sealing requiring heat resistance.
It can be used with bolts of any size. 1360F is a medium-viscosity type suitable for M10 bolts and larger.
There is also 1360N, which is a slow curing, medium strength type.

1320B

Ultra-low viscosity, low- to medium-strength type

It is possible to penetrate inside by application on screws after tightening and on the interlocking portion.
It is good for fixing thread portion and interlocking portion and for sealing pinholes, where penetrability is required.
It can be used in a temperature range from below -40°C to 150°C (approx.).

1372D

Thermal strength improved type

It has a high softening point, and can maintain high strength even in a high-temperature environment of 150°C.
It is good for fixing interlocking portion and sealing at locations requiring strength under heat.
It is a high strength, low-viscosity type with UV curability.
It can be used in a temperature range from below -40°C to 150°C (approx.).

1386D, 1386E, 1386H

Exclusive product for sealing welch plugs

It was adjusted to make it easy to use with coating robots.
It is a low strength, slow-curing type.
It can be used in a temperature range from below -40°C to 150°C (approx.).

1354

Halogen-free product with heat-curing property

It is possible to prevent dropping because the overflow portion becomes a dry film by heating, and as a result, outgas can be reduced.
It is good for adhesion and sealing of interlocking portions where outgas should be avoided such as HDD parts.
It can be used in a temperature range from below -40°C to 125°C (approx.).
It is a high strength, medium-high-viscosity type with UV curability.

1389F

Sealant for flanges

This has rubber elasticity, so it has high conformability, and it has excellent sealability for dissimilar metals and larger flanges.
It is good for flange sealing of transportation machines, construction machines, agricultural machines, hydraulic equipment, etc.
It can be used in a temperature range from below -40°C to 150°C (approx.).

1314

More thermal deterioration-resistant type

Even after continuous aging at 120°C, there is almost no decrease in strength.
It is a high strength, low-viscosity type.
It is good for fixing thread portion and interlocking portion and sealing that are normally under high-temperature environments.
It can be used in a temperature range from below -40°C to 150°C (approx.).

1353, 1353C, 1355

Type with heat-curing property

It is possible to cure by heating with a large clearance where it is normally difficult for curing to occur only by the anaerobic curing property. It is also possible to prevent dropping because the overflow portion becomes a dry film by heating. It is good for interlocking portion adhesion and sealing. It can be used in a temperature range from below -40°C to 125°C (approx.).
1353 and 1353C are medium-high strength, medium-viscosity types, and 1355 is a medium-high strength, medium-high-viscosity type. All have UV curability.

1355D, 1359, 1359D, 1359G

Grade for surface adhesion with UV curability

It is flexible, and it can be used for surface adhesion of metal parts, etc., because of its high peel strength.
It can be used in a temperature range from below -40°C to 150°C (approx.) (200°C for heat-resistant type).
1355D is a medium-high viscosity type, 1359 and 1359D are high viscosity types, and 1359G is a high viscosity, heat-resistant type.

1376B

Halogen-free product for interlocking, High-strength type

It is good for adhesion and sealing of interlocking portions such as pins, bushes, shafts, and bearings.
It can be used in a temperature range from below -40°C to 120°C (approx.).

1390E, 1390F, 1390K, 1390R

Curing accelerator (primer) for anaerobic adhesives and sealants

By applying and letting it dry on substrates in advance, it is possible to increase the curing speed of the anaerobic adhesives and sealants.
1390E is an alcohol-based solvent type that can be used with plastic parts, and 1390F and 1390K are quick-drying, acetone (solvent)-types.

Anaerobic Adhesives and Sealants

Property Table

Characteristics	Unit	1301B	1303	1303B	1303C	1303N	1305	1305B	1305N
Main component		Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester
Strength		High strength	High strength	High strength	High strength	High strength	High strength	High strength	High strength
Main usages		Screw	Screw	Screw	Screw	Screw	Screw	Screw	Screw
Features		Low viscosity	Low viscosity	Low viscosity	Low viscosity	Fast-curing	Medium viscosity	Medium viscosity	Fast-curing Lubricity
Appearance		Brown	Green	Purplish brown	Green	Green	Green	Purplish brown	Green
Viscosity	mPa-s	8.0	150	125	125	150	600	500	650
Specific gravity		1.07	1.11	1.07	1.07	1.12	1.11	1.07	1.11
Additional curability		-	-	-	-	-	-	-	-
Curing speed: Set time (Screws*1)	sec	-	-	-	-	-	60	-	-
Curing speed: Set time (Interlocking part*2)	sec	-	-	-	-	-	-	-	-
Curing speed: Set time (Interlocking part*2) When used with curing accelerator (1390K)	sec	-	-	-	-	-	-	-	-
Curing speed: Practical strength*3 onset	h	2	2	2	2	1	2	2	1
Curing speed: Final strength onset	h	24	24	24	24	12	24	24	12
Breaking torque*1	N/m	33.0	33.0	33.0	33.0	45.3	33.0	33.0	46.0
Interlocking adhesion strength*2	MPa	35.0	35.0	35.0	35.0	40.0	35.0	35.0	45.0
Operating temperature range (Est.)	°C	below -40°C to 120°C	below -40°C to 150°C	below -40°C to 120°C	below -40°C to 120°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 120°C	below -40°C to 150°C
Remark(s)		For permanent adhesion	For permanent adhesion	For permanent adhesion	For permanent adhesion	For permanent adhesion	For permanent adhesion	For permanent adhesion	For permanent adhesion

*1: Iron bolts/nut M10×Pitch 1.5
*2: Iron pin / collar 6ϕ ×15mm, Clearance 1/100mm
*3: 1/2 of the final strength

	1305P	1307N	1314	1316	1320B	1322N	1323N	1324	1324B	1324N	1327
	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester
	High strength	High strength	High strength	High strength	Medium strength	Medium strength	Medium strength	Medium strength	Medium strength	Medium strength	Medium strength
	Screw	Screw	Screw Interlocking part	Screw	Screw Interlocking part	Screw	Screw	Screw	Screw	Screw Interlocking part	Screw
	Excellent water resistance	Fast-curing Lubricity	Excellent heat aging resistance	Medium viscosity	Low viscosity Penetrability	Fast-curing	Ultrarapid curing	Medium viscosity	Medium viscosity	Fast-curing Lubricity	Compatible with high clearances
	Purple	Green	Green	Green	Green	Red	Green	Red	Red	Red	Red
	600	2300	250	410	18.0	150	90.0	650	600	600	2500
	1.16	1.12	1.10	1.09	1.10	1.11	1.16	1.13	1.13	1.12	1.11
	-	-	-	-	-	-	-	-	-	-	-
	-	-	180	-	480	-	-	-	-	-	-
	-	-	90	-	600	-	-	-	-	-	-
	-	-	-	-	-	-	-	120	120	-	-
	1	1	1	3	2	1	0.5	2	2	1	2
	12	12	12	24	24	12	6	24	24	12	24
	20.0	42.0	45.0	32.0	20.8	24.0	20.6	22.0	22.0	27.0	30.0
	40.0	40.0	41.0	35.0	20.4	28.0	25.0	28.0	28.0	30.0	32.0
	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 120°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C
		For large-diameter bolts and high tensile bolts	For permanent adhesion	For permanent adhesion							

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Anaerobic Adhesives and Sealants

Property Table

Product name / Characteristics	Unit	1333B	1342H	1342J	1344H	1344J	1350G	1353	1353C
Main component		Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Main agent: Methacrylic acid ester epoxy resin / Curing agent: Imidazole	Methacrylic acid ester	Methacrylic acid ester
Strength		Low strength	Low strength	Low strength	Low strength	Low strength	High strength	Medium strength	High strength
Main usages		Screw	Screw	Screw	Screw	Screw	Interlocking part	Interlocking part	Interlocking part
Features		Low viscosity	Low viscosity	Fast-curing	Medium viscosity	Fast-curing	Low outgassing Two-component heat-curing	Low outgassing	Low outgassing
Appearance		Red	Blue	Blue	Blue	Blue	Main agent: Blue / Curing agent: Light yellow	Blue	Blue
Viscosity	mPa-s	125	150	150	650	650	Main agent: 2000 / Curing agent: 600	650	650
Specific gravity		1.07	1.05	1.06	1.05	1.06	Main agent: 1.10 / Curing agent: 1.10	1.11	1.11
Additional curability		-	-	-	-	-	Heating UV light	Heating UV light	Heating UV light
Curing speed: Set time (Screws*1)	sec	-	-	-	-	-	-	-	-
Curing speed: Set time (Interlocking part*2)	sec	-	-	-	-	-	-	90	600 or less
Curing speed: Set time (Interlocking part*2) When used with curing accelerator (1390K)	sec	-	-	-	-	-	-	-	-
Curing speed: Practical strength*3 onset	h	4 to 6	2	1	2	1	-	1	1
Curing speed: Final strength onset	h	24	24	12	24	12	-	24	24
Breaking torque*1	N/m	12.0	16.7	24.1	14.5	23.7	-	-	-
Interlocking adhesion strength*2	MPa	-	-	-	-	-	30.2 (90°C×1h)	26.0	40.7
Operating temperature range (Est.)	°C	below -40°C to 120°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 120°C	below -40°C to 125°C	below -40°C to 125°C
Remark(s)			Good removability DOP-free product	Good removability DOP-free product	Good removability DOP-free product	Good removability DOP-free product			

*1: Iron bolts/nut M10×Pitch 1.5
*2: Iron pin / collor 6ϕ×15mm, Clearance 1/100mm
*3: 1/2 of the final strength

	1354	1355	1355D	1359	1359D	1359G	1360	1360F	1360G	1360K	1360N
	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester
	High strength	Medium-high strength	High strength	High strength	High strength	Medium strength	Medium strength	High strength	Medium-high strength	Medium strength	Medium strength
	Interlocking part	Interlocking part	Surface adhesion	Surface adhesion	Surface adhesion Interlocking part	Surface adhesion	Screw	Screw Interlocking part	Screw	Screw	Screw
	Low outgassing Low halogen content	Low outgassing	Flexibility Low outgassing	Flexibility Fast-curing	Flexibility Fast-curing	Flexibility High heat resistance	High heat resistance	High heat resistance Fast-curing	High heat resistance Fast-curing with axial force	High heat resistance Slow curing Lubricity	High heat resistance Slow curing
	Blue	Blue	Blue	Blue	Blue	Blue	Red	Blue	Red	Red	Red
	1000	1300	900	12000	14000	23000	1000	500	1800	1700	800
	1.10	1.12	1.10	1.07	1.05	1.10	1.07	1.10	1.10	1.13	1.07
	Heating UV light	Heating UV light	UV light	UV light	UV light	UV light	-	-	-	-	-
	-	-	-	-	-	-	-	-	300	-	-
	120 to 180	120	100 to 110	120	-	300 to 360	240	240	-	-	-
	5 to 10	-	10 to 15	-	-	60 to 70	15	15	-	-	-
	-	1	-	-	-	-	6	1	2	6	6
	-	24	-	-	-	-	24	12	24	36	36
	-	-	-	-	-	-	29.0	41.6	37.6	25.0	22.5
	33.2	25.0	38.2	41.2	32,0	22.8	23.0	36.6	-	25.0	25.0
	below -40°C to 125°C	below -40°C to 125°C	below -40°C to 150°C	Below 40°C to 150°C	below -40°C to 150°C	below -40°C to 200°C	below -40°C to 200°C	below -40°C to 200°C	below -40°C to 200°C	below -40°C to 180°C	below -40°C to 200°C
								For permanent adhesion			

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Anaerobic Adhesives and Sealants

Property Table

Characteristics	Unit	1372D	1372E	1373B	1373N	1374	1375B	1375N	1376B
Main component		Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester
Strength		High strength	Low strength	High strength	High strength	High strength	High strength	High strength	High strength
Main usages		Interlocking part	Screw	Interlocking part	Interlocking part	Screw	Interlocking part	Interlocking part	Interlocking part
Features		Strength at high temperature	Two-component type Ultrarapid curing	Low viscosity	Fast-curing	With axial force	Medium viscosity	Fast-curing	Low halogen content
Appearance		Green	Main agent: Light yellow/Transparent Additive: Clear/Transparent	Green	Green	Red	Green	Green	Blue
Viscosity	mPa-s	110	Main agent: 150 Additive: -	125	90.0	650	800	500	700
Specific gravity		1.07	Main agent: 1.06 Additive: 1.10	1.10	1.10	1.11	1.11	1.12	1.10
Additional curability		UV light	-	-	UV light	-	-	UV light	UV light
Curing speed: Set time (Screws*1)	sec	-	-	-	-	-	-	-	-
Curing speed: Set time (Interlocking part*2)	sec	180	-	-	-	-	-	-	60 to 120
Curing speed: Set time (Interlocking part*2) When used with curing accelerator (1390K)	sec	-	-	-	-	-	-	-	5 to 10
Curing speed: Practical strength*3 onset	h	1	5 to 10 (min)	1.5	1	1 to 2	2	1	-
Curing speed: Final strength onset	h	24	30 (min)	24	24	24	24	24	-
Breaking torque*1	N/m	-	10 to 15	42.7	-	35.8	-	-	-
Interlocking adhesion strength*2	MPa	33.0	-	25 to 34	38.2	19 to 27	29 to 34	31.8	33.5
Operating temperature range (Est.)	℃	below -40℃ to 150℃	below -40℃ to 150℃	below -40℃ to 150℃	below -40℃ to 150℃	below -40℃ to 150℃	below -40℃ to 175℃	below -40℃ to 120℃	below -40℃ to 120℃
Remark(s)									

*1: Iron bolts/nut M10×Pitch 1.5
*2: Iron pin / collor 6ϕ×15mm, Clearance 1/100mm
*3: 1/2 of the final strength

	1377B	1377N	1386	1386B	1386D	1386E	1386H	1386L	1389F
	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester	Methacrylic acid ester
	High strength	High strength	Low strength	Low strength	Low strength	Low strength	Low strength	Low to medium strength	Low strength
	Interlocking part	Interlocking part	Welch plug interlocking sealing	Welch plug interlocking sealing	Welch plug interlocking sealing	Welch plug interlocking sealing	Welch plug interlocking sealing	Welch plug interlocking sealing	Flange seal
	High viscosity	Fast-curing	Lubricity	Lubricity	Slow curing Lubricity	Slow curing Lubricity	Slow curing	Slow curing Lubricity	Rubber elasticity
	Green	Green	Red	Yellow	Red	Blue	Fluorescent yellow	Blue	Blue
	2000	1500	2000	2000	2000	2000	2200	2000	60000
	1.12	1.12	1.10	1.10	1.10	1.10	1.10	1.10	1.12
	-	UV light	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	50 (min)	20 (min)	-
	-	-	-	-	-	-	10	-	-
	1.5	1	2	2	5	5	-	6	-
	24	24	24	24	36	36	-	24	-
	-	-	15 to 25	15 to 25	10 to 15	10 to 15	15.3	23.5	9.0
	25 to 34	31.8	-	-	-	-	-	20.5	-
	below -40°C to 150°C	below -40°C to 120°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C	below -40°C to 150°C
								Galling prevention Excellent coating properties	

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Anaerobic Adhesives and Sealants

Property Table

Product name / Characteristics	Unit	1390E	1390F	1390K	1390R
Solvent		Alcohol	Acetone	Acetone	Alcohol
Main usages		Anaerobic curing Curing accelerator	Anaerobic curing Curing accelerator	Anaerobic curing Curing accelerator	Anaerobic curing Curing accelerator
Features		Little influence on plastics	Quick-drying	Quick-drying	Little influence on plastics
Appearance		Light brown	Light brown	Green	Blue-green
Specific gravity		0.8	0.8	0.8	0.8
Set time (Screws*1) used with 1322N	sec	15 to 25	15 to 25	10 to 20	10 to 20
Remark(s)					

*1: Iron bolts/nut M10×Pitch 1.5

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Agents for Preventing Screw Loosening, Leaks and Rust

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

These are single-component type solvent vaporizing-type screw-fixing agents.
They can be used for bonding small screws, mainly size M6 and smaller.
They have penetrability, so they can be applied after tightening. After application, it penetrates to the threaded portion, and the solvent vaporizes, resulting in the formation of a resin-based cured material that can prevent loosening and leakage.
These are also good for preventing rust at threaded portions.
It is possible to loosen by a force that is about 10 to 20% higher than the tightening torque, so they can be removed easily when necessary.
For M6 size screws, 1/2 of the final strength (practical strength) is achieved after one or two days, and it reaches final strength after three days.
It can be used in a temperature range from below -40°C to 80°C (approx.).

Property Table

Product name / Characteristics		Unit	1401	1401B	1401C	1401D	1401E	1401M (NEW)	1402	1402B
Main component			Vinyl acetate resin	Vinyl acetate resin	Vinyl acetate resin	Vinyl acetate resin	Vinyl acetate resin	Vinyl acetate resin	Acrylic resin	Acrylic resin
Features			Standard Type	Standard Type	Standard Type	Low viscosity	High viscosity	Low viscosity Toluene-free Azo compound-free	Strong adhesiveness Quick dry type	Strong adhesiveness Quick dry type
Appearance			Colorless to Light yellow	Blue	Red	Green	Dark green	Red	Yellow-brown	Green
Viscosity		mPa-s	445	445	445	25.0	630	270	525	525
Specific gravity			0.90	0.90	0.90	0.85	0.90	0.88	1.23	1.23
Solid content (Nonvolatile content)		%	31.0	31.0	31.0	16.0	32.0	28.0	30.0	30.0
Breaking* torque	M3	N/m	0.3	0.3	0.3	0.2	0.2	0.1	0.3	0.3
	M4	N/m	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5
	M6	N/m	3.5	3.5	3.5	2.0	2.5	3.0	2.0	2.0
Operating temperature range (Est.)		°C	below -40°C to 80°C	below -40°C to 80°C	below -40°C to 80°C	below -40°C to 80°C	below -40°C to 80°C	below -40°C to 80°C	below -40°C to 80°C	below -40°C to 80°C
Solvent used			Methanol	Methanol Toluene	Methanol Toluene	Methanol	Methanol	Methanol	Methylene chloride Methyl acetate	Methylene chloride Methyl acetate

*: Iron bolt/nut M3×Pitch 0.5, M4×Pitch 0.7, M6 Pitch 1.0 (Tightening torque = 0)

* -: Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

1401

This is a standard type transparent screw-locking agent.
It uses alcohol as the solvent, so it can be used without influencing plastic materials.
There are products with different colors and different viscosities available.

1402

This is a quick dry type screw-locking agent with strong adhesiveness.
There are products with different colors available.

Volatile Solvent Type Adhesives

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

This is a series of single-component, volatile solvent-type adhesives.
They can be used for general bonding to a wide range of substrates such as soft materials like rubber and leather, and rigid materials like plastic and metals.
After curing, they have elasticity so they provide excellent bonding between different types of materials due to the high peel strength.
After applying and letting the solvent vaporize until the stickiness is lost, adhesion strength is acquired immediately when it is clamped.
There is a rubber-based solvent type, water-based acrylic emulsion type, paste-like type that can be used with materials with high penetrability, which are normally difficult to bond, and a low-viscosity type that can be applied using an air gun.

1501

This is a standard type rubber-based adhesive.
It has a long adhesiveness-keeping time after application and becoming tack free, and it has good bonding workability for a large area.
There are products with different colors available.

1521

This is a rubber-based adhesive with high initial adhesiveness.

1521C

This is a high-viscosity colored type of 1521.
It has excellent padding ability, so dropping does not occur even when applied to a vertical surface.
It is good for bonding weather strip rubber for automobiles, etc., and is good for porous materials with high penetrability, which are difficult to bond.

1541C

This is a water-based acrylic emulsion type.
It can be used for polystyrene foams with low organic solvent resistance.

TCX-004

This is a low-viscosity type of 1521.
It can be applied using an air gun.

Property Table

Characteristics		Unit	1501	1521	1521B	1521C	TCX-004	1541C
Main component			Chloroprene rubber Phenolic resin	Chloroprene rubber Phenolic resin	Chloroprene rubber Phenolic resin	Chloroprene rubber Phenolic resin	Chloroprene rubber Phenolic resin	Acrylic resin-based emulsion
Features			Long adhesiveness-keeping time	High initial adhesiveness	1501 Black Long adhesiveness-keeping time	Optimal for materials with high penetrability	Low-viscosity type of 1521 Application by air gun possible	Water-based adhesive High initial adhesiveness
Appearance			Brown	Brown	Black	Black	Light yellow	Milky yellow
Viscosity		mPa-s	5000	2800	4700	Paste	330	1100
Specific gravity			0.89	0.87	0.88	1.13	0.86	1.00
Solid content (Nonvolatile content)		%	25.0	26.0	27.0	60.0	26.0	54.0
Tack free time		min	10 or less	8 to 10	10 or less	5	5	-
Adhesiveness-keeping time		min	90 or higher	8 to 30	90 or higher	40	60	* Open time 20 (Recommended)
Peel strength	Iron / Cotton canvas	kN/m	4.7	5.2	4.7	1.6	7.6	-
	Tin plate / Cotton canvas	kN/m	-	-	-	-	-	0.7
	Iron / Soft PVC	kN/m	15	3.7	15	1.0	-	-
	Aluminum foil / Soft PVC	kN/m	-	-	-	-	-	2.0
	Iron / NBR	kN/m	2.0	3.8	2.0	-	1.4	-
	Soft PVC / Soft PVC	kN/m	-	-	-	-	-	-
Tensile shear bond strength	ABS	MPa	-	-	-	-	-	-
	Hard PVC	MPa	-	-	-	-	-	-
Operating temperature range (Est.)		°C	below -40°C to 80°C	below -40°C to 80°C	below -40°C to 80°C	below -40°C to 80°C	below -40°C to 80°C	below -40°C to 80°C
Remark(s) (Solvent used)			Toluene n-hexane	Toluene n-hexane Ethyl acetate	Toluene n-hexane	Toluene	Toluene Acetone Ethyl acetate n-hexane	Water Coal tar naphtha Trimethylbenzene

* -: Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Elastomeric Adhesives

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

These are single-component type solventless moisture-curing adhesives.
The curing reaction occurs from the moisture in the air when it is squeezed from the container, and it becomes a rubber-like elastic body.
They have excellent adhesive strength for a wide range of materials including metals, plastics, rubber, wood, and inorganic materials.
After curing, they have elasticity so they provide excellent bonding between different types of materials due to the high peel strength.
The 1530 Series begins to have a strong initial tackiness in just 5 to 10 minutes after application, and temporary adhesion is possible without a jig. Depending on the bonding area, it can reach 1/2 of the final strength (practical strength) after 12 to 24 hours, and it reaches final strength after 3 to 7 days.
The 1532 Series reaches practical strength after two days, and reaches final strength after three to seven days, becoming a cured material with high elongation.
There is also a low-viscosity type and a type with incombustibility (certified according to incombustibility standards).
1533 is compliant with REACH.

1530 Series

This is a standard type elastomeric adhesive. After an open time of 5 to 10 minutes, initial tackiness develops and temporary adhesion is possible without a jig.
It has excellent adhesion strength for a wide range of materials. It is possible to bond with silicone rubber.
There are many variations such as different color tones and different viscosities.
It has a heat resistance of approximately 100°C to 120°C.

1532 Series

This is a modified silicone-based elastomeric adhesive.
It forms a cured material with high elongation.
Because of its thixotropic properties, it is easy to apply without dropping.
It has excellent adhesion strength with a wide range of materials, and it is also good as a filling adhesion for materials with uneven surfaces.
It has a heat resistance of approximately 80°C for continual use.

1537 Series

This is an incombustible type elastomeric adhesive.
This product is certified according to flammability standard UL94 V-0.
It has small cure shrinkage.
It has excellent adhesion strength for a wide range of materials.
It has a heat resistance of approximately 100°C to 120°C.

1538B

It is an elastomeric adhesive that meets special standards.
Certified as UL Standard QOQW2 [Polymeric Adhesive Systems, Rated temperature 80°C].
It has excellent adhesion strength for a wide range of materials. It has a heat resistance of approximately 100°C to 120°C.

1539 Series

This is an elastomeric adhesive that is speedily cured at low temperatures.
Plant-based polymers (Castor oil) are used,
so it is an environmentally-friendly adhesive.
It has excellent adhesion strength for a wide range of materials.
It has a heat resistance of approximately 100°C.

Elastomeric Adhesives

Property Table

Characteristics	Unit	1530	1530B	1530C	1530D	1530H	1530P	1532C	1532D
Main component		Silyl-containing special polymer	Silyl-containing special polymer	Silyl-containing special polymer	Silyl-containing special polymer	Silyl-containing special polymer	Silyl-containing special polymer	Modified Silicone	Modified Silicone
Reaction type		Alcohol-releasing	Alcohol-releasing	Alcohol-releasing	Alcohol-releasing	Alcohol-releasing	Alcohol-releasing	Alcohol-releasing	Alcohol-releasing
Features		Standard Type	Thixotropic type	Clear type	Low viscosity	Low viscosity	Ultra-low viscosity	Flexibility	Flexibility
Appearance		White	Black	Translucent	Gray	White	Black	White	Black
Viscosity	Pa-s	100	110	100	22.0	30.0	6.0	420	450
Specific gravity		1.39	1.31	1.31	1.39	1.14	1.43	1.40	1.55
Tack-free	min	7	7	7	5	13	8	60	60
Physical characteristics after curing — Hardness		A44	A48	A55	A34	A25	A26	A40	A40
Physical characteristics after curing — Elongation rate	%	280	380	200	220	280	140	360	360
Physical characteristics after curing — Tensile strength	MPa	5.9	3.0	4.1	3.2	2.1	1.6	1.8	1.8
Physical characteristics after curing — Volume resistivity	Ω/m	5.0×10^{10}	3.9×10^{10}	3.6×10^{10}	1.7×10^{10}	4.8×10^{9}	1.2×10^{9}	-	-
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	21	17	20	-	-	17	-	-
Tensile shear bond strength — Iron	MPa	5.4	4.1	3.5	2.9	2.5	2.5	2.0	2.0
Tensile shear bond strength — Aluminum	MPa	6.6	4.4	4.3	2.5	2.8	2.9	2.4	2.4
Tensile shear bond strength — Acrylic	MPa	4.7	3.3	3.8	2.6	2.1	2.3	0.5	0.6
Tensile shear bond strength — Polycarbonate	MPa	5.6	3.8	4.5	2.4	3.1	2.0	1.6	1.6
Peel strength — Aluminum	kN/m	2.5	2.8	1.9	2.5	-	1.7	-	-
Peel strength — NBR	kN/m	1.60	1.50	1.40	-	-	0.29	-	-
Peel strength — CR	kN/m	1.40	1.60	1.00	-	-	0.04	-	-
Peel strength — Silicone rubber	kN/m	0.30	0.75	0.30	-	-	0.07	-	-
Remark(s)			Structural viscosity ratio 4.1			Small increase in hardness when heating	DBT-free product		

	1533	1533C	1537	1537B	1537D	1538B	1538D	1539	1539B
	Silyl-containing special polymer	Silyl-containing special polymer	Silyl-containing special polymer	Silyl-containing special polymer	Silyl-containing special polymer	Silyl-containing special polymer	Silyl-containing special polymer	Castor oil polymer	Castor oil polymer
	Alcohol-releasing	Alcohol-releasing	Alcohol-releasing	Alcohol-releasing	Alcohol-releasing	Alcohol-releasing	Alcohol-releasing	Heat-curing	Heat-curing
	Standard Type	Clear type	Incombustible type	Incombustible type	Incombustible type	Incombustible type	Standard Type	Standard Type	Standard Type
	White	Translucent	White	Black	Gray	Black	Gray	Black	White
	100	100	55.0	55.0	55.0	80.0	55.0	100	100
	1.39	1.30	1.67	1.67	1.67	1.44	1.67	1.34	1.34
	7	7	4	4	4	9	7	-	-
	A40	A50	A72	A74	A71	A50	A85	A70	A70
	280	145	29	33	29	170	60	120	140
	4.5	3.8	5.0	3.9	4.3	2.9	4.1	3.5	3.5
	3.2×10^{10}	8.8×10^{9}	1.9×10^{10}	2.3×10^{10}	2.7×10^{10}	3.9×10^{10}	6.2×10^{11}	2.4×10^{11}	6.5×10^{10}
	21	25	25	24	26	17	20.6	19	22
	5.8	4.6	4.0	4.2	4.4	4.0	3.9	3.8	3.6
	5.7	4.7	4.3	4.3	4.3	4.2	3.5	4.3	4.1
	2.6	3.8	1.7	1.6	1.8	3.4	3.2	0.7	0.7
	4.3	3.2	3.7	3.6	3.6	3.2	3.5	1.5	1.4
	3.5	3.2	1.0	1.4	1.2	2.2	3.5	1.5	1.5
	2.30	1.0	0.10	0.11	0.09	0.30	-	-	-
	2.10	0.7	0.06	0.05	0.06	0.10	-	-	-
	1.00	0.2	0.13	0.13	0.12	0.30	-	-	-
	DBT-free product	DBT-free product	UL94 V-0 certified product	UL94 V-0 certified product	UL94 V-0 certified product	UL QOQW2 certified product	UL94 V-0 equivalent product	Heat-curing 60°C×1 min or more	Heat-curing 60°C×1 min or more

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.
* DBT: Dibutyltin compounds

Water-Based Pressure Sensitive Adhesives for Screen Printing

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

This is a series of single-component type, water-based, pressure sensitive adhesives.
They are good for screen printing, and adhesion processing can be done according to the design pattern.
They can be used as pressure-sensitive adhesives for plastic, paper, metal and other nameplates, as well as for labels and stickers.
After printing, a strong adhesive layer is formed by heating and drying, or at room temperature.
It is possible to configure the dried film thicknesses up to around 100µm according to the screen design.
There is a standard type and a high heat resistant, high moisture-resistant type.

1549

This is a standard type water-based, pressure sensitive adhesive for screen printing.
It has excellent adhesion with various plastics such as polyester, polyvinyl chloride, styrol, ABS, and PET, as well as paper, metal, etc.
It is an aqueous type, so it can be used with materials that have low organic solvent resistance.

1555C

This is a high heat resistant, highly moisture-resistant, aqueous, pressure-sensitive adhesive for screen printing.
It has excellent adhesion with various plastics such as polyester, polyvinyl chloride, styrol, ABS, and PET, as well as paper, metal, etc.
It is an aqueous type, so it can be used with materials that have low organic solvent resistance.

Property Table

Product name / Characteristics	Unit	1549	1549B	1555C	1555D
Main component		Acrylic resin-based emulsion	Acrylic resin-based emulsion	Acrylic resin-based emulsion	Acrylic resin-based emulsion
Features		Standard Type	Standard Type High viscosity	High heat resistance High moisture resistance	High heat resistance High moisture resistance Slow drying property
Appearance		Milky white	Milky white	Milky white	Milky white
Viscosity	Pa-s	20.0	25.0	30.0	25.0
Specific gravity		1.01	1.01	1.01	1.01
Solid content (nonvolatile content)	%	65.0	66.0	65.0	60.0
Recommended screen		Polyester or SUS 100 to 150 mesh, etc.		SUS 80 mesh, etc.	
Recommended conditions of drying		55°C×15 min or 25°C×60 min, etc.		60°C×20 min (SUS 80 mesh)	
Peel strength: PET/Polystyrol	N/m	823	823	-	-
Peel strength: PET/Acrylic	N/m	823	823	-	-
Peel strength: PET/ABS	N/m	-	-	380	380
Peel strength: Polycarbonate/ Polystyrol	N/m	1098	1098	-	-
Peel strength: Polycarbonate/Acrylic	N/m	1098	1098	-	-
Operating temperature range (Est.)	℃	below -30℃ to 60℃	below -30℃ to 60℃	below -30℃ to 80℃	below -30℃ to 80℃
Remark(s)					

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Heat-Bonding Sheet Adhesives

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works

These are heating and pressing type sheet-like adhesives made from thermoplastic resin sheets.
Through thermal pressure bonding, the adhesive layer adheres via thermofusion to the adhered material surface, and when the temperature returns to room temperature, the adhesive becomes solid and provides adhesion.
They are widely used for aluminum nameplates on sound equipment and home appliances.
They are especially excellent for bonding to metals and thermoplastics.
Products come in rolls of 50m or 100m.

1604

High-temperature adhesion type

Bending, raising and punching are possible on the substrate plate after laminating.
It is good for relatively large plates with large thermal contraction.
It can be used in a temperature range from below -40°C to 80°C (approx.).

1611

Medium-temperature adhesion type

Bending, raising and punching are possible on the substrate plate after laminating.
It is good for bonding with thin substrates with low heat resistance (low-temperature adhesiveness).
It can be used in a temperature range from below -40°C to 70°C (approx.).

1615

Medium-temperature adhesion type

It is good for plates that cannot be laminated such as when plating is done on the substrate plates.
It can be used in a temperature range from below -40°C to 70°C (approx.).

1620

Low-temperature adhesion type

This has faint adhesiveness, so it is easy to perform temporary adhesion or positioning.
It is good for bonding with thin substrates with low heat resistance (low-temperature adhesiveness).
It can be used in a temperature range from below -40°C to 60°C (approx.).

Property Table

Product name / Characteristics	Unit	1604	1611	1615	1620
Main component		Synthetic resin Synthetic rubber	Synthetic resin Synthetic rubber	Synthetic resin Synthetic rubber	Synthetic resin Synthetic rubber
Features		High-temperature adhesion	Medium-temperature adhesion	Medium-temperature adhesion Punching type	Low-temperature adhesion Faint adhesiveness
Appearance		Light yellow	White	Black	Light yellow
Film thickness	μm	95	90	130	80
Roll width	mm	400	400	500	480
Roll length	m	100	100	50	100
Release paper		Yes	Yes	None	Yes
Bonding temperature	°C	130 to 140	95 to 100	100 to 120	60 to 70
Adhesion strength (90° peel strength) * Aluminum/Aluminum	kN/m	1.1	1.3	2.6	0.6
Operating temperature range (Est.)		below -40°C to 80°C	below -40°C to 70°C	below -40°C to 70°C	below -40°C to 60°C
Remark(s)		Operate temporary lamination + thermo compression bonding Good for large plates	Operate temporary lamination + thermo compression bonding Good for parts that are weak against heat	Place punched sheets between the substrates and perform thermo compression bonding Good for parts that are weak against heat	Operate temporary lamination + thermo compression bonding Good for parts that are weak against heat

* - : Unmeasured
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* Before using, confirm the adequacy and safety for the relevant application.

Functional Sheet Adhesives

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works

These are reactive-curing type sheet-like adhesives that use technology that has been developed over many years with liquid adhesives. When compared to liquid adhesives, these functional adhesive sheets are especially good for bonding large areas with film thickness uniformity, and are good for bonding without air bubbles and overflow. Various functions has been added to meet the wide variety of needs including optical use such as flat panel displays, adhesion sealing of organic EL panels, and motor magnet bonding. There is a heat-curing type functional adhesive sheet and a type that cures under UV light.

* For more details about the bonding process and equipment, please contact our sales representative.

1630

This is a type of sheet-like adhesive that cures under UV light. By heat lamination, transferring and temporary adhesion occur, and then it cures by UV light irradiation.
After curing, it becomes a film with high transparency (high visible light transmission) that is flexible and has excellent light resistance. It is good for usages that require transparency such as flat panel displays and other usages such as surface adhesion of optical parts.

1655

This is a heat-curing type sheet-like adhesive for sealing organic EL solids.
By thermal pressure bonding and heat lamination, transferring and temporary adhesion occur, and then it cures by continuous heating.
After curing, it becomes a cured material with high transparency and reliable sealing.
It is good for bonding and sealing element glass and sealing glass for organic EL display devices.

1652

This is a heat-curing type expanding adhesive sheet for adhesion of clearance.
Swelling capsules are mixed in an epoxy-based adhesive, so it expands when heated, and adhesion and curing occur.
First the sheet is transferred to a substrate. Then by inserting the substrate in the gap and by heating, the gap is filled resulting in stable adhesion strength.
It is good for bonding of IPM motor magnets, and bonding with parts that have a relatively large dimensional tolerance such as ceramics and castings.

Property Table

Product name / Characteristics		Unit	1630	1652	1655
Main component			Acrylic resin	Epoxy resin	Epoxy resin
Features			High transparency Flexibility	Expanding Adhesive	High transparency Glass adhesion
Appearance			Colorless and transparent	White	White translucent
Film thickness		μm	30	50	20
Curing method			UV light irradiation	Heating	Heating
Curing conditions			30kJ/m^2	150°C × 30 min or more	100°C × 2 hours or 120°C× 30 min
Tensile shear bond strength	Glass/Glass	MPa	5.1	-	4.5
	Glass/Acrylic	MPa	4.0	-	-
	Iron/Iron	MPa	-	8.5	11.3
Total light transmittance*1		%	> 99	-	> 99
Remark(s)			High transparency High visible light transmission	High heat resistance Expanding adhesive function (x4) Chemical resistance	High transparency High visible light transmission

*1 Measured using reference glass.

* - : Unmeasured
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Instant Adhesives
Gold Label Instant Adhesives

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

These are single-component type instant adhesives that use cyanoacrylate as the main component.
When bonding, the adhesives cure in several seconds due to the trace of moisture that exists on the adhesion surface, and bonding occurs within a few seconds to a few minutes.
They are single component products, so they are easy to use and have excellent adhesion strength in a short time for a wide range of materials including metals, plastics, rubber, wood, and inorganic materials.
There is a gel type, a low-odor / low-blooming type, an ultra-rapid curing type, a high peel-strength type, a highly moisture- and heat-resistant type, and a light-curing type.

1721D

Low odor / Low-blooming type

Blooming is a phenomenon where white powder is generated at the bonding location when general use instant adhesives are applied. This is a low bloom product. There is also virtually no irritating odor.
It is good for elements requiring a good appearance.

1771E, 1771M, 1773E

Light-curing property

It can be cured by UV light or visible light, so it is possible to cure quickly in overflow portions that cause blooming and areas with large clearance that slows curing.
It also has excellent surface curability because there is no curing inhibition by oxygen.

7721

Non-blooming type

There is no characteristic irritating odor and almost no blooming. It also has excellent quick-curing property.
It is a highly functional instant adhesive with special functionality.

1757

High moisture resistance / Excellent water resistance, High heat resistance type

It has better moisture resistance and heat resistance than regular instant adhesives.
Even at an ambient temperature of 120°C, a bonding strength of at least 10MPa (iron/iron) is maintained. In addition, continuous use heat resistance is also high, as it can be used at approximately 120°C. It has excellent moisture resistance and water resistance, so it can be used for bonding parts that are used outdoors.
In particular, it has excellent adhesion strength for various elastomers.

1795C

Remover for instant adhesive

By dropping it on an adhered surface, this product dissolves the cured material so that the substrate can be removed from the surface.
It does not contain any chlorinated solvents or specified materials according to the Poisonous and Deleterious Substance Control Act / List of Carcinogens (IARC / Japan Society for Occupational Health).

7737, 7738

Elastomer-containing ultrahigh peel strength / impact-resistant type

This is a half-gel adhesive with sag resistance and excellent workability because there is no stringing.
It has excellent adhesion even at high temperatures and high humidity.
It is a highly functional instant adhesive with special functionality.

7741

Standard type

This is a highly functional instant adhesive standard product with excellent adhesion strength even on engineering plastics and with excellent quick-curing property.

7781, 7784, 7785, 7786

Ultra-rapid curing type

This has excellent quick-curing property, so it has quick adhesion strength even on porous materials that are normally difficult to bond, and on acidic materials such as wood. It has a sharp increase in strength even on difficult-to-bond materials such as polyacetal.
It has excellent heat resistance.
It is a highly functional instant adhesive with special functionality.

7789

Gel-type

There is no sagging property, so it can be used on vertical surfaces and ceilings.
By using a curing accelerator, thick curing is possible, so it can also be used for filling and reinforcement on uneven portions.

7796

Faint-odor curing accelerator for instant adhesives

By dropping it on protruding excessive adhesive, the bonding time of the adhesive is reduced.
It has excellent balance between low odor and curability.

7797, 7797C

Multi-primer for instant adhesive

It allows easy adhesion of difficult-to-bond materials such as polypropylene, polyethylene, polyacetal, fluoropolymers, and silicone rubber.
Apply and let it dry on surfaces as a preconditioning agent for difficult-to-bond materials.

Instant Adhesives and Gold Label Instant Adhesives

Property Table

Characteristics		Unit	1701	1702	1702B	1721D	1731	1733	1735	1739
Main component			Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate
Features			For metal	For metal	Colored	Low odor Low-blooming	High peel strength	High peel strength	High peel strength	Gel-like
Appearance			Colorless	Colorless	Blue	Light yellow	Light yellow	Light yellow	Light yellow	Colorless
Viscosity		mPa-s	3.0	35.0	35.0	6.0	20.0	150	1500	23000
Specific gravity			1.10	1.10	1.05	1.07	1.06	1.10	1.10	1.03
Set time	Iron	sec	10	30	40	40	30	40	60	30
	NBR	sec	5	15	5	2	60	70	120	30
Tensile shear bond strength	Iron	MPa	23.7	23.0	16.9	14.4	20.0	17.0	18.0	24.2
	Aluminum	MPa	15.3	17.0	8.4	13.2	11.0	11.0	10.0	11.5
	Polycarbonate	MPa	(Material failure)	(Material failure)	7.8	(Material failure)	(Material failure)	(Material failure)	1.4	5.8
	ABS	MPa	(Material failure)	(Material failure)	7.6	(Material failure)	(Material failure)	(Material failure)	(Material failure)	6.1
	NBR	MPa	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)
	Chloroprene rubber	MPa	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)
Peel strength	Iron	kN/m	-	-	-	-	3.0	3.0	4.0	-
	Aluminum	kN/m	-	-	-	-	2.0	2.0	2.0	-
Operating temperature range (Est.)		°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C
Remark(s)										Structural viscosity ratio 3.5

	1741	1741D	1743	1743D	1743F	1745	1747	1757	1771E	1771M	1773E
	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate
	For general use Low viscosity	For general use Low viscosity Colored	For general use Medium viscosity	For general use Medium viscosity Colored	Brush-equipped container	For general use Medium viscosity	For general use High viscosity	High moisture resistance Excellent water resistance High heat resistance	Light curing	Light curing	Light curing
	Colorless	Blue	Colorless	Colorless	Colorless	Colorless	Colorless	Light yellow	Yellow	Yellow to Yellowish green	Yellow
	2.0	2.0	100	100	100	500	2000	1200	2.0	2.0	150
	1.06	1.05	1.05	1.05	1.05	1.05	1.05	1.06	1.05	1.05	1.05
	5	5	10	10	20	10	10	30	3	10	5
	5	5	10	10	20	10	10	20	2	2	2
	14.2	14.2	19.3	19.3	22.0	22.2	22.9	19.2	15.1	17.5	15.9
	16.5	16.5	16.6	16.6	14.0	16.6	17.3	16.0	10.6	13.3	11.2
	(Material failure)	(Material failure)	(Material failure)	(Material failure)	4.5	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)
	4.2	4.2	5.2	5.2	(Material failure)	5.1	5.0	(Material failure)	(Material failure)	(Material failure)	(Material failure)
	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)
	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 120°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C
								Continuous usage at 120°C possible	Standard curing condition 10kJ/m²	Standard curing condition 10kJ/m²	Standard curing condition 10kJ/m²

* - : Unmeasured
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Instant Adhesives and Gold Label Instant Adhesives

Property Table

Characteristics		Unit	1781	1782	1783	1785B	1786	7721	7737	7738
Main component			Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate
Features			Impact resistance Heat resistance	Impact resistance Heat resistance	Impact resistance Heat resistance	Fast-curing for woodwork	Fast-curing for woodwork	High functionality Non-whitening type	High functionality Ultrahigh peel strength	High functionality Ultrahigh peel strength
Appearance			Colorless	Colorless	Colorless	Colorless	Colorless	Colorless to Light yellow	Light yellow	Light yellow
Viscosity		mPa-s	3.0	80.0	800	3.0	150	5.0	2000	5000
Specific gravity			1.05	1.05	1.05	1.05	1.05	1.07	1.07	1.08
Set time	Iron	sec	10	10	10	5	5	15	90	90
	NBR	sec	5	5	5	3	3	2	90	90
Tensile shear bond strength	Iron	MPa	16.4	25.5	24.7	11.9	18.2	18.4	25.7	27.7
	Aluminum	MPa	15.3	17.8	17.7	12.0	13.2	12.9	20.4	21.4
	Polycarbonate	MPa	(Material failure)	(Material failure)	(Material failure)	(Material failure)	5.4	(Material failure)	(Material failure)	(Material failure)
	ABS	MPa	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)
	NBR	MPa	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)
	Chloroprene rubber	MPa	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)
Peel strength	Iron	kN/m	-	-	-	-	-	-	3.4	4.2
	Aluminum	kN/m	-	-	-	-	-	-	3.4	2.9
Operating temperature range (Est.)		°C	below -40°C to 120°C	below -40°C to 120°C	below -40°C to 120°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C
Remark(s)			Continuous usage at 100°C possible	Continuous usage at 100°C possible	Continuous usage at 100°C possible				Structural viscosity ratio 4.8	Structural viscosity ratio 5.0

	7741	7781	7782	7784	7785	7786	7789
	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate	Cyanoacrylate
	High functionality Standard type	High functionality Ultrarapid curing	High functionality Ultrarapid curing	High functionality Ultrarapid curing	High functionality Ultrarapid curing	High functionality Ultrarapid curing	Fast-curing gel
	Colorless to Light yellow	Colorless to Light yellow	Colorless to Light yellow	Colorless to Light yellow	Colorless to Light yellow	Colorless to Light yellow	Light yellow
	2.0	2.0	15.0	160	500	1000	25000
	1.05	1.05	1.05	1.05	1.07	1.08	1.09
	3	2	2	3	3	4	10
	2	2	2	2	2	2	7
	15.0	14.0	14.2	15.3	16.3	17.0	21.0
	15.1	14.9	15.3	16.1	14.6	14.9	15.9
	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)
	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)
	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)
	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)	(Material failure)
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C	below -40°C to 100°C
	Continuous usage at 80°C possible	Continuous usage at 80°C possible Final strength within 30 min	Continuous usage at 100°C possible Final strength within 30 min	Continuous usage at 100°C possible Final strength within 30 min	Continuous usage at 100°C possible Final strength within 30 min	Continuous usage at 100°C possible Final strength within 30 min	

* -: Unmeasured
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Instant Adhesives and Gold Label Instant Adhesives

Property Table

Product name / Characteristics	Unit	1795C	1796	1796B	1796F	1796G	1796K	1797	7796
Main component		Acetone	Amine compound	Amine compound	Amine compound	Amine compound	Amine compound	Amine compound	Amine compound
Features		Remover	Curing accelerator	Curing accelerator	Curing accelerator	Curing accelerator	Curing accelerator	Bonding primer	Curing accelerator
		-	-	Lower odor	Aerosol	Ordinance on Prevention of Organic Solvent Poisoning does not apply	Lower odor Aerosol	-	Slight odor type
Appearance		Colorless	Light yellow	Light yellow	Light yellow	Light yellow	Colorless to Light yellow	Light yellow	Colorless to Light brown
Specific gravity		0.90	0.82	0.82	0.81	0.82	0.76	0.80	0.75
Set time	Iron	sec	-	5 to 10 (TB1739)	5 to 10 (TB1739)	5 to 10 (TB1739)	5 or less (TB1739)	5 or less (TB1739)	-	5 or less (TB1739)
	Polypropylene	sec	-	-	-	-	-	-	5 (TB1741)	-
Tensile shear bond strength	Iron*1	MPa	-	2.7 (TB1739)	2.7 (TB1739)	2.7 (TB1739)	3.4 (TB1739)	2.8 (TB1739)	-	2.7 (TB1739)
	Polypropylene	MPa	-	-	-	-	-	-	(Material failure) (TB1741)	-
Remark(s)									For hard-to-bond materials	

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

	7797	7797C
	Amine compound	Amine compound
	Bonding primer	Bonding primer
	Multi-primer	Multi-primer
	Colorless	Colorless
	0.67	0.68
	-	-
	3 (TB7784)	3 (TB7784)
	-	-
	(Material failure) (TB7784)	(Material failure) (TB7784)
	For hard-to-bond materials	For hard-to-bond materials (7797 variant with a different solvent)

Epoxy Resins

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

These are adhesives that use epoxy resin as the main component.
They have strong adhesion strength and have excellent overall characteristics including chemical resistance, electrical properties, and mechanical strength.
There is a two-component type that cures at room temperature, and a single-component type that is a heat-curing type.
They can be used for various purposes including general-purpose adhesion and sealing, for construction materials, and for electronic device bonding, filling, repair, casting, and impregnation.

2000 Series
(Two-component epoxy resin main agent)

2001

This is a standard epoxy main agent.
It forms a cured material with slight flexibility, and it has great adhesion strength.

2002K, 2002L

It has thixotropic properties and is cream-like.
There is virtually no dropping even when mixed with a curing agent, and it has excellent padding ability giving it good workability.

2022

This is a standard epoxy main agent.
It forms a cured material with good overall balance.
There is a low-viscosity type (2023), a low-viscosity colored type (2023J), and an ultra-low-viscosity type (2023B).

2100 Series
(Two-component epoxy resin curing agent)

2102B

This is a medium viscosity, high-speed curing agent.

2103

This is a low viscosity, high-speed curing agent.
It forms a cured material with medium heat resistance.

2104

This is a curing agent with excellent curability at low temperature.
It forms a flexible cured material, so it has excellent impact strength and freeze resistance.

2105C

This is a standard type curing agent.
It forms a cured material with some flexibility.
This is a medium-viscosity type, so it has excellent workability.

2105F

This is a standard type curing agent.
It forms a cured material with medium flexibility, so it has good impact strength.

2106G

This is a curing agent with excellent transparency.
It forms a cured material with excellent tensile shear bond strength and good overall balance.
This is also a slightly-high-viscosity type (2106H).

2131D

This is a heat-applied type curing agent with excellent transparency.
It has low viscosity and a low shrinkage rate while curing, so it is good for potting.

2163

This is a heat-applied type curing agent.
It forms a cured material with good heat resistance and insulation property.

2080 Series
(Two-component epoxy resin adhesive set)

2081D

This adhesive is a set with a main agent and curing agent.
It has excellent adhesion strength for soft PVC, which is difficult-to-bond material. It is good for bonding with rubber such as CR and EPDM, various metals, and concrete, etc.

2082C

This high-strength adhesive is a set with a main agent and curing agent.
Rubber particles are distributed, so it forms a tough cured material.
It has stable and strong adhesiveness. It is good for bonding a wide range of materials such as various metals and plastics.

2084

This filling adhesive is a set with a main agent and curing agent.
It contains iron powder so it forms a tough cured material. It is good for repair of metallic parts. There is an aluminum powder-contained type (2084B), and a crystal-containing type (2084E).

2086N

This fast-curing low temperature type adhesive is a set with a main agent and curing agent. It can even cure at a low temperature of -5°C.
It is good for bonding various metals, plastics, and rubber, etc.
There is also a low-viscosity transparent type (2086M).

2088E

This heat-resistant adhesive is a set with a main agent and curing agent.
It has excellent adhesion even at 200°C (approx.).
It is good for bonding various metals and ceramics.

2200 Series
(One-part heat-curing epoxy resin)

2202

This is a type cured at low temperatures.
It has low viscosity and can be used as an underfill agent for electronic device reinforcement. There are grades with different viscosities and different colors.

2212B

This is a type speedily cured at low temperature.
There are grades with different viscosities, different colors, and with low halogen content.

2222P

It has excellent heat resistance for soldering and excellent thermal shock resistance.
It has high adhesion strength and has excellent peeling strength.
There are grades with different viscosities.

2223Q

It has excellent thermal shock resistance.
It has low halogen content.

2239H

This is a highly-adhesive type.
It forms a cured material with good balance and excellent shear bond strength and peel strength.
There are grades with different viscosities and different colors.

2249G

This is a highly-adhesive type.
It forms a tough cured material with very excellent shear bond strength and peel strength.
There are grades with different viscosities and different colors.

2270C

This has low cure shrinkage and excellent dimensional stability.
It is a low outgassing product with reduced separation and uncuring issue.
It has excellent thermal conductivity and is good for heat dissipating purposes.

2272F

Incombustible type (UL94 V-0 certified product)
This exhibits excellent handling ability. It is good for bonding and potting electronic devices and other potential heat sources that require incombustibility.

2274S

This is an underfill agent for mounting CSP and BGA.
It has good flowability and penetrates in a short time.

2280E

It has low viscosity and low heat generation while curing, so it is good for coil impregnation and fixing.

2284F

This is a high specific-gravity type for adjusting the balance of rotating bodies such as motors.
There are grades with different specific gravities and different viscosities.

2287

This is a low-viscosity grade for impregnation of cut cores.

Epoxy Resins

Property Table

Product name / Main agent / Curing agent		2001					2002K		
Characteristics	Unit	Main agent	2103	2105C	2105F	2163	Main agent	2105	2105C
Main component		Epoxy resin	Aliphatic polyamine	Modified polyamido-amine	Modified polyamido-amine	Modified aromatic polyamine	Epoxy resin	Modified polyamido-amine	Modified polyamido-amine
Features		Adhesion strength Slight flexibility	Medium heat resistance Fast-curing	Adhesion strength Flexibility Chemical resistance	Adhesion strength Flexibility Chemical resistance	Heat resistance Mechanical strength	Highly thixotropic Padding ability	Adhesion strength Flexibility Chemical resistance	Adhesion strength Flexibility Chemical resistance
Appearance		Light yellow	Light yellow	Reddish brown	Reddish brown	Black	Gray	Light yellow	Reddish brown
Viscosity	Pa-s	12.0	-	1.8	40.0	1.2	100	4.5	1.8
	mPa-s	-	20.0	-	-	-	-	-	-
Specific gravity		1.16	0.97	0.95	0.96	1.10	1.21	0.95	0.95
Compounding ratio (Mass ratio) Main agent / Curing agent		-	100 / 9 to 10	100 / 45 to 50	100 / 80 to 100	100 / 20	-	100 / 40 to 50	100 / 40 to 50
Pot life (25°C / 100g when mixed)		-	23 min	65 min	60 to 90 min	5 hours	-	-	-
Standard curing conditions		-	25°C/24h or 100°C/30 min	25°C/24h or 100°C/1h	25°C/24h or 100°C/1h	100°C/3h and 150°C/2h	-	25°C/24h or 100°C/1h	25°C/24h or 100°C/1h
Physical characteristics after curing — Hardness		-	D88	D84	D80	D90	-	D84	D84
Physical characteristics after curing — Glass transition temperature	°C	-	90	81	64	160	-	-	-
Physical characteristics after curing — Volume resistivity	Ω/m	-	1×10^{14}	1×10^{13}	1×10^{13}	2×10^{15}	-	-	-
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	-	24	20	20	28	-	-	-
Iron — Tensile shear bond strength (When heat-cured)	MPa	-	18.0	22.0	20.0	24.5	-	17.5	19.1
Iron — Peel strength (When heat-cured)	N/m	-	196	353	471	276	-	-	-
Remark(s)									

	2002K		2002L					2002M	
	2105F	2107	Main agent	2105	2105C	2105F	2163	Main agent	2105C
	Modified polyamido-amine	Modified polyamido-amine	Epoxy resin	Modified polyamido-amine	Modified polyamido-amine	Modified polyamido-amine	Modified aromatic polyamines	Epoxy resin	Aliphatic polyamine
	Adhesion strength Flexibility Chemical resistance	Adhesion of structures	Highly thixotropic Padding ability	Adhesion strength Flexibility Chemical resistance	Adhesion strength Flexibility Chemical resistance	Adhesion strength Flexibility Chemical resistance	Adhesion of structures	For electronic device molding	For electronic device molding
	Reddish brown	Light brown	White	Light yellow	Reddish brown	Reddish brown	Reddish brown	Black	Reddish brown
	40.0	30.0	95.0	4.5	1.8	40.0	30.0	15.0	1.8
	-	-	-	-	-	-	-	-	-
	0.96	0.96	1.25	0.95	0.95	0.96	0.96	1.17	0.95
	100 / 80 to 100	100 / 100	-	100 / 40 to 50	100 / 40 to 50	100 / 80 to 100	100 / 100	-	100 / 40 to 50
	-	-	-	-	-	-	-	-	-
	25°C/24h or 100°C/1h	25°C/24h or 70°C/30 min	-	25°C/24h or 100°C/1h	25°C/24h or 100°C/1h	25°C/24h or 100°C/1h	25°C/24h or 70°C/30 min	-	25°C/24h or 100°C/1h
	D82	D70	-	D84	D84	D78	D70	-	D85
	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
	16.9	17.6	-	18.8	18.7	20.2	18.2	-	19.8
	-	-	-	-	-	-	-	-	-

* -: Unmeasured
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Epoxy Resins

Property Table

Product name / Main agent / Curing agent		2003					2003C	2003H	
Characteristics	Unit	Main agent	2102B	2103	2105C	2105F	Main agent	Main agent	2105T
Main component		Epoxy resin	Modified aliphatic polyamine	Aliphatic polyamine	Modified polyamido-amine	Modified polyamido-amine	Epoxy resin	Epoxy resin	Modified polyamido-amine
Features		Filling adhesion Usable as putty	Fast-curing	Medium heat resistance Fast-curing	Adhesion strength Flexibility Chemical resistance	Adhesion strength Flexibility Chemical resistance	General-purpose adhesion Usable as putty	High peel-strength adhesiveness No dropping while curing	
Appearance		Light yellow	Reddish brown	Light yellow	Reddish brown	Reddish brown	Black	Black	Milky white
Viscosity	Pa-s	12.0	2.8	-	1.8	40.0	Putty	Paste	
	mPa-s	-	-	20.0	-	-	-	-	
Specific gravity		1.16	1.06	0.97	0.95	0.96	1.53	1.80	
Compounding ratio (Mass ratio) Main agent / Curing agent		-	100 / 12.5	100 / 4.5 to 5	100 / 20 to 25	100 / 40 to 50	-	-	100 / 100
Pot life (25°C / 100g when mixed)		-	25 min	30 min	75 min	2h	-	-	1 to 2h
Standard curing conditions		-	25°C/24h or 100°C/1h	25°C/24h or 100°C/1h	25°C/24h or 100°C/30 min	25°C/24h or 100°C/30 min	-	-	25°C/24h or 60°C/1.5h
Physical characteristics after curing — Hardness		-	D82	D89	D85	D82	-	-	D80
Physical characteristics after curing — Glass transition temperature	°C	-	-	-	-	-	-	-	40
Physical characteristics after curing — Volume resistivity	Ω/m	-	1×10^{14}	3×10^{14}	1×10^{13}	1×10^{13}	-	-	-
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	-	20	25	25	20	-	-	-
Iron — Tensile shear bond strength (When heat-cured)	MPa	-	15.0	17.0	22.0	18.0	-	-	12.0 (When cured at room-temperature)
Iron — Peel strength (When heat-cured)	N/m	-	118	196	275	589	-	-	1900 (When cured at room-temperature)
Remark(s)									

	2004		2004J	2016F			
	Main agent	2105C	Main agent	Main agent	2103	2105C	2105F
	Epoxy resin	Modified polyamido-amine	Epoxy resin	Epoxy resin	Aliphatic polyamine	Modified polyamido-amine	Modified polyamido-amine
	Excellent adhesion strength For sprinkler piping		General-purpose adhesion High viscosity	For filling/ repairing Aluminum powder-contained High mechanical strength	Adhesion strength Flexibility Chemical resistance	Adhesion strength Flexibility Chemical resistance	Adhesion strength Flexibility Chemical resistance
	White	Reddish brown	Gray	Black	Light yellow	Reddish brown	Reddish brown
	60.0	1.8	90.0	Putty	-	1.8	40.0
	-	-	-	-	20.0	-	-
	1.40	0.95	1.18	1.31	0.97	0.95	0.96
	-	100 / 32 to 40	-	-	100 / 6.3 to 7	100 / 28 to 35	100 / 56 to 70
	-	50 to 60 min	-	-	-	-	-
	-	25°C/24h or 100°C/1h	-	-	25°C/24h or 100°C/1h	25°C/24h or 100°C/1h	25°C/24h or 100°C/1h
	-	-	-	-	D87	D84	D84
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
	-	15.7	-	-	14.3	20.1	21.2
	-	-	-	-	-	-	-

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Epoxy Resins

Property Table

Product name / Main agent / Curing agent		2022							
Characteristics	Unit	Main agent	2102	2102B	2103	2104	2105C	2105F	2106G
Main component		Epoxy resin	Modified aliphatic polyamine	Modified aliphatic polyamine	Aliphatic polyamine	polythiol	Modified polyamido-amine	Modified polyamido-amine	Modified aliphatic polyamine
Features		Good overall characteristic balance	Fast-curing Some flexibility	Fast-curing	Medium heat resistance Fast-curing	Rubber-like cured material Curing at low temperatures Impact strength Freeze resistance	Adhesion strength Flexibility Chemical resistance	Adhesion strength Flexibility Chemical resistance	Transparency Medium heat resistance
Appearance		Light yellow	Light yellow	Reddish brown	Light yellow	Dark brown	Reddish brown	Reddish brown	Light yellow
Viscosity	Pa-s	13.0	6.5	2.8	-	-	1.8	40.0	3.0
	mPa-s	-	-	-	20.0	950	-	-	-
Specific gravity		1.16	1.10	1.06	0.97	1.22	0.95	0.96	1.06
Compounding ratio (Mass ratio) Main agent / Curing agent		-	100 / 100	100 / 25	100 / 9 to 10	100 / 80 to 100	100 / 40 to 50	100 / 80 to 100	100 / 50
Pot life (25°C / 100g when mixed)		-	7 to 9 min	20 min	25 min	25 min	70 min	60 to 90 min	65 min
Standard curing conditions		-	25°C/12h	25°C/24h or 100°C/1h	25°C/24h or 100°C/1h	25°C/24h or 100°C/1h	25°C/24h or 100°C/1h	25°C/24h or 100°C/1h	25°C/48h or 80°C/1h
Physical characteristics after curing — Hardness		-	D74	D82	D88	D70	D84	D81	D87
Physical characteristics after curing — Glass transition temperature	°C	-	-	70	90	37	80	63	78
Physical characteristics after curing — Volume resistivity	Ω/m	-	-	1×10^{13}	2×10^{14}	1×10^{13}	1×10^{13}	1×10^{13}	-
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	-	19	20	25	18	23	20	-
Iron — Tensile shear bond strength (When heat-cured)	MPa	-	15.0 (When cured at room-temperature)	16.0	17.0	18.0	22.0	20.0	18.0
Iron — Peel strength (When heat-cured)	N/m	-	-	235	235	1962	353	589	500
Remark(s)									

	2022		2022B	2022C		2022D	2022F	2022R	2022S	
	2106H	2131D	Main agent	Main agent	2131D	Main agent	Main agent	Main agent	Main agent	2105C
	Modified aliphatic polyamine	Modified aliphatic polyamine	Epoxy resin	Epoxy resin	Modified aliphatic polyamine	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Modified polyamido-amine
	Transparency Medium heat resistance	Transparency Low shrinkage Low viscosity	Low viscosity Medium flexibility	Low viscosity	Transparency Low shrinkage Low viscosity	Water resistance Low discoloration Excellent defoaming ability	Water resistance Low discoloration Excellent defoaming ability	Low viscosity Medium flexibility	High strength	
	Light yellow	Light brown	Light yellow	Light yellow	Light yellow	Red	Blue	White	Light yellow	Reddish brown
	6.5	-	4.0	5.0	-	15.0	15.5	4.0	13.0	1.8
	-	10	-	-	10	-	-	-	-	-
	1.06	0.95	1.15	1.10	0.95	1.20	1.20	1.15	1.15	0.95
	100 / 60	100 / 30 to 35	-	-	100 / 30 to 35	-	-	-	-	100 / 40 to 50
	77 min	4 to 5h	-	-	4 to 5h	-	-	-	-	70 min
	25°C/48h or 80°C/2h	80°C/4h or 100°C/1h	-	-	80°C/4h or 100°C/1h	-	-	-	-	25°C/24h or 100°C/1h
	D87	D85	-	-	D80	-	-	-	-	D84
	73	-	-	-	80	-	-	-	-	75
	-	1×10^{13}	-	-	1×10^{13}	-	-	-	-	-
	-	27	-	-	25	-	-	-	-	-
	19.0	16.0	-	-	16.0	-	-	-	-	24.5
	500	392	-	-	589	-	-	-	-	1766

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Epoxy Resins

Property Table

Product name / Main agent / Curing agent		2023							
Characteristics	Unit	Main agent	2102B	2103	2105C	2105F	2106G	2106H	2131D
Main component		Epoxy resin	Modified aliphatic polyamine	Aliphatic polyamine	Modified polyamido-amine	Modified polyamido-amine	Modified aliphatic polyamine	Modified aliphatic polyamine	Modified aliphatic polyamine
Features		Low viscosity	Fast-curing	Medium heat resistance Fast-curing	Adhesion strength Flexibility Chemical resistance	Adhesion strength Flexibility Chemical resistance	Transparency Medium heat resistance	Transparency Medium heat resistance	Transparency Low shrinkage Low viscosity
Appearance		Light yellow	Reddish brown	Light yellow	Reddish brown	Reddish brown	Light yellow	Light yellow	Light yellow
Viscosity	Pa-s	-	2.8	-	1.8	40.0	3.0	6.5	-
	mPa-s	900	-	20.0	-	-	-	-	10.0
Specific gravity		1.13	1.06	0.97	0.95	0.96	1.06	1.06	0.95
Compounding ratio (Mass ratio) Main agent / Curing agent		-	100 / 25	100 / 9 to 10	100 / 40 to 50	100 / 80 to 100	100 / 50	100 / 60	100 / 30 to 35
Pot life (25°C / 100g when mixed)		-	22 min	27 min	80 min	2h	90 min	108 min	4 to 5h
Standard curing conditions		-	25°C/48h or 100°C/1h	25°C/48h or 100°C/1h	25°C/48h or 100°C/2h	25°C/48h or 100°C/1.5h	25°C/48h or 80°C/1.5h	25°C/48h or 80°C/3h	80°C/4h or 100°C/2h
Physical characteristics after curing — Hardness		-	D80	D85	D82	D80	D84	D85	D81
Physical characteristics after curing — Glass transition temperature	°C	-	68	80	76	60	63	55	79
Physical characteristics after curing — Volume resistivity	Ω/m	-	1×10^{13}	1×10^{14}	1×10^{13}	1×10^{13}	-	-	1×10^{13}
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	-	20	22	20	20	-	-	20
Iron — Tensile shear bond strength (When heat-cured)	MPa	-	16.0	16.0	20.0	18.0	18.0	19.0	17.0
Iron — Peel strength (When heat-cured)	N/m	-	196	275	392	981	500	500	235
Remark(s)									

	2023	2023B	2023D	2023J	2023K	2023S	2024B			
	2163	Main agent	Main agent	Main agent	Main agent	Main agent	Main agent	2103	2105C	2163
	Modified aromatic polyamine	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Aliphatic polyamine	Modified polyamido-amine	Modified aromatic polyamine
	Heat resistance Insulation property	Low viscosity	Low viscosity Flexibility	Black	White type of TB2023	Low viscosity Insulation property	Low shrinkage Heat dissipation property Insulation property	Medium heat resistance Fast-curing	Adhesion strength Flexibility Chemical resistance	Heat resistance Insulation property
	Black	Light yellow	Light yellow	Black	Light yellow	Colorless	Light yellow	Light yellow	Light yellow	Black
	1.15	-	-	-	2.5	-	11.0	-	1.8	1.15
	-	200	800	900	-	-	-	20.0	-	-
	1.10	1.13	1.07	1.13	1.15	1.09	1.45	0.97	0.95	1.10
	100 / 20	-	-	-	-	-	-	100 / 5.4 to 6	100 / 24 to 30	100 / 12
	5h	-	-	-	-	-	-	30 min	75 min	5h
	100°C/3h + 150°C/2h	-	-	-	-	-	-	25°C/48h or 100°C/1h	25°C/48h or 100°C/1h	100°C/3h + 150°C/2h
	D88	-	-	-	-	-	-	D87	D82	D88
	140	-	-	-	-	-	-	85	75	140
	2×10^{14}	-	-	-	-	-	-	2×10^{14}	1×10^{13}	2×10^{14}
	40	-	-	-	-	-	-	25	20	40
	24.0	-	-	-	-	-	-	16.0	20.0	24.0
	235	-	-	-	-	-	-	235	392	235

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Epoxy Resins

Property Table

Product name / Main agent / Curing agent		2025	2028		2061F	2074B		2081D	
Characteristics	Unit	Main agent	Main agent	2105C	Main agent	Main agent	Curing agent	Main agent	Curing agent
Main component		Epoxy resin	Epoxy resin	Modified polyamido-amine	Epoxy resin	Epoxy resin	Polyamido-amine	Epoxy resin	Modified polyamido-amine Tertiary amine
Features		Thermal impact Insulation property Flexibility	High strength	Adhesion strength Flexibility Chemical resistance	Casting Potting	Low viscosity High-thixotropic		Soft PVC adhesion	
Appearance		Light gray	Black	Reddish brown	Light brown	White	Black	Light yellowish white to pale rose	Brown
Viscosity	Pa-s	25.0	30.0	1.8	2.0	25.0	9.0	11.0	10.0
	mPa-s	-	-	-	-	-	-	-	-
Specific gravity		1.52	1.78	0.95	1.10	1.27	1.16	1.16	0.98
Compounding ratio (Mass ratio) Main agent / Curing agent		-	-	100 / 12 to 15	-	100 / 50		100 / 100	
Pot life (25°C / 100g when mixed)		-	-	-	-	50 min		60 min	
Standard curing conditions		-	-	25°C/48h or 100°C/1h	-	25°C/48h or 120°C/1h		25°C/24h or 60°C/1h	
Physical characteristics after curing — Hardness		-	-	D84	-	D84		D60 to 65	
Physical characteristics after curing — Glass transition temperature	°C	-	-	-	-	-		-	
Physical characteristics after curing — Volume resistivity	Ω/m	-	-	-	-	-		-	
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	-	-	-	-	-		-	
Iron — Tensile shear bond strength (When heat-cured)	MPa	-	-	1.75	-	20.4		13.7	
Iron — Peel strength (When heat-cured)	N/m	-	-	-	-	-		3730	
Remark(s)									

	2082C		2082E		2082F		2083J		2083L	
	Main agent	Curing agent	Main agent	Curing agent	Main agent	Curing agent	Main agent	Curing agent	Main agent	Curing agent
	Epoxy resin	Modified polyamido-amine	Epoxy resin	Modified polyamido-amine	Epoxy resin	Modified polyamido-amine	Epoxy resin	Polyamido-amine	Epoxy resin	Modified Aliphat ic polyamine
	High shear bond strength		General-purpose adhesive filling repair		Adhesive for repair of metallic parts		Filling adhesion for wet surfaces		Structural adhesive for wet surfaces	
	White	Brown	White translucent	Gray	Black	Light yellow	Gray	Dark brown	Light gray	Blue-green
	15.0	16.0	90.0	150	5500	-	Putty	Putty	Putty	Putty
	-	-	-	-	-	850	-	-	-	-
	1.19	0.98	1.20	1.07	2.60	0.95	1.76	1.54	1.60	1.50
	100 / 100		100 / 100		100 / 10		100 / 100		100 / 100	
	70 min		60 min		60 min		25 to 45 min		15 min	
	25°C/24h or 60°C/1h		25°C/24h or 80°C/1h		25°C/24h or 80°C/1h		25°C/24h		25°C/24h	
	D76		D78		D85		D65		D77	
	-		93.1		66.5		-		-	
	-		-		-		-		2.2×10^{10}	
	-		-		-		-		22	
	25.5		16.5		20.8		6.8 (When cured at room-temperature)		14.6	
	1720		-		-		-		-	

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Epoxy Resins

Property Table

Product name / Main agent / Curing agent		2084		2084B		2084E		2086M	
Characteristics	Unit	Main agent	Curing agent	Main agent	Curing agent	Main agent	Curing agent	Main agent	Curing agent
Main component		Epoxy resin	Modified polyamido-amine	Epoxy resin	Modified aliphatic polyamine	Epoxy resin	Modified polyamido-amine	Epoxy resin	Polythiol
Features		For repair of metallic parts (iron-based)		For repair of metallic parts (aluminum-based)		For repair (quartz-based)		Fast curing at low temperature	
Appearance		Black	Brown	Silver	Brown	Colorless	Brown	Colorless	Light yellow
Viscosity	Pa-s	250	2.4	Paste	-	13.0	1.9	13.0	10.0
	mPa-s	-	-	-	250	-	-	-	-
Specific gravity		3.04	0.95	1.20	0.95	1.16	0.96	1.17	1.15
Compounding ratio (Mass ratio) Main agent / Curing agent		100 / 10		100 / 10		100 / 50		100 / 100	
Pot life (25°C / 100g when mixed)		30 to 40 min		30 to 50 min		40 to 50 min		5 min	
Standard curing conditions		25°C/24h or 100°C/30 min		25°C/24h or 100°C/30 min		25°C/24h or 100°C/30 min		25°C/30 min or 5°C/20h	
Physical characteristics after curing — Hardness		D87		D85		(Rockwell R55)		D85	
Physical characteristics after curing — Glass transition temperature	°C	76		58.0		-		44.7	
Physical characteristics after curing — Volume resistivity	Ω/m	1×10^{10}		1×10^{10}		-		-	
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	4.3		-		-		-	
Iron — Tensile shear bond strength (When heat-cured)	MPa	15.7		9.81		23.7		20.3 (When cured at room-temperature)	
Iron — Peel strength (When heat-cured)	N/m	-		-		-		-	
Remark(s)								Twin cartridge type available	

	2086N		2087		2087E		2087H		2087R	
	Main agent	Curing agent	Main agent	Curing agent	Main agent	Curing agent	Main agent	Curing agent	Main agent	Curing agent
	Epoxy resin	Polythiol	Epoxy resin	Polyamido-amine	Epoxy resin	Polyamido-amine Tertiary amine	Epoxy resin	Imidazole derivative	Epoxy resin	Imidazole derivative
	Fast curing at low temperature		Adhesion of structures		High peel-strength adhesion		For HDD parts Low outgassing		Low outgassing Low halogen content	
	Light yellow	Gray	Light yellow	Light yellow	Light yellowish white to pale rose	Brown	White	Brown	Blue	Light yellow
	110	50.0	13.0	30.0	13.0	27.0	4.5	3.0	15.0	-
	-	-	-	-	-	-	-	-	-	30.0
	1.29	1.20	1.16	0.96	1.14	0.98	1.22	1.00	1.20	0.98
	100 / 100		100 / 100		100 / 100		100 / 20		100 / 5 to 15	
	5 min		60 min		30 min		4h		12h or longer	
	25°C/30 min or 5°C/20h		25°C/24h or 60°C/2h		25°C/7 days or 80°C/2h		90°C/1h		80°C/2h or 90°C/1h or 100°C/30 min	
	D70		D70		D83		-		D84	
	29.7		72.0		-		130.0		108	
	-		-		-		-		-	
	-		-		-		-		-	
	14.0 (When cured at room-temperature)		21.4		16.7 (When cured at room-temperature)		13.1		28.8	
	-		1220		4300 (When cured at room-temperature)		-		-	

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Epoxy Resins

Property Table

Product name / Main agent / Curing agent		2087W		2088E		2088F		2088J	
Characteristics	Unit	Main agent	Curing agent	Main agent	Curing agent	Main agent	Curing agent	Main agent	Curing agent
Main component		Epoxy resin	Modified polyamido-amine	Epoxy resin	Polyamido-amine	Epoxy resin	Alicyclic polyamido-amine	Epoxy resin	Polythiol
Features		High shear bond strength Twin cartridge type		High thermal adhesiveness		Low outgassing		High heat resistance High moisture resistance	
Appearance		White	Light yellow	Yellow	Yellow-brown	White	Blue	White	Brown
Viscosity	Pa-s	15.0	16.0	40.0	4.0	5.5	3.2	13.0	4.5
	mPa-s	-	-	-	-	-	-	-	-
Specific gravity		1.17	0.98	1.19	1.03	1.20	1.00	1.17	0.95
Compounding ratio (Mass ratio) Main agent / Curing agent		100 / 100		100 / 25		100 / 33 to 37		100 / 30	
Pot life (25°C / 100g when mixed)		70 min		70 min		80 to 90 min		4h	
Standard curing conditions		25°C/24h or 60°C/1h		25°C/24h or 100°C/1h		60°C/3h or 80°C/1h		80°C/2h	
Physical characteristics after curing — Hardness		D80		D82		D82		-	
Physical characteristics after curing — Glass transition temperature	°C	-		170 (150°C/1h)		114		100	
Physical characteristics after curing — Volume resistivity	Ω/m	-		-		-		-	
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	-		-		-		-	
Iron — Tensile shear bond strength (When heat-cured)	MPa	25.5		22.9		28.9		20.0	
Iron — Peel strength (When heat-cured)	N/m	1720		4400 (When cured at room-temperature)		-		-	
Remark(s)									

* - : Unmeasured
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* Before using, confirm the adequacy and safety for the relevant application.

Epoxy Resins

Property Table

Characteristics	Unit	2202	2202C	2202P	2204	2206	2206S	2206U	2210
Main component		Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin
Features		Curing at low temperatures	Curing at low temperatures	Curing at low temperatures Low outgassing No flowing while curing Strong adhesiveness	Curing at low temperatures	Curing at low temperatures Peel strength	Low halogen content	Low halogen content	Low viscosity Penetrability Small heat generation while curing
Appearance		Black	White	Purple	Black	Black	Black	Black	Black
Viscosity	Pa-s	13.0	27.0	13.0	28.0	120	15.0	40.0	10.0
	mPa-s	-	-	-	-	-	-	-	-
Specific gravity		1.14	1.39	1.16	1.23	1.20	1.36	1.25	1.18
Recommended curing conditions		70°C/50 min 80°C/20 min	70°C/50 min 80°C/ 15 to 30 min 100°C/ 10 to 15 min 120°C/ 5 to 10 min 150°C/ 2 to 7 min	90°C/ 20 to 30 min	70°C/50 min 80°C/20 min	70°C/50 min 80°C/20 min	80°C/30 min	80°C/30 min	90°C/30 min 100°C/20 min 120°C/15 min
Physical characteristics after curing — Hardness		D88	D90	D88	D89	D85	D87	D86	D86
Physical characteristics after curing — Glass transition temperature	°C	111	101	115	109	104	106	103	120
Physical characteristics after curing — Volume resistivity	Ω/m	1.3×10^{15}	-	-	1.7×10^{14}	1.4×10^{13}	4.8×10^{13}	5.8×10^{13}	1.5×10^{14}
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	16	-	-	16	16	31	36	23
Iron — Tensile shear bond strength (When heat-cured)	MPa	9.29	12.2	23.0	9.39	13.6	12.0	18.0	16.3
Iron — Peel strength (When heat-cured)	N/m	331	235	-	419	-	-	-	204
Remark(s)									

	2210C	2210K	2210S	2212	2212B	2212C	2212E	2212Q	2215	2215D	2217
	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin
	Low viscosity Reduced separation and uncuring issue	Low viscosity Curing at low temperatures	Low halogen content	Low viscosity Glossy cured material Excellent penetrability and flowability	Excellent moisture resistance Curing in 1 min at 150°C	Excellent moisture resistance Curing in 1 min at 150°C	Medium flowability Glossy cured material	Low halogen content	Some padding ability Glossy cured material	Reduced separation and uncuring issue	Screen printing possible 150°C Curing in 1 min
	Black	Black	Black	Black	Black	Reddish brown	Black	Black	Black	Black	Reddish brown
	8.0	3.5	8.0	13.0	25.0	25.0	35.0	15.0	80.0	140	265
	-	-	-	-	-	-	-	-	-	-	-
	1.17	1.15	1.20	1.39	1.39	1.39	1.40	1.69	1.40	1.30	1.44
	90°C/30 min 100°C/20 min 120°C/15 min	80°C/40 min	100°C/30 min	90°C/30 min 100°C/20 min 120°C/15 min	80°C/30 min 100°C/20 min 120°C/10 min 150°C/1 min	80°C/30 min 100°C/20 min 120°C/10 min 150°C/1 min	90°C/30 min 100°C/20 min 120°C/15 min	80°C/90 min 100°C/20 min 120°C/15 min	90°C/30 min 100°C/20 min 120°C/15 min	100°C/30 min	80°C/30 min 100°C/20 min 120°C/10 min 150°C/1 min
	D87	D87	D89	D92	-	D93	D92	D92	D94	D85	D90
	120	92	95	100	109	109	94	105	125	110	120
	-	-	4.5×10^{14}	5.7×10^{14}	1.6×10^{14}	1.6×10^{14}	5.7×10^{14}	-	5.7×10^{14}	-	-
	-	-	27	23	23	23	23	32	23	-	24
	14.7	16.5	13.9	10.8	10.2	8.89	11.7	10.0	14.7	17.7	9.8
	-	400	-	329	338	349	297	-	-	-	-

* - : Unmeasured
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* Before using, confirm the adequacy and safety for the relevant application.

Epoxy Resins

Property Table

Product name / Characteristics	Unit	2217B	2217H	2219C	2221D	2222P	2222R	2223	2223Q
Main component		Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin
Features		Screen printing possible 150°C/1 min curing	Temporary fixing of chip components Compatible with syringes Fast-curing, Curing at low temperatures Compatible with high-speed coating machines	High viscosity Low flowing while curing	Excellent flowability Reduced separation and uncuring issue	Heat resistance for soldering Thermal shock resistance Shear, peel strength	Heat resistance for soldering Thermal shock resistance Low linear expansion coefficient Shear, peel strength	Heat resistance for soldering Good electric insulation	Good thermal shock resistance Low halogen content
Appearance		Black	Pink	Black	Reddish brown	Black	Black	Reddish brown	Black
Viscosity	Pa-s	270	175	250	13.0	45.0	65.0	45.0	33.0
	mPa-s	-	-	-	-	-	-	-	-
Specific gravity		1.43	1.25	1.37	1.30	1.60	1.70	1.40	1.68
Recommended curing conditions		80°C/30 min 100°C/20 min 120°C/10 min 150°C/1 min	80°C/217 sec 100°C/79 sec 120°C/55 sec 150°C/39 sec	80°C/ 30 to 40 min 100°C/ 20 to 30 min 120°C/ 10 to 20 min 150°C/ 1 to 7 min	100°C/40 min 120°C/30 min	100°C/60 min	90°C/90 min 100°C/60 min 120°C/20 min	100°C/40 min 120°C/30 min 150°C/10 min	100°C/60 min
Physical characteristics after curing — Hardness		D90	D86	D90	D91	D89	D91	D93	D91
Physical characteristics after curing — Glass transition temperature	°C	120	99	95	123	115	115	127	125
Physical characteristics after curing — Volume resistivity	Ω/m	1.6×10^{14}	1.7×10^{14}	5.8×10^{13}	2.1×10^{14}	-	-	1.1×10^{14}	1.7×10^{14}
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	24	22	34	19	-	-	17	31
Iron — Tensile shear bond strength (When heat-cured)	MPa	9.8	22.0	19.0	17.7	25.5	21.4	18.7	18.0
Iron — Peel strength (When heat-cured)	N/m	-	-	-	200	1740	776	390	-
Remark(s)									

	2224	2224C	2225G	2230	2230B	2232	2233B	2233G	2234C	2234E	2235J
	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin
	Excellent flowability	Excellent flowability	For relays Low outgassing Heat resistance for soldering Tracking resistance	Low viscosity Peel strength Glossy cured material	Low viscosity Peel strength Glossy cured material	Penetrability Heat resistance Glossy cured material	Flexibility Glossy cured material	Little dropping while curing Impact strength	Excellent flowability Heat resistance Glossy cured material	Excellent flowability Heat resistance for soldering Glossy cured material	Low outgassing Heat resistance for soldering Tracking resistance
	Reddish brown	Black	Black	Hazel	Black	White	Black	Black	Gray	Black	Black
	80.0	64.0	56.0	8.0	8.0	27.0	55.0	60.0	110	70.0	58.0
	-	-	-	-	-	-	-	-	-	-	-
	1.40	1.70	1.40	1.28	1.28	1.23	1.16	1.19	1.35	1.42	1.40
	100°C/40 min 120°C/30 min 150°C/10 min	120°C/30 min	100°C/60 min 120°C/30 min	100°C/120 min 120°C/60 min 150°C/30 min	100°C/120 min 120°C/60 min 150°C/30 min	100°C/65 min 120°C/40 min 150°C/30 min	100°C/90 min 120°C/60 min	120°C/60 min	120°C/60 min 150°C/30 min	120°C/60 min 150°C/30 min	100°C/60 min 120°C/30 min 150°C/15 min
	D95	D94	D87	D84	D84	D90	D75	D82	D92	D92	D89
	125	140	123	70	70	130	75	-	142	142	120
	1.1×10^{14}	1.1×10^{14}	-	2.0×10^{13}	2.0×10^{13}	2.5×10^{13}	1.0×10^{13}	-	2.0×10^{13}	2.0×10^{13}	1.5×10^{13}
	17	17	-	-	-	10	20	-	20	20	28
	16.7	21.6	24.0	23.2	23.7	15.6	19.6	11.8	24.5	24.5	25.7
	390	780	-	1320	2400	-	1962	2000	1200	1200	2200

* - : Unmeasured
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Epoxy Resins

Property Table

Product name / Characteristics	Unit	2236	2239H	2239M	2239N	2239P	2242	2247D	2249G
Main component		Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin
Features		Heat resistance Excellent flowability Electric insulation	Low linear expansion coefficient	Strong adhesiveness	Strong adhesiveness	Strong adhesiveness	Strong adhesiveness Peel strength	Later penetration type Strong adhesiveness Excellent flowability under heat	Strong adhesiveness
Appearance		Grayish white	Grayish white	Gray	Greenish gray	Greenish gray	Black	Milky white	Black
Viscosity	Pa-s	120	-	510	510	230	53.0	45.0	75.0
	mPa-s	-	-	-	-	-	-	-	-
Specific gravity		1.35	1.55	1.47	1.47	1.51	1.46	1.17	1.59
Recommended curing conditions		120°C/60 min 150°C/30 min	120°C/60 min 130°C/50 min 150°C/30 min	150°C/30 min	150°C/30 min	150°C/30 min	100°C/40 min 120°C/30 min	150°C/30 min	160°C/30 min
Physical characteristics after curing — Hardness		D92	D92	D90	D92	D90	D87	D84	D90
Physical characteristics after curing — Glass transition temperature	°C	142	115	118	119	118	100	120	104
Physical characteristics after curing — Volume resistivity	Ω/m	2.0×10^{13}	1.7×10^{14}	8.5×10^{13}	5.4×10^{13}	8.5×10^{13}	3.3×10^{13}	-	1.0×10^{13}
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	20	29	-	-	-	15	-	33
Iron — Tensile shear bond strength (When heat-cured)	MPa	23.0	21.5	23.0	26.0	23.0	23.0	35.8	34.8
Iron — Peel strength (When heat-cured)	N/m	1180	1600	2000	2900	2000	1600	2300	4210
Remark(s)									

	2252	2253B	2253E	2270C	2272F	2273B	2274S	2280C	2280E	2284D	2284E
	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin
	High peel-strength adhesiveness Low viscosity Crack resistance	Flexibility	Strong adhesiveness	Excellent heat dissipation property Low cure shrinkage Reduced separation and uncuring issue High Tg	Incombusti-bility	Strong adhesiveness	For mounting CSP/BGA Underfill Agent	Low viscosity Small heat generation while curing	Low viscosity Small heat generation while curing	Resin for balancing a motor Strong adhesion when not cured	Resin for balancing a motor Nonmagnetic type
	Black	Ivory	Milky white	Gray	Black	Milky white	Blue	Colorless	Black	Brown	Brown
	24.0	60.0	90.0	65.0	75.0	32.0	3.8	1.0	1.0	Putty	Putty
	-	-	-	-	-	-	-	-	-	-	-
	1.15	1.50	1.55	1.95	1.64	1.30	1.17	1.16	1.16	3.2	3.42
	120°C/60 min	150°C/30 min	120°C/60 min 150°C/30 min	100°C/40 min 120°C/30 min 150°C/20 min	100°C/60 min	150°C/30 min	120°C/10 min	120°C/120 min	120°C/120 min	100°C/40 min 120°C/20 min 150°C/10 min	100°C/40 min 120°C/20 min 150°C/10 min
	D81	D63	D89	D93	D92	D90	-	D87	D87	D90	D93
	-	50	60	140	117	127	124	125	125	120	120
	4.7×10^{12}	2.7×10^{14}	1.2×10^{13}	-	2.0×10^{13}	-	1.6×10^{14}	-	-	8.9×10^{12}	-
	21	-	-	-	24	-	-	20	20	-	-
	26.0	4.7	26.5	21.6	21.3	33.2	23.0	10.8	12.4	9.8	8.8
	4500	1700	2350	314	460	5900	-	-	217	-	-
					UL94 V-0 Certified Product						

* - : Unmeasured
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Epoxy Resins

Property Table

Product name / Characteristics	Unit	2284F	2285	2286D	2286G	2286J	2286L	2286U	2287
Main component		Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin
Features		Resin for balancing a motor High specific gravity	For motor coil impregnation and fixing Excellent penetrability under heat High heat resistance Strength when highly heated	For motor coil impregnation and fixing High heat resistance Low shrinkage while curing Impact strength	For motor coil coating Heat resistance Low linear expansion coefficient	For motor coil coating Low linear expansion coefficient High viscosity	For motor coil coating Low linear expansion coefficient High viscosity No flowing while curing	For motor coil coating Low linear expansion coefficient	Cut core-impregnating adhesion Low viscosity Excellent impregnation
Appearance		Reddish brown	Milky white	Grayish white	Pale red	Milky white	Milky white	Milky white	Reddish brown
Viscosity	Pa-s	Putty	140	330	325	150 (consistency)	590	1150	-
	mPa-s	-	-	-	-	-	-	-	120
Specific gravity		3.25	1.56	1.66	1.66	1.90	1.68	1.40	1.10
Recommended curing conditions		150°C/10 min	120°C/60 min 150°C/30 min	150°C/30 min	150°C/30 min	150°C/30 min	160°C/30 min	160°C/30 min	150°C/ 5 to 15h
Physical characteristics after curing — Hardness		D92	D90	D94	D93	D95	D94	D91	D86
Physical characteristics after curing — Glass transition temperature	°C	110	180	182	155	120	142	110	65
Physical characteristics after curing — Volume resistivity	Ω/m	8.0×10^{12}	2.3×10^{14}	-	-	-	-	4.0×10^{12}	4.5×10^{12}
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	-	20	-	-	-	-	-	-
Iron — Tensile shear bond strength (When heat-cured)	MPa	9.8	24.0	21.0	23.0	22.0	27.0	27.1	11.8
Iron — Peel strength (When heat-cured)	N/m	-	543	-	-	-	-	2300	120
Remark(s)									

* -: Unmeasured
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* Before using, confirm the adequacy and safety for the relevant application.

	2287B
	Epoxy resin
	Cut core-impregnating adhesion Low viscosity Excellent impregnation
	Reddish brown
	-
	170
	1.10
	120°C/2h + 150°C/4h
	-
	-
	4.5×10^{12}
	-
	20.6
	160

Pre-Coating of Bolts and Nuts to Prevent Screws from Loosening and Leaking

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

This is the process for coating the sealant and locking agent to the thread portion of screws, bolts, and pipes, etc. to add sealing and locking functions to screws themselves.
Pre-coated screws maintain stability, and have sealing or locking functions when tightened.
Pre-coating of bolts includes bolts pre-coated by MEC process where a microencapsulated reactive adhesive is applied, Threelock Processing where nylon is fused, and Sealock Processing where a sealing function is added.

■ Bolts pre-coated by MEC process

A microencapsulated reactive adhesive is used for the coating process.
The microcapsules are broken up when the processed screws are tightened, and the packaged adhesive quickly cures by polymerization.
After 24 to 48 hours, it reaches final strength, and it forms a tough cured material with excellent oil resistance, chemical resistance, heat resistance, and weather resistance.
It has good heat resistance. The lock function works up to approximately 100°C (approximately 150°C for the heat-resistant type), and the sealing function works up to approximately 170°C.

2418

Bolts pre-coated by MEC process / Acrylic medium-strength heat-resistant type

It is good for bonding and sealing screws that may need to be removed.
It has good heat resistance. The lock function works up to approximately 150°C, and the sealing function works up to approximately 170°C.
The minimum applied nut diameter is M3.
The standard curing conditions are 25°C×24h.

2448, 2448B

Bolts pre-coated by MEC process / High-strength epoxy type

This is good for permanent adhesion and sealing of screws that do not need to be removed.
It has good heat resistance. The lock function works for 2448 up to approximately 150°C and for 2448B up to approximately 160°C, and the sealing function works up to approximately 170°C.
The minimum applied nut diameter is M2.
The standard curing conditions are 25°C×24h.

2458

Bolts pre-coated by MEC process / Acrylic low-strength type

It is good for bonding and sealing screws that will be removed.
The lock function works up to approximately 100°C, and the sealing function works up to approximately 170°C.
The minimum applied nut diameter is M3.
The standard curing conditions are 25°C×24h.

2458B

Bolts pre-coated by MEC process / Acrylic low-strength less-scum type

It is good for bonding and sealing screws that will be removed.
The lock function works up to approximately 100°C, and the sealing function works up to approximately 170°C.
The minimum applied nut diameter is M3.
The standard curing conditions are 25°C×24h.

2468

Bolts pre-coated by MEC process / Acrylic medium-strength type

It is good for bonding and sealing screws that may need to be removed.
The lock function works up to approximately 100°C, and the sealing function works up to approximately 170°C.
The minimum applied nut diameter is M3.
The standard curing conditions are 25°C×24h.

2478

Bolts pre-coated by MEC process / Acrylic high-strength less-scum type

This is good for permanent adhesion and sealing of screws that do not need to be removed.
It has good heat resistance. The lock function works up to approximately 130°C, and the sealing function works up to approximately 170°C.
The minimum applied nut diameter is M3.
The standard curing conditions are 25°C×24h.

2488

Nuts pre-coated by MEC process / Acrylic type

It is good for bonding nuts that may need to be removed.
It has good heat resistance. The lock function works up to approximately 130°C.
The minimum applied nut diameter is M3.
The standard curing conditions are 25°C×24h.

Bolts and Nuts Pre-Coated by MEC process

Property Table

Product name / Characteristics		Unit	2418	2446	2446B	2448	2448B	2457	2458	2458B
Main component			Acrylic resin	Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin	Acrylic resin	Acrylic resin	Acrylic resin
Strength			Medium strength	High strength	High strength	High strength	High strength	Low strength	Low strength	Low strength
Standard curing conditions			25°C×24h	25°C×48h	25°C×48h	25°C×24h	25°C×24h	25°C×24h	25°C×24h	25°C×24h
Appearance			Yellow	Blue	Orange	Blue	Orange	Green	Green	Green
Applied nut diameter			M3 or larger	M2 to 40	M2 to 40	M2 to 40	M2 to 40	M4 to 40	M3 or larger	M3 or larger
Fixing strength to each material*1	Iron	N/m	49.8	53.7	53.7	62.6	64.6	40.2	38.2	39.2
	Zinc-chromate plating	N/m	49.1	56.1	56.1	67.0	70.7	35.9	37.4	39.3
	Chromium plating	N/m	50.3	52.3	52.3	67.8	62.1	37.9	32.9	40.3
	Nickel plating	N/m	50.4	54.9	54.9	73.9	65.1	38.8	37.3	40.7
	Unichromate plating	N/m	50.2	47.6	47.6	72.0	66.5	37.3	36.3	39.4
	Black oxide	N/m	46.1	53.3	53.3	62.4	64.1	39.8	33.5	39.6
	SUS304	N/m	47.8	49.0	49.0	64.6	66.8	35.1	31.9	38.5
	Brass	N/m	26.2	-	-	38.3	37.8	29.0	27.0	28.4
	Aluminum	N/m	26.8	26.9	26.9	36.4	40.9	21.4	20.6	20.9
Hot strength*2	25°C	N/m	49.1	58.0	58.0	70.3	70.7	35.3	37.4	39.3
	60°C	N/m	45.6	39.2	39.2	52.2	54.4	35.1	32.6	38.0
	80°C	N/m	42.9	-	-	50.3	52.0	34.1	32.0	31.9
	100°C	N/m	40.5	37.2	37.2	46.8	47.6	32.4	30.8	31.5
	120°C	N/m	-	33.7	33.7	-	-	29.4	26.0	-
	130°C	N/m	38.3	-	-	37.0	42.0	-	-	26.1
	150°C	N/m	33.2	29.5	29.5	31.6	38.0	21.2	20.4	25.9
	180°C	N/m	26.2	24.7	24.7	21.4	21.0	16.5	19.5	21.3
Sealability*3	25°C	MPa	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher
	150°C	MPa	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher	10 or higher
	170°C	MPa	10 or higher	-	-	10 or higher	10 or higher	-	10 or higher	10 or higher
Operating temperature range (Est.)		°C	Locking 150°C Sealing 170°C	Locking 150°C Sealing 150°C	Locking 150°C Sealing 150°C	Locking 150°C Sealing 170°C	Locking 160°C Sealing 170°C	Locking 120°C Sealing 150°C	Locking 100°C Sealing 170°C	Locking 100°C Sealing 170°C
Remark(s)			Aqueous type	Aqueous type	Aqueous type	Aqueous type	Aqueous type	Aqueous type	Aqueous type	Aqueous type

*1: M10×P1.5 bolt/nut, Tightening torque 30N/m (15N/m for brass and aluminum)
*2: M10×P.1.5 zinc-chromate plated bolt/nut, Tightening torque 30N/m
*3: Iron seal block/Hydraulic pressure, M10×P.15 bolt, Tightening torque 30N/m, Maximum pressure 10MPa
*4: 2488 is a grade for nuts, processing is done to nuts for testing, and measurement is done using a protrusion rate of 50% to bolts

	2468	2475	2478	2488*4
	Acrylic resin	Acrylic resin	Acrylic resin	Acrylic resin
	Medium strength	High strength	High strength	Medium strength
	25°C×24h	25°C×24h	25°C×24h	25°C×24h
	Red	Blue	Blue	Blue
	M3 or larger	M2 to 40	M3 or larger	M3 or larger
	45.4	56.1	52.5	43.1
	44.9	46.1	52.3	44.9
	43.4	46.1	49.8	42.5
	42.2	44.5	52.8	40.8
	45.8	44.9	48.4	41.5
	43.8	42.1	42.5	40.8
	42.6	42.1	45.5	41.1
	28.8	-	29.6	36.5
	24.8	24.9	22.3	22.4
	44.9	46.1	52.3	44.9
	36.4	43.1	44.3	37.5
	33.5	38.9	38.9	36.4
	30.1	41.4	37.5	34.7
	26.9	39.4	34.1	33.4
	-	-	31.0	31.4
	22.9	32.1	30.1	27.4
	18.4	25.9	21.1	21.1
	10 or higher	10 or higher	10 or higher	-
	10 or higher	10 or higher	10 or higher	-
	10 or higher	-	10 or higher	-
	Locking 100°C Sealing 170°C	Locking 150°C Sealing 150°C	Locking 130°C Sealing 170°C	Locking 130°C
	Aqueous type	Aqueous type	Aqueous type	Aqueous type * For nuts

* - : Unmeasured
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* Before using, confirm the adequacy and safety for the relevant application.

Heat Dissipating Agents

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works

This is a series of one-part moisture-curing resins for heat dissipation that use a silyl-containing special polymer as the base resin and contain a thermally conductive filler.
They are in a liquid state, so they have excellent adhesion and filling property resulting in good heat dissipation.
In addition, they are reaction type products, so there is no increase of flowability or separation over time. All grades do not contain low molecular weight cyclic siloxane, which can cause electrical contact failure, so they can be used for insulation and heat dissipation with various electronic parts including switching power supplies, power ICs, and computer CPUs.

2955P

This is an alcohol-releasing type.
The surface cures gradually by the moisture in the air, which prevents dripping after assembling parts.
It has excellent electric insulation together with thermal conductivity.

2955R

This is an alcohol-releasing type.
The surface cures gradually by the moisture in the air, which prevents dripping after assembling parts.
It has excellent electric insulation together with high thermal conductivity.

Moisture-curing heat-dissipating resin

Property Table

Product name		2955P	2955R
Characteristics	Unit		
Main component		Silyl group-containing special polymer thermal conductivity filler	Silyl group-containing special polymer thermal conductivity filler
Features		Alcohol-releasing Moisture-curing type	Alcohol-releasing Moisture-curing type
Appearance		Gray	Gray
Viscosity	Pa-s	120	130
Specific gravity		3.1	3.1
Tack free time	h	24 or less	24 or less
Physical characteristics after curing: Thermal conductivity (25°C)	W/m-K	4.8	5.3
Physical characteristics after curing: Volume resistivity	Ω/m	3.1×10^{14}	4.1×10^{9}
Physical characteristics after curing: Surface resistivity	Ω	1.7×10^{17}	4.0×10^{12}
Physical characteristics after curing: Dielectric breakdown strength	kV/mm	19	15
Remark(s)			

* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

UV Curing Resins

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works

These are single-component solventless type adhesives with curing in several seconds by UV light irradiation.
They have excellent adhesion to various materials such as metals, plastics, and glass, and are used for many purposes including bonding, sealing, casting, and coating of electric and electronic devices, automobile parts, optical parts, and, accessories, etc.
There are many variations available including acrylate-based, epoxy-based, and silicone-based products, and there are grades with different curability including visible-light-curing, anaerobic curing, heat-curing, moisture-curing, and primer curing in addition to curing under UV light. Therefore, it is possible to cure portions that do not receive UV light and to bond materials that do not transmit UV light.
There are many grades available according to physical properties including a type that forms a tough cured material with high hardness and a type that forms a flexible cured material with rubber elasticity.

3013

This is soft with excellent impact strength.
It is used for bonding optical pick-up lenses and optical parts.
There are variations available according to viscosity, curing characteristics, adhesion characteristics, etc.

3013Q

This uses acrylic rubber polymer as the main component and forms a rubber-like elastic body with excellent heat and chemical resistance.
It maintains rubber elasticity in a wide temperature range, and continuous usage is possible at approximately 120°C. It has excellent chemical resistance for engine oil and AT oil, so it is used for electrical device adhesion, sealing, etc.

3017

This is soft with high peel-strength adhesiveness.
It has excellent adhesion with difficult-to-bond materials such as PET and PPS, PEN (polyethylene naphthalate), and olefin-based materials.
It forms a cured material with a low water absorption rate and low moisture permeability.
There are grades with different viscosities.

3017D, 3017E, 3017F

This forms a soft cured material with excellent surface curability.
It has good adhesion with difficult-to-bond materials such as olefin-based materials, and is used for bonding optical parts.
It also has LED curing capability.
This is a low-halogen product.
There are grades with different viscosities.

3021

This forms a transparent cured material with excellent surface curability.
This has excellent adhesion with glass, metal, and polycarbonate.
There are grades with different viscosities.

3026 Series

This is an exclusive product for sealing of liquid crystal filling ports of LCD panels that has excellent adhesion to glass.
There are variations available according to viscosity, curing characteristics, adhesion characteristics, etc.

3027G

This is an electrode-protection molding grade product with low water absorption.
It is used as a protective agent for ITO electrodes of LCD panels.
The balance of the cured material strength and adhesion strength was adjusted, and repair is also possible.

3030, 3031, 3033F, 3034

This has flexibility and has excellent adhesion with plastic materials.
It is used for electric and electronic devices and optical parts.
There are variations available according to viscosity, curing characteristics, adhesion characteristics, etc.

3035B

This is a sealant for dye-sensitized solar cells with low moisture permeability and resistance to liquid electrolytes. It can be used for main sealing and end sealing.

3036G, 3038, 3038B

This forms a cured material with small cure shrinkage and a low linear expansion coefficient.
It is used for fixing optical parts requiring accurate positioning such as optical pick-up parts.
There are variations available according to viscosity, curing characteristics, adhesion characteristics, etc.
It also has LED curing capability.

3042 Series

This has excellent adhesion with glass and metal.
It forms a transparent cured material with excellent surface curability.
There are products with different viscosities and colors available.

3046

This forms a water soluble cured material with strong adhesion to glass.
It is possible to peel using water after bonding, so it is used for temporary fixing during the cutting process for products that use glass and quartz.
There are grades with different viscosities.

3050C

This has excellent adhesion with glass and metal.
It is used for fixing of pin lead with LCDs.
There are variations available including a high glass transition temperature-adopted type and heat cycle resistance-improved type.

3055

This is a type with primer curing property that can be cured in shaded areas, etc. during UV light irradiation by using the primer.
It has excellent adhesion strength and durability.
It is used for bonding motor magnets and fixing of pin lead with LCDs. There are products with different colors available.

3056F

It is a moisture-curing type that can be cured by moisture in the air, etc., and in shaded area, etc. during UV light irradiation.
It has excellent adhesion with glass, metals, and plastics.
It is used for bonding, sealing, and coating of electric and electronic parts.

3057

This is a type with heat-curing property that can be cured in shaded areas, etc., during UV light irradiation.
It has excellent adhesion with metal.
There are grades with different viscosities, and the low-viscosity grade is used as a coating agent for preventing burrs of a stepping motor when grinding.

3062, 3065E, 3067

This is a type with anaerobic curing property that can be quickly cured in the small gap of metal surfaces which is shaded during UV light irradiation.
It has excellent adhesion with glass, metal and plastic, and it is used for bonding motor magnets and electrical parts.
There are many variations available according to viscosity, curing characteristics, and adhesion characteristics, etc.

3075

This forms a soft, transparent cured material with excellent surface curability.
It has excellent crack resistance and is used as a soft coat material for nameplates and accessories.

3081J

This forms a rubber-like elastic body, and is used as a precure type CIPG (on-site formed gasket).
It has rubber elasticity over a wide temperature range, and has excellent sealability due to its small compression set.
It also has excellent shape retention during application, and is used for electrical parts.

3084, 3084E

This is an exclusive product for correcting the balance of rotating bodies such as motors and polygon mirrors (balancing resins).
It forms a cured material with high specific gravity that has shape retention during application.

3088, 3088B

This is a two-component type product. In addition to UV light irradiation, it can also be quickly cured by two-component mixture reaction, so there is no need to worry about it being uncured in shaded areas or about thickness restrictions.
It can be used for potting sensors and for coating, etc., in shaded areas.
There is a soft type and a hard type available.

3114

This is a UV curing resin that uses epoxy resin as the main component.
It has small cure shrinkage, and is used for fixing optical parts that require accurate positioning such as optical pick-up parts and CMOS.
There are grades with different characteristics including a low halogen grade.

3118

This is a sealant for dye-sensitized solar cells with low moisture permeability and excellent resistance to liquid electrolytes. It can be used for main sealing.

3161, 3163, 3164D

This is a UV curing resin that uses silicone resin as the main component.
It cures by UV light irradiation and humidity, forming a rubber-like elastic body.
It has excellent heat resistance, freeze resistance, and heat cycle resistance, and also has excellent adhesion to engineering plastics.
With its low content of low-molecular siloxane, the product is free from contact failures.

3168, 3168E

This is a UV curing resin that uses silicone resin as the main component.
It becomes a soft gel cured material with excellent adhesion and has excellent vibration absorption.
It is used as a damping agent for optical pick-up parts.
Customized products are available.

3170B

This is a visible-light-curing resin. It can be cured by visible light in addition to UV light, so bonding is possible even with UV-cutting transparent materials.
It has excellent adhesion with glass, metals, and plastics.
It is used for electric and electronic devices and optical parts.
There are grades with different characteristics including a low halogen grade.

3177

This is a UV curing resin and instant adhesive hybrid type product.
It cures by visible light, and has excellent adhesion for a wide range of materials including metals, plastics, and rubber.
It has excellent moisture resistance and heat resistance, so it can be used outdoors.

UV Curing Resin

Property Table

Characteristics		Unit	3006D	3013	3013B	3013D	3013M	3013Q	3014	3014C
Main component			Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acryl rubber	Acrylate	Acrylate
Additional curability			Heating	-	-	-	-	-	-	-
Features			Rubber elasticity Heat resistance	Soft Impact strength	Soft Impact strength	Soft Impact strength	Soft Impact strength	Rubber elasticity Heat resistance Oil resistance	Soft Impact strength	Soft Impact strength Moisture resistance
Main usages			Wire harness connector Automotive electronics Electrical parts	Optical pick-up lens Optical part	Optical pick-up lens Optical part	Optical pick-up lens Optical part	Optical pick-up lens Optical part	Automotive electronics Electrical part potting	Optical pick-up lens Optical part	Optical pick-up lens Optical part
Appearance			Blue	Light yellow	Pale greenish brown	Pale green	Blue	Blue	Light yellow	Milky white
Viscosity		Pa-s	2.0	6.0	1.0	-	8.5	23.0	17.0	10.0
		mPa-s	-	-	-	680	-	-	-	-
Specific gravity			1.07	1.00	1.02	1.03	1.01	1.11	0.99	1.06
Curing conditions (Cumulative light intensity)		kJ/m^2	30	30	30	30	30	45	30	20
Physical characteristics after curing	Hardness		A50	A90 to 95	A90	A90	-	A32	A80 to 85	A50
			-	D20	-	-	D42	-	-	-
	Volume resistivity	Ω/m	-	2.1×10^{11}	2.0×10^{11}	2.0×10^{11}	-	9.4×10^{9}	8.5×10^{10}	3.9×10^{12}
	Dielectric breakdown strength	kV/mm	30	-	-	-	-	21	-	12.4
Tensile shear bond strength	Glass/Glass	MPa	5.5	-	-	-	-	-	-	-
	Glass/Acrylic	MPa	3.1	-	-	-	-	-	-	-
	Glass/Polycarbonate	MPa	4.0	-	-	-	-	-	-	-
	Glass/Glass epoxy	MPa	5.2	-	-	-	-	-	-	-
	Glass/ABS	MPa	-	-	-	-	-	-	-	-
	Glass/LCP	MPa	-	-	-	-	4.9	-	-	-
	Glass/Iron	MPa	5.3	(Material failure)	(Material failure)	-	-	4.1	(Material failure)	-
	Glass/Aluminum	MPa	6.1	-	-	-	-	-	-	-
	Glass/Stainless steel	MPa	5.5	-	-	-	-	-	-	-
	Polycarbonate/ Polycarbonate	MPa	-	-	-	-	-	-	-	2.0
Remark(s)								Exellent engine oil and AT oil resistance Continuous use at approx. 120°C		

	3015F	3016	3016H	3017	3017B	3017D	3017E	3017F	3018	3021	3021J
	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate
	-	-	-	-	-	-	-	-	-	-	-
	Low cure shrinkage Low linear expansion coefficient	Rubber-like cured material Thick film curing	Rubber-like cured material Thick film curing	Low moisture permeability Peel strength	Low moisture permeability Peel strength	Compatible with LED light sources Adhesion strength with difficult-to-bond materials Low halogen content	Adhesion strength with difficult-to-bond materials Low halogen content	Adhesion strength with difficult-to-bond materials Low halogen content	Soft Thick film curing	Excellent transparency Excellent optical properties	Excellent surface curability Excellent transparency
	Optical pick-up PD/LD Optical part	Electrical part potting Soft material adhesion	Electrical part potting	Difficult-to-bond materials such as PET, PEN, and PPS	Difficult-to-bond materials such as PET, PEN, and PPS	Olefin-based difficult-to-bond materials Optical part	Olefin-based difficult-to-bond materials Optical part	Olefin-based difficult-to-bond materials Optical part	Electrical part potting Soft material adhesion	Bonding Coating	Bonding Coating
	White	Light blue	Light blue	Yellow	Milky white	White	White	White	Colorless	Colorless	Light yellow
	14.1	20.0	20.0	46.0	16.0	13.0	25.0	7.5	8.0	-	-
	-	-	-	-	-	-	-	-	-	600	135
	1.57	1.18	1.17	0.87	1.05	0.93	0.93	0.93	1.12	1.12	1.06
	30	30	30	60	30	30	30	30	45	30	30
	-	A25	A37	A20	A40	A41	A35	A58	A62	-	-
	D86	-	-	-	-	-	-	-	-	D80 to 85	D70
	-	3.8×10^{12}	5.8×10^{15}	-	1.0×10^{13}	-	-	-	2.8×10^{11}	7.0×10^{12}	-
	-	-	-	-	22.1	-	-	-	-	-	-
	-	-	4.8	-	-	-	-	-	3.3	-	6.9
	-	-	4.2	-	-	-	-	-	-	-	-
	-	-	3.3	-	-	-	-	-	-	-	-
	-	-	2.8	-	-	-	-	-	(Material failure)	-	-
	-	-	-	-	-	-	-	-	2.4	-	-
	-	-	2.1	-	-	-	-	-	-	-	-
	-	-	2.1	-	-	-	-	-	-	(Material failure)	-
	-	3.4	2.3	-	-	-	-	-	-	-	-
	-	5.5	2.1	-	-	-	-	-	-	-	6.9
	-	-	-	-	-	-	-	-	4.2	-	5.9
		Blue after curing	Blue after curing	PET/ Aluminum Peel strength : 1.1kN/m	PET/ Aluminum Peel strength : 1.2kN/m	ZEONEX ®/ LCP adhesion : 1.0MPa	ZEONEX ®/ LCP adhesion : 1.0MPa	ZEONEX ®/ LCP adhesion : 2.0MPa	Cures to 10mm or more at $30kJ/m^2$		

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

UV Curing Resin

Property Table

Product name		3021Q	3026E	3026G	3026J	3027G	3030	3030B	3031
Characteristics	Unit								
Main component		Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate
Additional curability		-	-	-	-	-	-	-	-
Features		Good visibility when applied Adhesion to glass	Exclusive product for liquid crystal panel end sealing	Exclusive product for liquid crystal panel end sealing	Exclusive product for liquid crystal panel end sealing	Low water absorption rate Good repairability	Flexibility Heat cycle resistance Strong adhesiveness	Low viscosity Flexibility	Flexibility Strong adhesiveness
Main usages		End face protection for glass during chemical polishing Glass bonding	Liquid crystal panel end sealing	Liquid crystal panel end sealing	Liquid crystal panel end sealing	Display panel ITO electrode molding	Plastic bonding Optical part	Lens bonding Glass bonding	Plastic bonding Optical part
Appearance		Red	Colorless	Light yellow	Faint brown	Light yellow to Pale white	Milky white	Light yellow	Light brown
Viscosity	Pa-s	-	19.0	14.0	20.6	2.0	16.5	2.6	5.0
	mPa-s	750	-	-	-	-	-	-	-
Specific gravity		1.11	1.17	1.17	1.17	1.01	1.16	1.10	1.05
Standard curing conditions	kJ/m^2	30	20	30	30	30	30	30	30
Physical characteristics after curing: Hardness		-	-	-	-	A80	A95	-	-
		-	D85	D80	D81	-	D63	D52	D70
Physical characteristics after curing: Volume resistivity	Ω/m	-	1.1×10^{12}	-	-	1.0×10^{11}	2.0×10^{14}	-	8.1×10^{11}
Physical characteristics after curing: Dielectric breakdown strength	kV/mm	-	-	-	-	18.4	-	-	-
Tensile shear bond strength: Glass/Glass	MPa	7.4	(Material failure)	7.0	6.3	5.0	(Material failure)	7.5	-
Tensile shear bond strength: Glass/Acrylic	MPa	-	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/Polycarbonate	MPa	-	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/Glass epoxy	MPa	-	-	-	-	-	(Material failure)	-	-
Tensile shear bond strength: Glass/ABS	MPa	-	-	-	-	-	(Material failure)	-	-
Tensile shear bond strength: Glass/LCP	MPa	-	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/Iron	MPa	-	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/Aluminum	MPa	-	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/Stainless steel	MPa	-	-	-	-	-	-	-	-
Tensile shear bond strength: Polycarbonate/ Polycarbonate	MPa	-	-	-	-	-	4.0	-	-
Remark(s)						Boiling water absorption rate : 0.2%			

	3031J	3033B	3033F	3034	3034C	3035B	3036	3036E	3036G	3038	3038B
	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate
	-	-	-	-	-	-	-	-	-	-	-
	Curing in low light intensity	Flexibility Heat cycle resistance Strong adhesiveness	Flexibility Strong adhesiveness	Excellent moisture resistance Strong adhesiveness Screen printing	Flexibility Strong adhesiveness Thick film curing	Sealant for dye-sensitized solar cells	Low cure shrinkage Low linear expansion coefficient	Low cure shrinkage Low linear expansion coefficient	Compatible with LED light sources Low cure shrinkage	Compatible with LED light sources Strong adhesiveness	Compatible with LED light sources Low cure shrinkage
	Electronic device potting	Engineering plastics bonding Optical part	Electronic device potting / Bonding	Engineering plastics bonding	Sealing of terminals	Main sealing / end sealing of dye-sensitized solar cells	Optical pick-up lens Optical part	Optical pick-up lens Optical part	Various light source parts	Optical pick-up Optical part	Optical part
	Light yellow	Milky white	Blue	Milky white	Blue	White	Grayish white	Light orange	White	White	Blue
	5.0	35.0	40.0	20.0	27.0	51.0	35.0	10.5	29.0	13.0	12.5
	-	-	-	-	-	-	-	-	-	-	-
	1.14	1.09	1.14	1.11	1.13	1.30	1.53	1.54	1.53	1.17	1.56
	10	30	30	30	30	30	30	30	60 (LED)	70 (LED)	3000
	-	-	-	A95	-	-	-	-	-	-	D75
	D95	-	D70	D68	D69	D48	D77	D58	D40	D70	-
	-	-	1.0×10^{13}	2.0×10^{12}	3.2×10^{13}	1.5×10^{14}	-	-	-	5.0×10^{10}	5.0×10^{10}
	-	-	-	19.4	-	23	-	-	-	30	30
	-	(Material failure)	8.3	-	7.8	(Material failure)	-	-	-	-	(Material failure)
	-	-	8.2	-	-	2.36	-	-	-	(Material failure)	(Material failure)
	-	-	7.6	-	-	2.3	-	-	-	2.6	(Material failure)
	-	-	8.5	-	-	4.6	-	-	-	(Material failure)	(Material failure)
	-	-	7.6	(Material failure)	-	3.6	-	-	-	-	(Material failure)
	-	-	3.8	-	-	3.6	5.1	-	-	3.7	3.8
	-	-	9.6	-	(Material failure)	5.4	-	-	4.5	4.3	(Material failure)
	-	-	8.9	-	-	6.8	10	-	3.8	6.1	5.2
	-	-	8.5	-	(Material failure)	-	9.4	-	(Material failure)	(Material failure)	(Material failure)
	-	6.4	5.4	(Material failure)	-	1.3	10	-	-	-	2.1
									PPS/Glass Material failure ZnDc/Glass Material failure		

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

UV Curing Resin

Property Table

Product name		3042	3042B	3042C	3042D	3043B	3046	3046B	3050B
Characteristics	Unit								
Main component		Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate
Additional curability		Heating	-	-	-	-	-	-	-
Features		Transparency Low viscosity High hardness	Transparency Low viscosity High hardness	Transparency Low viscosity High hardness	High hardness Moisture resistance Heat cycle resistance	Flexibility Nylon adhesion	Water soluble Glass adhesion	Water soluble Glass adhesion	Excellent low-temperature properties
Main usages		Coating agent preventing burrs of stepping motors when grinding Glass/metal bonding	Injection needle adhesion accessory coating Glass/metal bonding	Injection needle adhesion accessory coating Glass/metal bonding	Lens Optical part	Nylon fiber binding Strings for tennis	Temporary fixing of glass or quartz products while being cut	Temporary fixing of glass or quartz products while being cut	Liquid crystal panel pin lead fixing
Appearance		Colorless	Colorless	Colorless	Milky white	Light yellow	Light yellow	Light yellow	Transparent green
Viscosity	Pa-s	-	-	1.5	15.0	1.6	-	10.0	4.5
	mPa-s	20	500	-	-	-	5.0	-	-
Specific gravity		1.07	1.10	1.11	1.13	1.05	1.00	1.10	1.04
Standard curing conditions	kJ/m^2	15	15	30	30	15	18	18	20
Physical characteristics after curing	Hardness	-	-	-	-	-	-	-	-
		D82	D83	D83	D84	D60	D80	D80	D65
	Volume resistivity	Ω/m	2.3×10^{13}	8.1×10^{13}	5.5×10^{13}	-	-	-	-	4.16×10^{11}
	Dielectric breakdown strength	kV/mm	-	-	-	-	-	-	-	18.0
Tensile shear bond strength	Glass/Glass	MPa	(Material failure)	(Material failure)	8.2	7.5	-	(Material failure)	5.0	-
	Glass/Acrylic	MPa	-	-	-	-	-	-	-	-
	Glass/Polycarbonate	MPa	-	-	-	-	-	-	-	-
	Glass/Glass epoxy	MPa	(Material failure)	(Material failure)	-	-	-	2.8	-	-
	Glass/ABS	MPa	2.1	(Material failure)	-	-	-	(Material failure)	-	-
	Glass/LCP	MPa	-	-	-	-	-	-	-	-
	Glass/Iron	MPa	-	-	-	-	8.0	-	5.0	-
	Glass/Aluminum	MPa	-	-	-	-	6.0	-	-	-
	Glass/Stainless steel	MPa	-	-	-	-	8.0	-	-	(Material failure)
	Polycarbonate/ Polycarbonate	MPa	3.7	4.1	-	-	4.0	4.8	-	-
Remark(s)					High viscosity of 3042	3042 with thixotropy			High viscosity grade of 3046	

	3050C	3050J	3051	3051E	3051G	3052	3052B	3052C	3052D	3055	3055B
	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate
	-	-	-	-	-	-	-	-	-	Primer	Primer
	Heat resistance	Heat resistance Heat cycle resistance	Glass adhesion	Metal adhesion	Flexibility	Glass adhesion	Glass adhesion	Glass, metal adhesion	Weather resistance Heat cycle resistance	Adhesion Moisture resistance Impact strength	Adhesion Moisture resistance Impact strength
	Liquid crystal panel pin lead fixing	Liquid crystal panel pin lead fixing	Liquid crystal panel glass fixing end-sealing	Battery insulating sealant	Bonding Temporary fixing Potting	Liquid crystal panel glass fixing end-sealing	Liquid crystal panel glass fixing end-sealing	Glass/Iron Polycarbon-ate Acrylic bonding	Glass/Iron Polycarbon-ate Acrylic bonding	Motor magnets Liquid crystal panel pin lead fixing	Motor magnets Liquid crystal panel pin lead fixing
	Light yellow	Dark blue	Light brown	Light transparent yellow	Light transparent yellow	Light brown	Light yellow	Light yellow	Light yellow	Light yellow	Green
	9.0	4.5	5.0	1.5	6.5	11.0	9.0	8.0	43.0	15.0	15.0
	-	-	-	-	-	-	-	-	-	-	-
	1.04	1.05	1.16	1.06	1.08	1.17	1.17	1.05	1.04	1.06	1.06
	15	30	30	15	30	10	30	35	30	20	20
	-	-	-	-	-	-	-	-	-	-	-
	D58	D60	D85	D70	D66	D90	D90	D65	D70	D70	D70
	1.05×10^{10}	2.0×10^{13}	3.5×10^{12}	-	2.1×10^{13}	3.5×10^{12}	3.5×10^{12}	-	-	4.6×10^{10}	4.6×10^{10}
	15.7	30.2	-	-	30	-	-	-	-	14.2	14.2
	-	7.0	(Material failure)	-	-	(Material failure)	-	(Material failure)	(Material failure)	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	(Material failure)	-	-	(Material failure)	-	(Material failure)	(Material failure)	-	-
	-	-	(Material failure)	-	-	(Material failure)	-	(Material failure)	(Material failure)	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	(Material failure)	-	(Material failure)	-	7.5	(Material failure)	(Material failure)
	-	-	-	-	-	-	-	-	-	-	-
	(Material failure)	8.0	-	7.8	-	-	-	-	-	-	-
	-	-	1.8	-	-	2.2	-	(Material failure)	(Material failure)	-	-
					Iron/Acrylic (Material failure)						Green version of 3055

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

UV Curing Resin

Property Table

Product name		3056F	3057	3057B	3057E	3057J	3059D	3060	3062
Characteristics	Unit								
Main component		Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate
Additional curability		Humidity	Heating	Heating	Heating	Heating	-	Anaerobic Primer	Anaerobic Primer
Features		Moisture-curing Flexibility Adhesion	Metal adhesion	Metal adhesion	Metal adhesion Low viscosity	Hard Adhesion	Low outgassing Thixotropic properties	Anaerobic curing	Flexibility Impact strength
Main usages		Electrical parts sealing / bonding General-purpose adhesion	Electrical parts bonding	Electrical parts bonding	Coating agent preventing burrs of stepping motors while grinding	Electrical parts bonding	HDD parts Electrical parts bonding	Metallic joint Electrical parts bonding	Motor magnets Stator coil Adhesion of different materials
Appearance		Green	Turbid white	Turbid white	Light yellow	Light yellow	Milky white	Light yellow	Light yellow
Viscosity	Pa-s	6.0	35.0	18.0	-	9.0	80.0	1.2	8.0
	mPa-s	-	-	-	24.0	-	-	-	-
Specific gravity		1.08	1.44	1.42	1.08	1.06	1.18	1.12	1.07
Standard curing conditions	kJ/m²	30	30	30	30	30	30	30	35
Physical characteristics after curing: Hardness		-	-	-	-	-	-	A90	-
		D65	D89	D80	D75	D80	D86	D65	D70
Physical characteristics after curing: Volume resistivity	Ω/m	1.4×10^{11}	7.6×10^{12}	7.8×10^{12}	5.4×10^{13}	5.6×10^{12}	-	3.2×10^{11}	4.2×10^{12}
Physical characteristics after curing: Dielectric breakdown strength	kV/mm	27.5	28.4	28.4	-	31	-	17.2	-
Tensile shear bond strength: Glass/Glass	MPa	6.4	(Material failure)	-	-	6.9	8.0	(Material failure)	-
Tensile shear bond strength: Glass/Acrylic	MPa	-	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/Polycarbonate	MPa	-	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/Glass epoxy	MPa	-	(Material failure)	-	-	-	-	(Material failure)	-
Tensile shear bond strength: Glass/ABS	MPa	-	0.2	-	-	-	-	3.5	-
Tensile shear bond strength: Glass/LCP	MPa	-	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/Iron	MPa	7.5	-	5.0	8.8	-	3.0	-	(Material failure)
Tensile shear bond strength: Glass/Aluminum	MPa	6.0	-	-	-	-	3.0	-	-
Tensile shear bond strength: Glass/Stainless steel	MPa	7.8	-	-	-	-	5.0	-	-
Tensile shear bond strength: Polycarbonate/Polycarbonate	MPa	7.5	1.7	-	-	4.1	-	3.8	-
Remark(s)									

	3062D	3062F	3062H	3062 I	3062K	3062P	3062Q	3062S	3062U	3065E	3066
	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate
	Anaerobic Primer	Anaerobic Primer	Anaerobic Primer	Anaerobic Primer	Anaerobic Primer	Anaerobic Primer	Anaerobic Primer	Anaerobic Primer	Anaerobic Primer	Anaerobic Primer	Anaerobic Primer
	Moisture resistance Impact strength Low viscosity	Flexibility Moisture resistance Impact strength	Flexibility Moisture resistance Impact strength	Hard / Tough Moisture resistance Impact strength	Flexibility Moisture resistance Impact strength	Flexibility Moisture resistance Impact strength	Hard / Tough	Hard / Tough Metal/glass adhesion	Flexibility	Flexibility Surface adhesion Low outgassing	Hard Chemical resistance
	Metallic joint Electrical parts bonding	Motor magnets Sheet coil Adhesion of different materials	Motor magnets Piezoelectric element Adhesion of different materials	Motor magnets Rotary transformer Piezoelectric element	Metallic joint Adhesion of different materials	Stator coil Resin Magnets Adhesion of different materials	Liquid crystal panel pin lead fixing General-purpose adhesion	Motor magnets Metal/glass bonding	Motor magnets Adhesion of different materials	Adhesion of different materials	Metallic joint Electrical parts bonding
	Blue	Light yellow	Light yellow	Light yellow	Light yellow	Light yellow	Green	Light yellow	Light yellow to Brown	Light yellow	Light yellow
	-	4.0	2.0	2.5	7.0	15.0	12.0	8.0	1.0	7.0	-
	150	-	-	-	-	-	-	-	-	-	230
	1.1	1.08	1.07	1.07	1.05	1.07	1.06	1.05	1.07	1.05	1.13
	35	35	30	35	70	35	20	30	30	30	30
	-	-	-	-	-	-	-	-	-	-	-
	D80	D45	D80	D70	D65	D35	D65	D70	D70	D65	D90 to 95
	2.6×10^{12}	-	-	-	-	-	-	-	-	5.8×10^{10}	1.3×10^{13}
	-	-	-	-	-	-	-	-	-	24.2	17.7
	-	-	-	-	-	-	-	-	9.8	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	8.8	-	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
	18.0	-	(Material failure)	-	(Material failure)	4.4	4.4	10.0	12.7	12.0	-
	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-
	9.7	-	3.3	-	3.9	3.7	8.8	10.0	-	-	-
		Shear bond strength Iron: 10MPa				3062C with more viscosity					

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

UV Curing Resin

Property Table

Product name		3067	3067B	3067C	3068B	3069F	3075	3081J	3084
Characteristics	Unit								
Main component		Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate
Additional curability		Anaerobic Primer	Anaerobic Primer	Anaerobic Primer	Anaerobic Primer	Anaerobic Primer	-	-	-
Features		Hard Chemical resistance	Hard Chemical resistance	Hard Chemical resistance	Flexibility	Hard / Tough Metal/glass adhesion	Clear/ Transparent Soft / Tough Crack resistance	Rubber elasticity Heat resistance / Freeze resistance	High specific gravity Shape retention
Main usages		Metallic joint Electrical parts bonding	Metallic joint Electrical parts bonding	Metallic joint Electrical parts bonding	Metallic joint Electrical property bonding	Motor magnets Metal/glass bonding	Soft coating for nameplates/ accessories Electronic device coating	CIPG for electric parts Elastic sealing application	Balance correcting agent for motors, polygon mirrors, etc.
Appearance		Light yellow	Dark blue	Turbid white	Red	Milky white	Colorless	Light yellow	Gray
Viscosity	Pa-s	-	-	4.0	-	55.0	-	95.0	100
	mPa-s	600	120	-	280	-	700	-	-
Specific gravity		1.18	1.13	1.17	1.07	1.20	1.07	1.11	2.19
Standard curing conditions	kJ/m^2	30	30	30	30	30	27	45	30
Physical characteristics after curing: Hardness		-	-	-	-	-	A49	A27	-
		D90	D90 to 95	D88	D75	D90	-	-	D90 to 95
Physical characteristics after curing: Volume resistivity	Ω/m	7.6×10^{12}	7.8×10^{12}	7.6×10^{12}	2.1×10^{11}	6.4×10^{12}	2.2×10^{9}	1.2×10^{10}	9.8×10^{12}
Physical characteristics after curing: Dielectric breakdown strength	kV/mm	28.4	-	-	-	33.0	-	19.0	18.3
Tensile shear bond strength: Glass/Glass	MPa	(Material failure)	-	-	-	8.9	7.0	-	(Material failure)
Tensile shear bond strength: Glass/Acrylic	MPa	-	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/Polycarbonate	MPa	-	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/Glass epoxy	MPa	(Material failure)	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/ABS	MPa	(Material failure)	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/LCP	MPa	-	-	-	-	-	-	-	-
Tensile shear bond strength: Glass/Iron	MPa	4.9	4.9	7.0	-	8.9	-	-	(Material failure)
Tensile shear bond strength: Glass/Aluminum	MPa	-	-	-	-	3.0	-	-	-
Tensile shear bond strength: Glass/Stainless steel	MPa	-	-	-	-	8.0	-	-	-
Tensile shear bond strength: Polycarbonate/ Polycarbonate	MPa	1.6	-	-	-	-	4.0	-	5.1
Remark(s)				3067 with added thixotropy		High-thixotropic			

	3084E	3087B	3087G	3088		3088B		3111B	3113B	3114	3114B
	Acrylate	Acrylate	Acrylate	Acrylate		Acrylate		Epoxy resin	Epoxy resin	Epoxy resin	Epoxy resin
	-	-	-	Two-component mixture		Two-component mixture		-	-	-	-
	High specific gravity Shape retention	2P molding Optical part molding	2P molding Optical part molding	Soft Impact strength Short-time curing in shaded areas		Hard (Flexibility) Impact strength Short-time curing in shaded areas		Low moisture permeability	Surface curability Deep curability Low cure shrinkage	Surface curability Low cure shrinkage Low linear expansion	Surface curability Low cure shrinkage Low linear expansion
	Balance correcting agent for motors, polygon mirrors, etc.	Optical pick-up parts Optical part	Optical part	Sensor potting UV light impermeable material adhesion		Sensor potting UV light impermeable material adhesion		Main sealing for touch panel bonding	Optical pick-up parts Electrical parts bonding	Optical pick-up parts Electrical parts bonding Accurate adhesion of optical parts such as for digital cameras	Optical pick-up parts Electrical parts bonding Accurate adhesion of optical parts such as for digital cameras
	Milky white	Colorless	Light transparent yellow	Main agent Blue	Curing agent Pale green	Main agent Blue	Curing agent Pale green	White	Milky white	Grayish white	Grayish white
	30.0	-	-	5.0	5.0	5.0	5.0	9.0	15.0	26.0	50.0
	-	180	640	-	-	-	-	-	-	-	-
	1.46	1.06	1.05	1.02	1.02	1.04	1.04	1.18	1.13	1.54	1.62
	30	20	30	30		30		30	20	30	30
	-	-	-	A50		-		-	-	-	-
	D90	D80	D69	-		D55		D47	D72	D80	D82
	1.3×10^{12}	-	-	1.5×10^{11}		5.7×10^{11}		-	-	-	-
	32.0	-	-	-		-		-	-	-	-
	7.1	-	-	-		-		7.2	-	(Material failure)	3.8
	-	-	-	-		-		-	-	-	-
	-	-	-	-		-		-	-	-	-
	-	-	-	-		-		-	-	-	-
	-	-	-	3.4		6.4		-	-	-	-
	-	-	-	-		-		4.5	-	3.5	3.4
	-	-	-	-		-		-	-	-	-
	2.8	-	-	-		-		-	(Material failure)	-	-
	8.0	-	-	-		-		6.0	(Material failure)	-	-
	-	-	(Material failure)	5.2		6.4		-	3.4	-	-
		Refractive index 1.51 (cured material)	Refractive index 1.49 Abbe's number 49 (cured material)	Can be used for static mixers		Can be used for static mixers		Moisture permeability 40g/m²/24h (60°C×95%RH Film thickness 150μm)			High-viscosity type of 3114

* -: Unmeasured
* The value listed in the property table is an example of an actual measured value but is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

UV Curing Resin

Property Table

Characteristics	Unit	3114G	3118	3161	3163	3164D	3168	3168E	3170B
Main component		Epoxy resin	Epoxy resin	Silicone	Silicone	Silicone	Silicone	Silicone	Acrylate
Additional curability		-	-	Humidity	Humidity	Humidity	-	-	Visible Light
Features		Low cure shrinkage Low halogen content Highly thixotropic	Sealant for dye-sensitized solar cells	Rubber elasticity High and low temperature resistance	Rubber elasticity High and low temperature resistance	Rubber elasticity High and low temperature resistance Adhesion to engineering plastic	Soft Gel Damping materials	Soft Gel Damping materials	Thick film curing Adhesion
Main usages		CMOS parts Optical part	Main sealing of dye-sensitized solar cells	Electrical parts bonding / sealing / potting	Sealing for sliding portion of cleaner rotor Electrical parts bonding	Electrical parts bonding / sealing / potting	Damping agent for pick-ups	Damping agent for pick-ups	Transparent material that cuts UV light Electrical parts bonding
Appearance		White to Light yellowish white	White	Light yellow	Blue	Pale white	White	Red	Light yellow
Viscosity	Pa-s	9.2	86.0	3.0	12.0	10.0	15.0	90	1.8
	mPa-s	-	-	-	-	-	-	-	-
Specific gravity		1.12	1.33	0.98	1.02	1.00	1.01	1.02	1.04
Standard curing conditions	kJ/m^2	30	30+80℃ ×1h	30 (+Moisture-curing)	30 (+Moisture-curing)	30 (+Moisture-curing)	30	60	30
Physical characteristics after curing — Hardness		-	-	A30	A33	A32	Gel (Penetration: 100)	Gel (Penetration: 110)	-
		D82	D83	-	-	-	-	-	D70
Physical characteristics after curing — Volume resistivity	Ω/m	-	5.2×10^{13}	4.0×10^{12}	-	8.8×10^{12}	2.7×10^{12}	-	-
Physical characteristics after curing — Dielectric breakdown strength	kV/mm	-	-	12.3	-	30	-	-	-
Tensile shear bond strength — Glass/Glass	MPa	8.4	(Material failure)	6.0	3.9	4.0	-	-	(Material failure)
Tensile shear bond strength — Glass/Acrylic	MPa	-	1.2	-	-	-	-	-	-
Tensile shear bond strength — Glass/Polycarbonate	MPa	-	1.3	-	-	-	-	-	-
Tensile shear bond strength — Glass/Glass epoxy	MPa	7.1	3.3	-	-	4.8	-	-	-
Tensile shear bond strength — Glass/ABS	MPa	-	3.8	-	-	3.4	-	-	-
Tensile shear bond strength — Glass/LCP	MPa	4.2	2.9	-	-	1.9	-	-	-
Tensile shear bond strength — Glass/Iron	MPa	-	4.6	2.0	-	-	-	-	-
Tensile shear bond strength — Glass/Aluminum	MPa	-	3.1	0.66	-	0.5	-	-	(Material failure)
Tensile shear bond strength — Glass/Stainless steel	MPa	-	4.3	-	-	-	-	-	(Material failure)
Tensile shear bond strength — Polycarbonate/ Polycarbonate	MPa	3.2	0.58	0.96	-	2.6	-	-	5.0
Remark(s)				Alcohol-releasing type Reduced content of low-molecular siloxane	Alcohol-releasing type Reduced content of low-molecular siloxane	Alcohol-releasing type Reduced content of low-molecular siloxane	Reduced content of low-molecular siloxane	Color fades to light yellow after curing	

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

	3170D	3170E	3170F	3170J	3177
	Acrylate	Acrylate	Acrylate	Acrylate	Acrylate
	Visible Light	Visible Light	Visible Light	Visible Light	Visible Light Humidity
	Thick film curing Adhesion	Thick film curing Adhesion	Thick film curing Adhesion	Thick film curing Adhesion Heat cycle resistance	High and low temperature resistance Adhesion
	Transparent material that cuts UV light Electrical parts bonding	Transparent material that cuts UV light Electrical parts bonding	Transparent material that cuts UV light Electrical parts bonding	Transparent material that cuts UV light Electrical parts bonding	Light blocking materials Optical part Metal/plastic/ rubber bonding
	Light yellow	Light yellow	Light yellow	Light yellow	Yellow to Light yellow
	37.0	11.2	18.0	4.5	-
	-	-	-	-	1200
	1.06	1.10	1.06	1.04	1.06
	30	30	30	30	10
	-	-	-	-	-
	D54	D44	D50	D10	D84
	-	-	-	1.0×10^{11}	9.2×10^{13}
	-	-	-	29	24
	-	-	(Material failure)	-	-
	-	-	-	5.5	-
	-	-	-	4.7	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	5.4	-
	-	-	-	-	-
	-	-	(Material failure)	4.9	-
	-	-	(Material failure)	7.6	-
	-	-	6.9	4.5	5.8
					Hybrid instant adhesive

Electrically Conductive Resins · Anisotropically Conductive Pastes

Electrical and Electronics

These are conductive adhesives that have conductive materials that consist of electro conductive fillers evenly dispersed in the synthetic resin that work as an adhesive/binder.
By applying and curing at bonding locations requiring conductivity, they show excellent adhesion and conductivity.
Silver, nickel, carbon, etc., are used as electro conductive fillers, and epoxy resin, urethane resin, silicone resin, synthetic rubber, etc., which have good physical properties, are used as binders. There are various grades available.
They have excellent adhesion with various materials including metals, plastics, glass, and rubber, and can be used for bonding lead wires and electrodes, and for semiconductor elements and EMI shield parts.
In addition, anisotropically-conductive adhesives for screen printing can be used for multiple-contact simultaneous connection of displays such as LCDs.

3301E

This is a soft type conductive adhesive for crystal oscillators that uses silver as an electro conductive filler and uses heat-curing epoxy resin as a binder.
It has excellent heat aging property.
In addition to quartz crystal, it can also be used for spot conductive adhesion.
There are grades with different viscosities.

3301W

This is a highly-adhesive type solventless conductive adhesive that uses silver as an electro conductive filler and uses heat-curing epoxy resin as a binder.
It is used for adhesion of fixed surfaces for quartz crystal.
It can also be used for surface adhesion in addition to spot conductive adhesion.

3303B

This is a heat-resistant flexible type conductive adhesive for SMD-type crystal oscillators that uses silver as an electro conductive filler and uses heat-curing silicone resin as a binder.
It has flexibility because of the silicone resin, and has excellent stress relaxation property, and its characteristics are stable over a wide temperature range.
There are grades with different viscosities.

3303G (NEO)

This is a heat-resistant flexible type conductive adhesivefor SMD-type crystal oscillators that uses silver as an electro conductive filler and uses heat-curing silicone resin as a binder.
It has flexibility because of the silicone resin, and has excellent stress relaxation property, and its characteristics are stable over a wide temperature range.
It has excellent adhesion with gold electrodes and silver electrodes.
There are also grades that use slow-drying solvents.

3315E

This is a soft type conductive adhesive that uses carbon as an electro conductive filler and uses synthetic rubber as a binder.
Hot-melt adhesion is possible for dried films from which the solvent has dried after application.
It is used as a conductive adhesion for copy machine neutralization rollers, and as a ground for electronic devices.

3331L

This is a conductive adhesive with excellent adhesion that uses silver as an electro conductive filler and uses heat-curing epoxy resin as a binder.
It is used for adhesion of piezoelectric elements for SAW filters and as an electrode connection for quartz crystal.
It can also be used for spot conductive adhesion.
There is also a high-viscosity type and a soft type available.

3333C

This is a heat-resistant flexible type conductive adhesive for SMD-type crystal oscillators that uses silver as an electro conductive filler and uses heat-curing silicone resin as a binder.
It has flexibility and excellent stress relaxation property, and its characteristics are stable over a wide temperature range.
In addition, it is used as an electrode connection for small quartz crystals and SAW filter piezoelectric elements.

3350B

This is a solvent-vaporizing type conductive paint that uses silver as an electro conductive filler and uses acrylic resin as a binder.
It is quick-drying and forms a cured film.
It can be used for screw conductive locking, for electromagnetic wave shielding, for fixing of terminals, repairing of circuits, and for plating bases.
There is also a low-resistance type available.

3351C

This is a low-halogen, solvent-vaporization heating type conductive paint that uses nickel as an electro conductive filler and elastomer as a binder.
It can be used for ensuring conductivity by film forming and spot welding, and for electronic device grounds.

3373C, 3373F

This is an anisotropically-conductive adhesive for screen printing that uses gold plated particles as an electro conductive filler and uses synthetic rubber as a binder.
It is possible to form an anisotropically-conductive film directly on the substrate by screen printing, and multiple contact points can be connected at the same time via thermo compression bonding.
It is used for general connections such as for touch panels and flexible substrates, membrane switches, and film substrates for EL backlights.

3380

This is a solventless conductive adhesive that uses silver as an electro conductive filler and uses two-component room temperature curing epoxy resin as a binder.
It can be used for bonding electronic device electrodes and carbon contact points, and for conductive adhesion of ceramic and glass portions where soldering cannot be done.

3381

This is a solventless conductive adhesive that uses nickel as an electro conductive filler and uses two-component room temperature curing acrylic resin as a binder.
It is used for electronic device EMI shielding.
It is used for bonding conductive plastic materials for EMI shields.
It can also be used for conductive adhesion of large areas.

Conductive Resin Materials

Property Table

Product name / Characteristics	Unit	3301E	3301F	3301W	3303B	3303R	3303G (NEO)	3303Y	3315E
Binder		Epoxy-based	Epoxy-based	Epoxy-based	Silicone-based	Silicone-based	Silicone-based	Silicone-based	Synthetic rubber-based
Electro conductive filler		Silver-based	Silver-based	Silver-based	Silver-based	Silver-based	Silver-based	Silver-based	Carbon-based
Features		Soft type	Soft type	Solventless Surface adhesion-available	Heat resistance Flexible type	Excellent adhesion with gold/silver electrodes	Excellent adhesion with gold/silver electrodes	Excellent adhesion with gold/silver electrodes (slow-drying type)	Can be used for conductive hot melting
Main usages		Quartz crystal	Quartz crystal	Adhesion of fixed surfaces for quartz crystal	SMD-type crystal oscillator / Transmitting element / SAW filter	SMD-type crystal oscillator / Transmitting element / SAW filter	SMD-type crystal oscillator / Transmitting element / SAW filter	SMD-type crystal oscillator / Transmitting element / SAW filter	Conductive adhesion for copy machine neutralization rollers Electronic device ground
Appearance		Silver	Silver	Silver	Silver	Silver	Silver	Silver	Black
Viscosity	Pa-s	32.0	23.0	35.0	21.0	50.0	40.0	40.0	0.6
Specific gravity		3.10	3.00	3.20	2.30	-	-	-	0.90
Standard curing conditions		130°C/40 min or 150°C/30 min	130°C/40 min or 150°C/30 min	120°C/60 min or 170°C/15 min	150°C/60 min or 170°C/30 min	180°C/60 min	180°C/60 min	180°C/60 min	80°C/30 min
Physical characteristics after curing: Volume resistivity	Ω/m	3.0×10^{-6}	3.0×10^{-6}	1.6×10^{-6}	1.0×10^{-5}	2.8×10^{-6}	2.5×10^{-6}	2.7×10^{-6}	4.3×10^{-2}
Physical characteristics after curing: Pencil scratch hardness		4H	4H	5H	Softer than 6B	Softer than 6B	Softer than 6B	Softer than 6B	-
Physical characteristics after curing: Chip bonding strength (Ceramic chip/Glass)	MPa	-	-	-	2.9	3.5	3.0	2.5	-
Remark(s)									Flexibility

	3331L	3331M	3333C	3350B	3350C	3351C
	Epoxy-based	Epoxy-based	Silicone-based	Acrylic resin-based	Acrylic resin-based	Elastomer synthetic resin
	Silver-based	Silver-based	Silver-based	Silver-based	Silver-based	Nickel-based
	Excellent adhesion	Excellent adhesion	Stress relaxation property (low elasticity)	Quick-drying Cured material	Low resistance	Low halogen content
	SAW filter piezoelectric element / Quartz crystal	SAW filter piezoelectric element / Quartz crystal	Conductive adhesive for SMD-type crystal oscillator Small crystal oscillator / Transmitting element / SAW filter	Spot fixing Screw conductive locking Circuit repair Electromag-netic wave shielding	Spot fixing Screw conductive locking Circuit repair Electromag-netic wave shielding	Ensuring conductivity by film forming / spot welding Electronic device ground
	Silver	Silver	Silver	Silver	Silver	Gray
	20.0	70.0	30.0	2.5	1.0	3.0
	-	-	-	1.90	2.20	1.5
	150°C/30 min	150°C/30 min	180°C/60 min	25°C/4h or 60°C/1h	25°C/24h or 60°C/1h	90°C/60 min
	0.7×10^{-6}	0.8×10^{-6}	8.0×10^{-6}	2 to 3×10^{-6}	2.0×10^{-6}	8.0×10^{-5}
	4H	8H	Softer than 6B	3H	3H	-
	17.1	10.9	1.4	-	-	-

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Anisotropically Conductive Pastes

Property Table

Product name / Characteristics	Unit	3371	3373C	3373F	3373G
Binder		Synthetic rubber-based	Synthetic rubber-based	Synthetic rubber-based	Synthetic rubber-based
Electro conductive filler		Gold plated particles	Gold plated particles	Gold plated particles	Silver-plated particle
Features		For screen printing Anisotropically-conductive adhesive L/S=0.2mm compatible	For screen printing Anisotropically-conductive adhesive	For screen printing Anisotropically-conductive adhesive	For screen printing Anisotropically-conductive adhesive
Main usages		Electrical connection, bonding between electrical circuits	Electrical connection, bonding between electrical circuits	Electrical connection, bonding between electrical circuits	Electrical connection, bonding between electrical circuits
Appearance		Gray	Light yellowish green	Grayish white	Grayish white
Viscosity	Pa-s	63.0	75.0	60.0	60.0
Specific gravity		1.01	1.00	1.10	1.07
Film formation (drying) conditions		100°C/10 to 20 min or 120°C/5 to 10 min			
Crimping conditions		140°C×3MPa×10s			
Physical characteristics after curing: Connection resistance	Ω	1 or less	1 or less	1 or less	1 or less
Physical characteristics after curing: Hardness		-	-	-	-
Remark(s)		Aromatic solvent	Isophorone Toluene	Aromatic solvent	Aromatic solvent

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Product name / Characteristics	Unit	3380		3381	
Binder		Epoxy-based		Acrylic resin-based	
Electro conductive filler		Silver-based		Nickel-based	
Features		Two-component room temperature curing Solventless		Two-component contact curing	
Main usages		Electrode/carbon contact point for various electrical devices / Conductive adhesion of yokes and ferrites		Electronic device EMI shielding Bonding of conductive plastic for EMI shielding Conductive adhesion for large areas	
Appearance		Main agent: Silver	Curing agent: Grayish yellow	Agent A: Black	Agent B: Black
Viscosity	Pa-s	70.0	120	100	90.0
Specific gravity		3.30	2.68	2.80	2.70
Standard curing conditions		25°C/5 days or 60°C/24h or 80°C/1h		25°C/15h or 60°C/30 min	
Physical characteristics after curing: Volume resistivity	Ω/m	8.0×10^{-6}		$7\text{ to }10\times10^{-5}$	
Physical characteristics after curing: Pencil scratch hardness		3H		H	
Physical characteristics after curing: Chip bonding strength (Ceramic chip/Glass)	MPa	-		-	
Remark(s)		Compounding ratio 2:1		Compounding ratio 1:1 Toluene	

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

High Temperature Resistant Inorganic Adhesives

Electrical and Electronics | Industrial Materials and Public Works

These are single-component heat resistant adhesives that use ceramics and inorganic polymers as the main components.
They have a heat resistance of 1000°C and higher, and have excellent adhesion with inorganic substances such as ceramics, glass, and metals.
In addition to heat-resistant adhesion usages, they can also be used for filling adhesion and coating of sensors and elements, for oxidation-preventing coatings of metals, and as binders for heat-resistant molding.

3713B

This is a single-component heat-curing type high temperature resistant inorganic adhesive with a heat resistance of up to 1300°C.
It has excellent adhesion for inorganic substances such as ceramics, glass, and metals, and can be used for heat-resistant fixing of bolts and for oxidation-preventing coating of metals.
It has low viscosity and adequate thixotropic properties, so it is ideal as a binder for heat-resistant moldings.

3732

This is a single-component heat-curing type high temperature resistant inorganic adhesive that can cure at room temperature and has a heat resistance of up to 1400°C.
It has good drying performance due to the alcohol based solvent, it forms a clean cured material with few bubbles, and it has no acidic or alkaline properties, so there is no corrosiveness, which allows it to be used safely.
The cured material has excellent water resistance and electric insulation, so there is virtually no degradation of insulation property even when there is humidity.
In addition to heat-resistant adhesion usages, it can also be used for filling adhesion and coating of sensors and elements, for oxidation-preventing coatings of metals, and as a stain preventing coating against carbon and sludge.

Property Table

Product name / Characteristics		Unit	3713B	3732
Main component			Alumina	Alumina
Feat ures			Low viscosity Thixotropic properties Strong adhesiveness	Water resistance Good electric insulation Excellent airtightness
Appearance			White	White
Viscosity		Pa-s	8.0	11.0
Specific gravity			2.00	3.00
pH			12	-
Solid content		%	66.0	91.0
Standard curing conditions			150℃/30 min	100℃/30 min
Physical characteristics after curing	Mohs' hardness		5 to 6	1
	Heat-resistant temperature	℃	1300	1400
	Linear expansion coefficient	1℃	8×10^{-6}	8×10^{-6}
	Volume resistivity	Ω/m	5×10^{7}	1×10^{12}
	Thermal conductivity	W/m-K	1.28	2.55
Tensile shear bond strength (Iron)		MPa	4.9	2.8
Chemical resistance	Water	(25℃)	-	◎
	5% sodium hydroxide	(25℃)	-	△
	5% hydrochloric acid	(25℃)	-	◎
	Toluene	(25℃)	-	◎
Remark(s)				It can cure at room temperature

* - : Unmeasured
* The value listed in the property table is an example of an actual measured value but is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Structural Adhesives
High Peel Strength 2 Part Rapid Curing Elastic Adhesives
Highly Resistant 2 Part Rapid Curing Elastic Adhesives

Transportation Equipment | Industrial Materials and Public Works

The 3920 Series adhesives have a good balance of shear bond strength and peel bond strength, containing acrylate as the main component.
They have excellent adhesion for a wide range of materials including various metals and plastics, and can be used as structural adhesives.
3955 forms a rubber-like elastic cured material, and it is an adhesive with excellent durability and conformability to impact.

3921/3926

This is a two-component structural adhesive that uses acrylate as the main component.
It is a contact-curing type, so it does not need to be completely mixed.
It has a short set time, so handling is possible after 5 minutes, and it reaches practical strength after about 15 minutes.
It has both a high shear bond strength and high peel strength making it ideal for adhesion of structures.
It can be used for various fields such as electrical parts transportation equipment, and construction materials.

3923/3928

This is a two-component structural adhesive that uses acrylate as the main component.
It is a contact-curing type, so it does not need to be completely mixed.
It has a short set time, so handling is possible after 10 minutes, and it reaches practical strength after about 30 minutes.
It has both a high shear bond strength and high peel strength, making it ideal for adhesion of structures.
It can be used for various fields such as electrical parts transportation equipment, and construction materials.
It has excellent heat resistance, so the bonding strength does not degrade even when left at 120°C for 30 days.

3955

This is a two-component elastomeric adhesive that uses acrylate as the main component.
It cures by mixing Agent A and Agent B at a 1:1 ratio.
It has a short set time, so handling is possible after 10 minutes, and it reaches practical strength after about 3 hours.
After curing, it forms an elastomeric rubber-like cured material with excellent heat resistance and moisture resistance, making it ideal for bonding parts that require durability, stress relaxation property, vibration absorption, and conformability.
It can be used for bonding and fixing various electrical parts, sensors, and motors for automobiles and other machines.

Property Table

Product name / Characteristics		Unit	3921	3926	3923	3928
Features			Contact-curing type High shear bond strength / High peel strength adhesive Excellent adhesiveness for a wide range of materials		Contact-curing type High shear bond strength / High peel strength adhesive Excellent adhesiveness for a wide range of materials Excellent heat resistance	
Main component			Acrylate	Acrylate	Acrylate	Acrylate
Appearance			Red	Blue	Pale white	Green
Viscosity		Pa-s	5.1	5.1	3.0	3.0
Specific gravity			1.06	1.10	1.0	1.0
Compounding ratio (Mass ratio)			100:100 (Usage method is contact curing)		100:100 (Usage method is contact curing)	
Set time			Within 5 min		10 to 12 min	
Standard curing conditions			25°C×24 hours (Practical strength after about 1 hour)		25°C×24 hours (Practical strength after about 30 min)	
Tensile shear bond strength	Iron	MPa	22.1		26.5	
	Aluminum	MPa	16.9		16.7	
	Stainless steel	MPa	21.6		23.5	
	Polycarbonate	MPa	-		14.7 (Material failure)	
	ABS	MPa	4.0		2.9	
	Acrylic	MPa	3.0		2.9	
	Nylon	MPa	1.9		1.0	
Peel strength	Iron	kN/m	3.5		2.7	
	Aluminum	kN/m	-		3.1	
Remark(s)						

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Practical strength = 50% of the strength when curing at 25°C×24h is considered 100%
* Before using, confirm the adequacy and safety for the relevant application.

Structural Adhesives, High Peel Strength 2 Part Rapid Curing Elastic Adhesives and Highly Resistant 2 Part Rapid Curing Elastic Adhesives

Property Table

Product name			3955	
Characteristics		Unit		
Features			Rubber-like elastic cured material Excellent heat resistance Excellent moisture resistance	
Main component			Acrylate	Acrylate
Appearance			Light blue	Light yellow
Viscosity		Pa-s	2.4	2.4
Specific gravity			1.04	1.04
Compounding ratio (Mass ratio)			100:100	
Set time			5 to 15 min	
Standard curing conditions			25°C×24h (Practical strength after 3 hours)	
Physical characteristics after curing	Hardness		A65	
	Elongation rate	%	130	
	Tensile strength	MPa	5.2	
Tensile shear bond strength	Iron	MPa	6.6	
	Aluminum	MPa	5.6	
	PBT	MPa	2.4	
	PPS	MPa	2.2	
	ABS	MPa	-	
	Acrylic	MPa	-	
	Nylon	MPa	2.9	
Remark(s)				

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Antirust Lubricants/Molybdenum Anti-Seizing Lubricants

Transportation Equipment | Industrial Materials and Public Works | Automotive Aftermarket

These rust-preventing lubricants mainly contain rust-preventing oil and lubricating agents, so rust is prevented by blocking water and oxygen from metallic surfaces. The oil films and the lubricating agents help ensure slipperiness for lubricating capability.
There are various grades available for general rust-preventing lubrication, heavy-load lubrication, galling prevention, and specially formulated products for automobile parts which provide a wide range of penetrability, oil film strength, base oil heat resistance, and type of lubricating agent, etc.
Other products include a film-type vapor phase corrosion inhibitor for creating a rust-preventing atmosphere, and a rust-preventing lubricant for food.

1801B, 1802B

This is a general rust-preventing lubrication spray with excellent penetrability.
By simply spraying, it penetrates to necessary locations providing rust prevention and lubricity.
It also penetrates through rust and dirt, making it easy to remove rust, and it is helpful when loosening bonded screws.
There is also a can type available.

1804

This is an odorless general rust-preventing lubrication spray with excellent penetrability.
By simply spraying, it penetrates to necessary locations providing rust prevention and lubricity.
It also penetrates through rust and dirt, making it easy to remove rust, and it is helpful when loosening bonded screws.
There is virtually no influence on rubber and plastic, so it can be used for a wide range of materials.

1805

This is a grease type general rust-preventing lubrication spray.
By spraying, it forms a grease type soft film that strongly adheres to metallic surfaces. It has excellent weather resistance and water resistance, resulting in long-term rust prevention, so it can be used as rust prevention for outdoor parts.
It has high oil film strength, excellent lasting effect on sliding surfaces, and highly durable lubricity.

1807

This is a high-quality rust-preventing lubrication spray with excellent penetrability and good load-resistant lubricating capability.
By simply spraying, it penetrates to necessary locations providing rust prevention and lubricity.
It also penetrates through rust and dirt, making it easy to remove rust, and it is helpful when loosening bonded screws.
It contains organic molybdenum with high lubrication, so it can fill in the fine gaps of sliding portions, and it has excellent lubricity.

1809B

This is a odorless grease type rust-preventing lubricant with excellent load-resistant lubricating capability. It forms a soft film when applied.
It contains organic molybdenum with high lubrication, so it can fill in the fine gaps of sliding portions, and it has excellent lubricity with high load resistance.
It also has a good lasting effect on sliding surfaces due to its high oil film strength, so it has durability for long-term usage.

1810C

This is an odorless dry powder lubrication spray.
It uses fluorine powder as the main component, so there is no stickiness after spraying.
There is no influence on plastic, so it can be used for a wide range of materials including metals and wood.
It has excellent lubricity for a wide temperature range from high temperatures to low temperatures.

1815D

This is a grease type rust-preventing lubrication spray with excellent rust prevention and heavy load-resistant lubricating capability.
It has excellent extreme pressure property and very good lubricity even under heavy loads. It also has good rust prevention and excellent durability for long-term corrosion prevention, and it has good water resistance so that good lubricity can be maintained even when water enters.
It can be used in severe environments such as outdoor facilities, and can be used as rust-preventing lubrication for construction machines.

1816B

This is a rust-preventing lubrication spray for chains.
It has excellent penetrability, lubricity, and rust prevention for chain pins and bushes, and it prevents elongation and abrasion in addition to preventing rust for chains.
It has proper viscosity for a lasting effect on chains during high-speed rotation, and there is less dust attachment because it has low stickiness. The formed film is flexible even at low temperatures so that performance can be maintained.
It can be used for the metal chains of automobiles, motorcycles, and agriculture equipment, etc.

1821

This is a very safe rust-preventing lubrication spray that uses materials certified by the Food Sanitation Act.
It has antibacterial properties and can be used for food machinery.
It also has excellent penetrability. By simply spraying, it penetrates to necessary locations providing rust prevention and lubricity.
It also penetrates through rust and dirt, making it easy to remove rust, and it is helpful when loosening bonded screws.

1855, 1856

This is a silicone grease-based rust-preventing lubricant that is mainly used for automobile maintenance.
It has a wide operating temperature range, and has excellent thermal oxidative stability, water resistance, and brake oil resistance. It can be used for brakes, suspension, transmissions, and various other parts because there is no negative influence on rubber or plastics.
There is a tube type and a spray type available.

1860B

This is a silicone grease-based, rust-preventing lubrication spray for vehicle brakes.
It has excellent high temperature lubricity because it contains a solid lubricant with a heat resistance of 900°C. Flowing is suppressed at high temperatures since the dropping point is above 280°C.
It has high adhesion to metal parts because it is highly sticky, and it can reduce resonant sound. It also has excellent lubricity for preventing abrasion at metal sliding portions. There is no negative influence on rubber or plastic.
It is a disposable size 15ml aerosol.

1878

This is a rust prevention sheet that is impregnated with a vapor phase corrosion inhibitor which vaporizes at room temperature for creating a rust-preventing atmosphere.
There is a roll type and bag type available. It can provide long rust resistance by simply wrapping or bagging metal parts.
As it vaporizes the rust-preventing atmosphere is distributed throughout even to small portions. In addition, it is not necessary to clean the parts taken out of the sheet because the rust prevention agent quickly vaporizes.
It is a two-layer film. The external layer has a barrier effect, so the effect lasts a long time.

1901, 1910

This is a grease-type galling-preventing lubricant that uses molybdenum disulfide as the base.
It has a low coefficient of friction, high lubrication, and extreme pressure property, so it has excellent lubricity for heavy loads, and can prevent abrasion, galling and seizure of parts.
It has excellent heat resistance and can be used at up to 400°C (for galling prevention of screws and pins, up to 800°C).
There is a can type and an aerosol type available.

1920

This is a grease-type lubricant for gas valves and cocks that contains molybdenum disulfide mixed with a stable base oil for city gas and LP gas.
It has excellent wear resistance and sealability to prevent chattering at high temperatures.
There is no negative influence on rubber or plastic.
It is used for lubrication and sealing of city gas and LP gas valves and cocks.

1925

This is a spray type grease for brake maintenance for vehicle brake and rubber.
It has excellent lubricity because it contains molybdenum disulfide.
It can be used both as a grease for brakes and as a grease for brake rubbers. It has excellent lubricity and rust prevention.
It can be used safely with various rubbers and plastics for brake equipment because it has no negative influence on these.

1930

This is a lubrication spray for preventing noise and abrasion for constant-velocity joint ball bearings of vehicle drive shafts.
It uses molybdenum disulfide as the main component, it has high lubricity for reducing noise at bearing portions, and it is used as an abnormal sound-preventing agent and abrasion-preventing agent.

Antirust Lubricants/Molybdenum Anti-Seizing Lubricants

Property Table

Product name		1801B	1802B	1804	1805	1807	1809B	1810C	1815D
Characteristics	Unit								
Applications		Penetrating lubrication Water repellency and rust prevention Loosening of screw Rust removal	Penetrating lubrication Water repellency and rust prevention Loosening of screw Rust removal	Penetrating lubrication Water repellency and rust prevention Loosening of screw Rust removal	Rust-preventing lubrication Long-term corrosion prevention	Sliding portion lubrication Penetrating lubrication Water repellency and rust prevention Loosening of screw	Sliding portion lubrication Water repellency and rust prevention Galling prevention	Sliding portion dry lubrication	Rust-preventing lubrication in areas near the ocean and for outdoor facilities Heavy-load environment rust-preventing lubrication
Features		Excellent penetrability	For equipment Excellent penetrability	Odorless No damage to plastics	Grease high oil film strength Excellent adhesion Excellent water resistance No damage to plastics	Contains organomo-lybdenum Excellent load resistance No damage to plastics	Contains organomo-lybdenum Excellent load resistance and resistance to galling Low friction	Dry powder lubrication No stickiness because fluorine powder is main component	Grease Excellent water resistance Strong rust prevention High lubrication Heavy load resistance
Appearance		Brown	Brown	Yellow-brown	Reddish brown	Light brown	Yellow-brown	White	Light brown
Viscosity	mPa-s	3.8	3.8	5	400	2.7	880		Paste
Specific gravity		0.80	0.80	0.80	0.85	0.80	0.92	1.40	-
Solid content	%	33	33	28	70	22	97	100	-
Rust prevention capability		○	○	○	○	○	△	×	○
Lubricity		○	○	○	○	○	○	○	○
High speed resistance and load resistance		○	○	△	○	◎	△	○	○
Penetrability		○	○	○	×	◎	×	×	×
Heat resistance		△	△	△	○	○	○	○	○
Plastic compatibility	Polycarbonate	○	○	○	○	○	○	-	○
	ABS	○	○	○	○	○	○	-	○
	Polystyrene	△	△	○	○	○	×	-	○
	Hard PVC	△	△	○	○	○	×	-	-
	Overall evaluation	△	△	○	○	○	△	○	○
Remark(s)		Aerosol Can Liquid type available	Aerosol Can Liquid type available	Aerosol Can Liquid type available	Aerosol	Aerosol	Can Liquid type	Aerosol	Aerosol

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Antirust Lubricants/Molybdenum Anti-Seizing Lubricants

Property Table

Product name / Characteristics	Unit	1816	1816B	1821	1851	1855	1856	1860	1860B
Applications		For metal chains Rust-preventing lubrication	Rust-preventing lubrication for metal chains, rotating parts, and sliding portions	Rust-preventing lubrication for food machinery Loosening of screw Rust removal	Preventing vehicle door squeaking Weather strips Rubber lubrication, freeze prevention Rubber part lubrication	Vehicle parts Rust-preventing lubrication for brakes, suspension, transmissions, etc.	Vehicle parts Rust-preventing lubrication for brakes, suspension, transmissions, etc.	Brake grease Brake Lubrication for metal contact portions / Preventing resonance and squealing	Brake grease Brake Lubrication for metal contact portions / Preventing resonance and squealing
Features		For chains Excellent penetrability for pins and bushes Low stickiness Good lasting effect for chains Excellent low-temperature performance	For chains Excellent penetrability for pins and bushes Low stickiness Good lasting effect for chains Excellent low-temperature performance	Can be used for food machinery Has antibacterial action Excellent penetrability	Low viscosity Excellent heat resistance, freeze resistance, and weather resistance due to silicone oil No damage to rubber, plastic, or paint	Silicone grease heat resistance, Excellent freeze resistance Excellent brakes oil resistance and water resistance No damage to rubber, plastic, or paint	Aerosol version of 1855	Low flow at high-temperatures due to a high dropping point of above 280°C Excellent high temperature lubricating capability No damage to rubber, plastic, or paint	Low flow at high-temperatures due to a high dropping point of above 280°C Excellent high temperature lubricating capability No damage to rubber, plastic, or paint
Appearance		Blue	Yellow	Turbid white	Colorless	Beige	Beige	White	White
Viscosity	mPa-s	80	80	20	1000	Paste	Paste	Paste	Paste
Specific gravity		0.81	0.81	0.95	0.97	0.97	0.97	-	-
Solid content	%	70	70	97.1	100	-	100	99.7	99.7
Rust prevention capability		○	○	○	△	△	△	○	○
Lubricity		○	○	○	△	△	△	○	○
High speed resistance and load resistance		○	○	○	×	×	×	-	-
Penetrability		○	○	○	×	×	×	-	-
Heat resistance		-	-	-	○	○	○	○	-
Plastic compatibility: Polycarbonate		-	-	×	-	○	○	-	-
Plastic compatibility: ABS		-	-	×	-	○	○	-	-
Plastic compatibility: Polystyrene		-	-	×	-	△	△	-	-
Plastic compatibility: Hard PVC		-	-	×	-	-	-	-	-
Plastic compatibility: Overall evaluation		×	×	×	○	○	○	○	○
Remark(s)		Aerosol	Aerosol	Aerosol	Aerosol	Tube	Aerosol	Tube	Aerosol

	1862	1878	1901	1910	1920	1925	1927B	1930
	For screws Rust-preventing lubrication / Axial force stabilization	Vapor phase corrosion inhibitor Storage and rust prevention of metal parts	Galling and seizure prevention of mechanical parts Abrasion and chattering prevention	Galling and seizure prevention of mechanical parts Abrasion and chattering prevention	Galling prevention Lubrication	Rubber grease Maintenance and rust-preventing lubrication for brake parts and rubber parts	Engine oil additive Engine lubrication Coating	Prevention of noise and abrasion for vehicle drive shaft bearings
	Lubricating capability for screws Axial force stabilization	Rust prevention by vaporizing of the rust-preventing agent contained in the film Rust prevention just by wrapping/ bagging	Contains molybdenum disulfide High lubricity Heavy load resistance High heat resistance, can be used at 400℃ (for galling prevention, 800℃)	Contains molybdenum disulfide Aerosol	Contains molybdenum disulfide Excellent gas resistance	Contains molybdenum disulfide Excellent lubricating capability No damage to rubber or plastic	Contains organomo-lybdenum Lubricity for metal friction surfaces Forms an abrasion-resistant coating film that reduces abrasion and power loss	Contains molybdenum disulfide Prevention of noise and abrasion by coating effect
	Light yellow	Roll / Bag	Black	Black	Black	Dark gray	Green	Black
	185	-	Paste	25	-	1.1	-	2.5
	0.82	-	1.40	1.60	0.90	0.91	0.90	0.88
	-	-	96.5	-	99.0	31.0	-	-
	○	○	○	○	-	-	-	-
	○	-	○	○	○	○	○	○
	-	-	◎	◎	○	○	-	○
	-	-	×	×	×	×	-	×
	-	-	◎	◎	-	◎	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	×	○	×	×	-	○	-	-
			Can Paste	Aerosol	Can Paste	Aerosol	Can Liquid type	Aerosol

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Electrical Contact Point Protectors

Electrical and Electronics

These are electrical contact point protectors that are oil or grease agents for rust prevention, lubrication, and protection at electric contacts.
By applying these, it is possible to reduce contact resistance due to their lubricity, which can prevent noise and abrasion from sliding, and prevent sulfuration and oxidation corrosion by their barrier properties. They also have a cleaning effect that can soften and remove adsorbates and wear debris attached to contact surfaces, and prevent surface leakage current.
They can be used at contact points such as connectors, sockets, slide switches, toggle switches, and DIP switches.

2501L, 2501S

This is a general use grade with excellent lubricity.
An oil type and an aerosol type are also available.

2585G

This has excellent plastic compatibility.
It is for lubrication of plastic parts such as ABS and polycarbonates.
This is a grease-type product.

Property Table

Product name / Characteristics			Unit	2501L	2501S	2585G
Appearance				Colorless	Colorless	White
Viscosity			Pa-s	0.45	0.55	-
Specific gravity				1.00	1.00	0.86
Solid content			%	99 or higher	99 or higher	99 or higher
Features				Lubricity	Aerosol version of 2501L	Lubrication of plastic parts
Applications	Slide switch	Light load (0 to 30g)		×	×	×
		Medium load (30 to 50g)		△	△	×
		Heavy load (50g or higher)		×	×	×
	IC socket			○	○	×
	Connector			○	○	×
	DIP switch			○	○	×
	Toggle switch			○	○	×
	Rotary switch			×	×	×
	Power switch			△	△	×
	Tuner			×	×	×
	Volume			×	×	×
	Terminal			○	○	×
	Mechanical lubrication			○	○	○
Characteristics	Oil film strength		Pa	687	687	932
	Coefficient of friction			0.15	0.15	0.15
	Feel			○	○	○
	Freeze resistance			○	○	△
	Fluidity resistance			△	△	○
Plastic compatibility	Polystyrene			×	×	○
	Polycarbonate			×	×	○
	Acrylic			×	×	○
	ABS			-	-	-
	Overall evaluation			×	×	○
Operating temperature range (Est.)			℃	0 to 80	0 to 80	-30 to 100
Remark(s)						

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Industrial Parts Cleaners

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

This is a series of cleaning agents for industrial use.
There is an aerosol type that is easy to use degreaser for mechanical parts, and a water-based diluted type that is environmentally-friendly.
There is also a cleaning agent for industrial use that can remove oil stains, etc., from factory floors.

2701

This is a water soluble type parts cleaner.
It is used as a 20-fold diluted solution.

2706

This is an aerosol type parts cleaner.
Degreasing is easy by simply spraying.
There is virtually no influence on rubber and plastic.

2730

This is a water soluble type parts cleaner.
It is used as a 30-fold diluted solution.
It also has a short-term rust prevention effect.
2750 is also available, which has low foamability and is good for spray cleaning.

2771D

This is a water soluble type neutral floor cleaning agent for industrial use.
It can easily remove oil stains from factory floors, etc.
It can be used as an undiluted solution or diluted up to 5 times depending on the dirtiness.

2777E

This is a water soluble type alkaline floor cleaning agent for industrial use.
It can easily remove oil stains from factory floors, etc.
It can be used as an undiluted solution or diluted up to 5 times depending on the dirtiness.

Property Table

Product name / Characteristics	Unit	2701	2702	2706	2706C	2706D	2706E	2730	2750
Applications		Mechanical part cleaning	Mechanical part cleaning	Mechanical part cleaning	Mechanical part cleaning	Cleaning and lubrication of pneumatic tools such as impact wrenches	Mechanical part cleaning	Mechanical part cleaning	Mechanical part cleaning
Features		Water-based parts cleaner Use 20-fold diluted solution	Non-hazardous material under the Fire Service Act	Quick-drying Ordinance on Prevention of Organic Solvent Poisoning not applicable	Quick-drying Ordinance on Prevention of Organic Solvent Poisoning not applicable	Maintenance possible by just connecting to the plug of an air tool and spraying the agent	Quick-drying Ordinance on Prevention of Organic Solvent Poisoning not applicable	Water-based parts cleaner Use 30-fold diluted solution	Water-based parts cleaner Low-foamability type so it is good for spray cleaning
Main component		Non-ionic surfactant	Alcohol-based solvent	Hydrocarbon-based solvent	Hydrocarbon-based solvent	Hydrocarbon-based mixed solvent Rust-preventing lubricant	Hydrocarbon-based solvent	Anion surfactant	Non-ionic surfactant
Appearance		Yellow	Colorless	Colorless	Colorless	Brown	Colorless	Colorless	Yellow
Specific gravity		1.03	0.87	0.67	0.67	0.81	0.67	1.03	1.10
Solid content	%	-	-	0.0	0.0	0.0	0.0	9.9	7.0
Material compatibility: Polypropylene		-	-	○	○	-	○	-	-
Material compatibility: Nylon		-	-	○	○	-	○	-	-
Material compatibility: Polyethylene		-	-	○	○	-	○	-	-
Material compatibility: Phenol		-	-	○	○	-	○	-	-
Material compatibility: ABS		-	-	○	○	-	○	-	-
Material compatibility: PPO		-	-	○	○	-	○	-	-
Material compatibility: Iron		-	-	○	○	-	○	-	-
Material compatibility: Aluminum		-	-	○	○	-	○	-	-
Material compatibility: Brass		-	-	○	○	-	○	-	-
Material compatibility: Copper		-	-	○	○	-	○	-	-
Material compatibility: Zinc		-	-	○	○	-	○	-	-
Remark(s)		18L can	18L can	Aerosol	Aerosol	Aerosol	Aerosol	18L can	18L can

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Cleaning agent

Property Table

Product name / Characteristics	Unit	2770	2771C	2771D	2777E
Applications		Floor cleaning	Concrete floor cleaning	Cleaning of concrete and resin flooring	Concrete floor cleaning
Features		-	Environmentally-friendly product Undiluted solution or diluted up to 5 times	Environmentally-friendly product Neutral type Undiluted solution or diluted up to 5 times	Environmentally-friendly product Neutral type Undiluted solution or diluted up to 5 times
Main component		Petroleum solvent	Non-ionic surfactant	Surfactant	Surfactant
Appearance		Colorless	Yellow	Colorless	Blue
Specific gravity		0.80	1.02	1.00	1.04
Solid content	%	-	12.7	7.6	12.9
Material compatibility: Polypropylene		-	○	-	-
Material compatibility: Nylon		-	-	-	-
Material compatibility: Polyethylene		-	○	-	-
Material compatibility: Phenol		-	-	-	-
Material compatibility: ABS		-	○	-	-
Material compatibility: PPO		-	-	-	-
Material compatibility: Iron		-	○	-	-
Material compatibility: Aluminum		-	○	-	-
Material compatibility: Brass		-	○	-	-
Material compatibility: Copper		-	-	-	-
Material compatibility: Zinc		-	-	-	-
Remark(s)		18L can	18L can	17L can	18L can

* - : Unmeasured
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* Before using, confirm the adequacy and safety for the relevant application.

Dilution-Use Solvents

Transportation Equipment | Industrial Materials and Public Works

This is a series of mixed solvents for dilution of solvent dispersion-type liquid gaskets, screw-locking agents, and adhesives, etc.
They can be used for viscosity adjustment, etc., mainly for target products.

2801

This is a mixed solvent that uses toluene and methyl ethyl ketone as the main components.
It is mainly used for dilution of solvent dispersion-type liquid gaskets and adhesives.

2802

This is a mixed solvent that uses toluene, methyl ethyl ketone, and ethyl acetate as the main components.
It is mainly used for dilution of solvent dispersion-type liquid gaskets.

2803

This is a mixed solvent that uses methanol and isopropyl alcohol as the main components.
It is mainly used for dilution of screw-locking agents.

2810

This is a mixed solvent that uses toluene and a glycol ether-based solvent as the main components.
It is mainly used for dilution of epoxy-resin paints.

Property Table

Product name / Characteristics	Unit	2801	2802	2803	2810	2811
Main component		Toluene Methyl ethyl ketone	Toluene Methyl ethyl ketone Ethyl acetate	Methanol Isopropyl alcohol	Toluene Glycol ether-based solvent Methyl isobutyl ketone	Xylene Ethyl benzene Trichloro-ethylene
Appearance		Colorless and transparent	Colorless and transparent	Colorless and transparent	Colorless and transparent	Colorless and transparent
Specific gravity		0.86	0.86	0.79	0.87	0.96
Flash point	°C	2	2	22	11	28.5
Applicable products		1102 1501 1521 4101 etc.	1111B 1103B 1105 1105B etc.	1401 4002 etc.	Epoxy-resin paint etc.	1184 etc.
Classification according to Fire Service Act		Category 4, class 1 petroleums (water-insoluble)	Category 4, class 1 petroleums (water-insoluble)	Category 4 Alcohols	Category 4, class 1 petroleums (water-insoluble)	Category 4, class 1 petroleums (water-insoluble)
Remark(s)						

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* Before using, confirm the adequacy and safety for the relevant application.

Electrical Part Protective Agents

Electrical and Electronics

This is a series of coating agents that are used for surface protection and static charge prevention of various materials.

2901

This is a silicone resin-based aerosol type electrical part-protection coating agent.
By simply spraying it to electronic circuit parts and electric insulating materials, it forms an insulating film with excellent heat resistance that protects parts from humidity, rust, sulfuric gas, etc.

2910B

This is an aerosol type antistatic agent with a surfactant as the main component.
By simply spraying, it prevents static on textiles, plastic products, and electronic products, and can prevent dust from attaching.
It is colorless and transparent, has no stickiness, and does not damage rubber or plastic.

2921D

This is a dust blower for industrial use that contains no CFCs or CFC alternative.
By simply spraying, it is possible to easily remove dust and dirt attached to computers, office equipment, photo-typesetters, cameras, lenses, etc., with its air pressure.
A special absorbent that is inside of the can prevents spraying liquid when used upside down.

Property Table

Product name / Characteristics		Unit	2901
Main component			Silicone resin
Features			Electrical part protective coating Hard coating film
Appearance			Colorless
Viscosity		mPa-s	35
Specific gravity			0.97
Solid content (Nonvolatile content)		%	35
Tack free time		min	15 (Thickness 20μ)
Complete drying time		h	24 (Thickness 40μ)
Physical characteristics after curing	Storage modulus (25°C)	MPa	-
	Volume resistivity	Ω/m	above 1×10^{13}
	Dielectric breakdown strength	kV/mm	above 60
	Water absorption rate (100°C×2h)	%	-
	Peel strength (Film formation/Glass)	N/m	-
Plastic compatibility	Polystyrene		×
	Polycarbonate		×
	Acrylic		×
	ABS		×
	Overall evaluation		×
Remark(s)			

* - : Unmeasured
* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Product name				2910B
Characteristics			Unit	
Main component				Surfactant
Features				Fast-acting type No damage to rubber or plastic
Appearance				Colorless
Specific gravity				0.79
Characteristics	Friction-charged electrostatic potential test		V	11
	Half life measurement experiment		sec	Less than 1
	Surface resistivity test	Polyester	Ω	1.49×10^{11}
		Nylon	Ω	1.22×10^{12}
Remark(s)				

* The value listed in the property table is an example of a measured value and is not the guarantee level.
* Before using, confirm the adequacy and safety for the relevant application.

Product name			2921D
Characteristics		Unit	
Main component			DME/ Carbon dioxide
Features			No CFCs Prevention of liquid spray when used upside down
Specific gravity			0.66
Plastic compatibility	Polystyrene		○
	Polycarbonate		○
	Acrylic		○
	ABS		○
	NR		○
	SBR		○
	CR		○
	NBR		○
Remark(s)			

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Hand Cleaners

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

This is a series of hand cleaners that have effective cleaning power for solidified paint and oil stains.

5903B

For removal of paint

This is a hand cleaner for removal of paint that does not apply to the PRTR Law and that contains benzyl alcohol as an alcohol-based solvent and silica scrubbing particles.

5904B

Moisturizing type

This is a cream type hand cleaner that contains lauryl betain as a moisturizing ingredient, making it very gentle on hands.
It meets the Uniform National Effluent Standards (0.1w/v% aqueous solution) determined in the Water Pollution Control Act (BOD/COD).

5905C

Product containing polyethylene scrubbing particles

This is a hand cleaner with excellent cleaning ability from physical force because it contains polyethylene particles with different grain diameters.
It meets the Uniform National Effluent Standards (0.1w/v% aqueous solution) determined in the Water Pollution Control Act (BOD/COD).
It also contains hyaluronic acid Na that has high moisture-retaining property.

5909

Product containing Natural scrubbing particles

This is a hand cleaner containing walnut shell grains as natural scrubbing particles that have biodegradability.
It has effective cleaning power for solidified paint and oil stains. It meets the Uniform National Effluent Standards (0.1w/v% aqueous solution) determined in the Water Pollution Control Act (BOD/COD).

Property Table

Product name / Characteristics	Unit	5903B	5904B	5905C	5909
Main component		Alcohol-based solvent Surfactant	Surfactant	Surfactant	Surfactant
Features		For removal of paint	Contains moisturizing ingredient	Contains polyethylene scrubbing particles Contains moisturizing ingredient	Contains natural scrubbing particles Contains moisturizing ingredient
Appearance		Red	Turbid white	White	Brownish white
Viscosity	Pa-s	3.5	5.8	3.0	6.7
Specific gravity		1.03	1.02	0.92	1.0
pH		6.5	7.8	8.7	7.8
Cleaning ability*1		Completely emulsified	Completely emulsified	Completely emulsified	Completely emulsified
Water quality index BOD*2	mg/L	-	55	160	55
Water quality index COD*2	mg/L	-	110	44	110

*1: Cleaning ability 10wt% aqueous solution
*2: BOD/COD water quality indexes 0.1w/v% aqueous solution

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* Before using, confirm the adequacy and safety for the relevant application.

Wet-Wiper Deodorizers

Transportation Equipment | Industrial Materials and Public Works | Automotive Aftermarket

This is a series of wet wipers and deodorizers with a high antifungal effect.

6701C Antimicrobial mold-proof wet wiper

This is a high-function wet wiper with a cleaning liquid impregnated into an acrylic microfiber nonwoven fabric.
It has an antifungal and mildew-proof effect because it contains hinokitiol.

6731 Photocatalytic deodorizer Aerosol

This is an aerosol type deodorizer that has a photocatalytic effect from the silver-deposited titanium oxide for breaking down harmful substances that exist in room air, and also has an antifungal effect from the silver.

6732 Photocatalytic deodorizer with Hinokitiol

This is a deodorizer (undiluted solution type) that contains hinokitiol, which has an initial antifungal effect and deodorizing effect. It has a photocatalytic effect from the silver-deposited titanium oxide for breaking down harmful substances that exist in room air, and also has an antifungal effect from the silver.

6733 Photocatalytic deodorizer Spray of total release type

This is an aerosol type deodorizer that has a photocatalytic effect from the silver-deposited titanium oxide for breaking down harmful substances that exist in room air, and also has an antifungal effect from the silver. With one push, the spray lever can be fixed so that whole-quantity dispensing is possible as a mist, which means it can be implemented for a whole room in one simple process.

Industrial Paper Wipers
Protective Masks
Double Faced Adhesive Tape

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

This is a series of double faced adhesive tapes, paper wipers, and fine masks for use in factories.

6930B Highly sticky double-sided tape for molding

This is a highly sticky double-sided tape with a pressure-sensitive adhesive applied on both sides that uses polyethylene foam as the base material and has good adhesion to painted boards.

6950 Paper wiper roll for industrial use

This is a roll type paper wiper that has the merits of both paper and cloth products.
It has excellent absorbability and resistance to water and various solvents.

6950B Paper wiper sheet for industrial use

This is a sheet-type paper wiper that has the merits of both paper and cloth products.
It has excellent absorbability and resistance to water and various solvents.

6955E Fine mask DS1 compliant product

This is a dust mask that is compliant with disposable dust mask standards for DS1 classification under Industrial Safety and Health Act.
It can be used for work at oil mist-free locations where general mineral dust is present.

6956E Fine mask DS2 compliant product

This is a dust mask that is compliant with disposable dust mask standards for DS2 classification under Industrial Safety and Health Act.
It can be used at oil mist-free locations where metallurgical fumes, particular substances specified by the Act, and/or where general mineral dust is present.

Wiping Cloth Desiccant

Transportation Equipment | Electrical and Electronics | Industrial Materials and Public Works | Automotive Aftermarket

This is a series of cloths and desiccants for use in factories.

9950B Microfiber wiping cloth

This is a wiping cloth that uses 1 to 5µm conjugated microfiber threads. It is flexible and soft, so it does not scratch material surfaces, and it has excellent wipability due to its special cross-section structure.

9970 Natural desiccant

This is a new type of desiccant made from seawater minerals. A small amount can effectively absorb moisture chemically for a wide temperature range.

Automotive Chassis Coating Agents

Automotive Aftermarket

This is a series of coating agents with excellent rust prevention for the lower part of car bodies and spot welded portions of the chassis, etc.

6101B

Oil-based aerosol

This is an aerosol type quick-drying vehicle chassis coating agent.
It is good for completing maintenance quickly.

6102

Water-based aerosol

This is an aerosol type aqueous vehicle chassis coating agent.
It forms a film with a deep black glossy finish, providing excellent rust prevention.

6107G

Thick film

This is a vehicle chassis coating agent for forming thick films with excellent chipping resistance.
It protects the body from flying pebbles while driving and against corrosion from salt. It provides strong protection against corrosion.

6110C

Oil-based

This is a quick-drying vehicle chassis coating agent.
It is good for completing maintenance quickly.

6161

Water-based

This is an aqueous type chassis coating agent.
It is very effective for rust prevention and maintaining the good appearance of the chassis.

Property Table

Product name / Characteristics	Unit	6101B	6102	6107G	6110C	6161	6168
Main component		Natural bitumen	Water soluble acrylic resin	Synthetic resin	Natural bitumen	Acrylic resin-based emulsion	Acrylic resin-based emulsion
Features		Oil-based type Aerosol	Aqueous type Aerosol	Oil-based type Aerosol	Oil-based type	Aqueous type	Aqueous type
Appearance		Black	Black	Black	Black	Black	Black
Viscosity	mPa-s	15	74	1900	22.5	200	200
Specific gravity		0.91	0.96	1.13	0.92	1.01	1.01
Solid content	%	30	20	50	39	24	24
Tack free	min	5 to 10	20 to 25	30 or less	10 or less	25	25

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* Before using, confirm the adequacy and safety for the relevant application.

Brake & Parts Cleaners

Automotive Aftermarket

This is a series of degreasing and cleaning agents for cleaning automobile brake shoes, brake drums, mechanical parts, and other parts with oil and grease stains.

6602L

Undiluted solution / Slow-drying type

This is a slow-drying, undiluted solution type cleaning agent with good workability designed for automobile brake shoes, brake drums, and mechanical parts. It is possible to easily clean oil and grease stains on mechanical parts.

6602M

Aerosol / Compatible with rubber and plastic / Slow-drying type

This is a slow-drying, aerosol type cleaning agent with good workability designed for automobile brake shoes, brake drums, and mechanical parts. It is possible to easily clean oil and grease stains on mechanical parts, rubber, and plastics.

6602P

Aerosol / Quick-drying

This is a quick-drying, aerosol type cleaning agent with good workability designed for automobile brake shoes, brake drums, and mechanical parts. It is possible to easily clean oil and grease stains on mechanical parts.

6602R

Aerosol / Large type

This is a quick-drying, aerosol type cleaning agent with good workability designed for automobile brake shoes, brake drums, and mechanical parts. It comes in a large can which can be used upside down. It is possible to easily clean oil and grease stains on mechanical parts.

6602S

Undiluted solution / Quick-drying

This is a quick-drying, undiluted solution type cleaning agent with good workability designed for automobile brake shoes, brake drums, and mechanical parts. It is possible to easily clean oil and grease stains on mechanical parts.

6651D

Undiluted solution / Semi-aqueous

This is a semi-aqueous cleaning agent with good workability designed for automobile brake shoes, brake drums, and mechanical parts, and it is not a hazardous substance under the Fire Service Act. It is safer than conventional hydrocarbon cleaning agents, and has better drying performance than water-based cleaning agents.

Property Table

Product name / Characteristics	Unit	6602L	6602M	6602P	6602R	6602S	6651D
Main component		Hydrocarbon-based compound	Hydrocarbon-based compound	Hydrocarbon-based compound	Hydrocarbon-based compound	Hydrocarbon-based compound	Alcohol-based
Features		Undiluted solution Slow-drying type	Aerosol / Compatible with rubber and plastic	Aerosol Quick-drying	Aerosol Large type	Undiluted solution Quick-drying	Undiluted solution Semi-aqueous
Appearance		Colorless	Colorless	Colorless	Colorless	Colorless	Colorless
Solid content	%	0.00	0.00	0.00	0.00	0.00	0.00
Drying performance	sec	210	210	30	30	30	550
Cleaning ability Brake fluid		Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Classification according to Fire Service Act		Category 4, class 2 petroleums (water-insoluble)	Category 4, class 2 petroleums (water-insoluble)	Category 4, class 1 petroleums (water-insoluble)	Category 4, class 1 petroleums (water-insoluble)	Category 4, class 1 petroleums (water-insoluble)	Non-hazardous material

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* Before using, confirm the adequacy and safety for the relevant application.

Compatible with the 1100 Series

These are dispensing devices for liquid gaskets.

Simple dispensing machine

Tank for tube
Tank controller
(minicoater CIV)

Applicable package type: Tube
The discharge amount is adjusted according to the dispensing time and tank pressure.

Tank for 1-kg can (PT-01)
Pen type manually operated valve
(pencil gun)

Applicable package type: 1-kg can
This is a dispensing unit for low-viscosity materials. Dispensing is done by holding the gun lever.

Automatic dispenser

Tank for 1-kg can (PT-01)
Needle type automatic valve (SVR-S)
Pressure controller (coater SIII)
Desktop 3-axis robot (TRC-120N)

Applicable package type: 1-kg can
It pumps the material from the tank using pressure, and controls the valve of the nozzle for dispensing. The combination of dispensing unit and robot provides proper amount of application at programmed positions.

Compatible with the 1200 Series

These are dispensing devices for silicone-based liquid gasket agents.

Simple dispensing machine

Cartridge-type air gun (PG100C)

Applicable package type: Cartridge
This is an air pressure-type cartridge gun.

Tank for tube
Tank controller
(minicoater CIV)

Applicable package type: Tube
The discharge amount is adjusted according to the dispensing time and tank pressure.

Cartridge-type pump (ACB-10)
Pen type manually operated valve
(pencil gun)

Applicable package type: Cartridge
This is a coating unit with excellent high-speed dispensing and operability that uses a combination of a high-pressure cartridge pump and a hand gun.

Reciprocating pump for pails (AP-30)
Gun type high-pressure manually operated valve (high-pressure flow gun)

Applicable package type: Pail
This is a coating unit with excellent high-speed dispensing and operability that uses a combination of a high-pressure pump for pails and a hand gun.

Compatible with the 1200 Series

Automatic dispenser

Pump for pails (PBIII-45)
Constant-rate injection head (fixed-quantity booster)
Desktop 3-axis robot (TRC-130N)

Applicable package type: Pail
It is possible to perform highly accurate, stable application by using the constant-rate dispensing unit together with a robot.

Pump for pails (PBII-45)

Applicable package type: Pail
This is a high-pressure pump for automatic application. It is possible to have consistent straight-line application by using it together with a robot.

Cartridge-type pump (PCB-20)

Applicable package type: Cartridge
This is a high-pressure pump for automatic application. It is possible to have consistent straight-line application by using it together with a robot.

Compatible with the 1300 Series

These are dispensing and application devices for anaerobic adhesives and sealants.

Simple dispensing machine

Transfer-type simple applicator (coater R)

Application to threaded portions is done by lightly pressing the threaded portion of a bolt to the outer portion of the rotating rotor.

Controller for syringes (minicoater CIV)

The discharge amount is adjusted according to the dispensing time and air pressure.

Automatic dispenser

Rotary applicator (RTM)

Applicable materials: TB1386 Series
This is a unit for applying adhesives inside of cylinders.

250g container tank (PT-005)
Diaphragm type automatic valve
Pressure controller (coater SIII)
Desktop 3-axis robot (TRC-130N)

Applicable package type: 50g and 250g container
It pumps the material from the tank using pressure, and controls the valve of the nozzle for dispensing.
The combination of dispensing unit and robot provides proper amount of application at programmed positions.

Compatible with the 1500 Series

These are dispensing devices for adhesives for industrial use and for single-component, moisture-curing elastic adhesives.

Simple dispensing machine

Tank for tube
Tank Controller (minicoater CIV)

Applicable package type: Tube
The discharge amount is adjusted according to the dispensing time and tank pressure.

Cartridge-type air gun (PG100C)

Applicable package type: Cartridge
This is an air pressure-type cartridge gun.

Automatic dispenser

Tank for 1-kg can (PT-01)
Diaphragm type automatic valve
Pressure controller (coaterSIII)
Desktop 3-axis robot (TRC-130N)

Applicable package type: 1-kg can
It pumps the material from the tank using pressure, and controls the valve of the nozzle for dispensing.
The combination of dispensing unit and robot provides proper amount of application at programmed positions.

Cartridge-type tank
Diaphragm type automatic valve
Controller for pressure (coater SIII)

Applicable package type: Cartridge
It pumps the material from the cartridge tank using pressure, and controls the valve of the nozzle for dispensing.

Cartridge-type high-pressure pumping unit (PCT)

Applicable package type: Cartridge
A cartridge plunger is pushed by a high driving force to pump at high pressure. It is good for high-speed injection or when the piping from the pressure source to the dispensing port is long.

Compatible with the 1700 / 7700 Series

These are dispensing devices for instant adhesives.

Simple dispensing machine

Tubing pump

This is a dispenser for low-viscosity small-amount injection.

Automatic dispenser

Tank with remaining amount detection (PT-01E)
Extremely small-quantity and fixed-quantity valve (TDV)
Exclusive controller

This is an extremely small-quantity dispenser with excellent durability and stability.

Compatible with the 2000 Series

These are dispensing devices for two-component epoxies.

Simple dispensing machine

Controller for syringes (minicoater CIV)

The discharge amount is adjusted according to the dispensing time and air pressure.

Hand gun for two-component cartridge

Applicable package type: Twin cartridge
This is a hand gun dispenser that mixes two components with a static nozzle.

Automatic dispenser

Gear pump type two-component mixer and dispenser

The gear pump sends each agent to the dynamic mixer which mixes and then dispenses the mixture.
It is manufactured according to specifications such as the mixing ratio and dispensing rate.

Compatible with the 2000 / 2100 Series

This is an agitating and defoaming device for epoxy resins.

Agitator

Agitating and defoaming device

This is a device for quickly performing agitation and defoaming by rotating or revolving the high-viscosity material in the container.

Compatible with the 2200 Series

These are dispensing devices for single-component epoxy resins.

Simple dispensing machine

Controller for syringes (minicoater CIV)

The discharge amount is adjusted according to the dispensing time and air pressure.

Tank for 1-kg can (PT-01)
Pen type manually operated valve (pencil gun)

Applicable package type: 1-kg can
This is a coating unit for low-viscosity materials. Dispensing is done by holding the gun lever.

Compatible with the 2200 Series

Automatic dispenser

Gear pump type dispenser for single-component agent

This is a dispenser for accurate application that performs pumping with a gear pump.

Tank for 1-kg can (PT-01)
Diaphragm type automatic valve
Pressure controller (coater SIII)
Desktop 3-axis robot (TRC-130N)

Applicable package type: 1-kg can
This is a dispensing system for low-viscosity materials. It pumps the material from the tank using pressure, and controls the valve of the nozzle for dispensing. The combination of dispensing unit and robot provides proper amount of application at programmed positions.

Pump for pails (PB-45)
Needle type automatic valve (SVRIII)
Desktop 3-axis robot (TRC-130N)

Applicable package type: Pail
It pumps the material using high-pressure pumping, and controls the valve of the nozzle for dispensing. The combination of dispensing unit and robot provides proper amount of application at programmed positions.

Compatible with the 3000 Series

These are dispensing devices for UV-curable resins.

Simple dispensing machine

Controller for syringes (minicoater CIV)

The discharge amount is adjusted according to the dispensing time and air pressure.

Automatic applicator

3D application machine

A multiple-joint robot is used for application to three-dimensional surfaces.

Compatible with the 3000 Series

UV irradiator

UV-LED irradiator

This product irradiates strong UV light to UV-curable resins for fast curing.
It provides high-power (shorter takt time), saves energy (lower power consumption), reduces environmental load (mercury-free), has a longer service time (less running cost), and decreases damages to irradiated objects (reduced temperature load).
A line-type irradiator can be manufactured to suit the needs of the customer.
* Use UV-LED compatible adhesives only.

Compatible with the 3100 Series

These are dispensing devices for UV-curable resins.

Simple dispensing machine

Cartridge-type air gun (PG100C)

Applicable package type: Cartridge
This is an air pressure-type cartridge gun.

Controller for syringes (minicoater CIV)

The discharge amount is adjusted according to the dispensing time and air pressure.

3900 Series

3911D Gasket remover

This is a non-chloride type gasket remover.
It has excellent releasing performance. By spraying it onto solid gaskets and cured liquid gaskets, it makes sealant removal much easier. It is also possible to remove dirt.
It is an environmentally-friendly product because no chlorinated solvent is used.

3991 Liquid paraffin (for delaying curing of silicone-based sealant)

This is a cure-delaying liquid paraffin for silicone sealants.
It prevents contact between uncured silicone sealant with moisture in the air so that curing is delayed.
By immersing the injection nozzle of the automatic dispensing machine on standby, it is possible to delay the sealant curing at the nozzle tip. By filling it into the oil cup portion of a ThreeBond power booster, the paraffin can also be used for lubrication at the drive portion and curing prevention by insulating oxygen from inside the equipment.

ThreeBond General Catalog Products Guide

Version 2

For Industrial Use Only Do not use this product for household purposes

This product was developed for general industrial use. Before using this product, the user must accept the following terms:

- The technical data given herein are not guaranteed values, but examples of experimental values obtained by our specified test methods. We do not guarantee that the uses described herein do not conflict with any intellectual property right.
- Users are asked to examine whether the product is appropriate to the purpose of use and can be used safely before they use it and bear all responsibilities and hazards involved in its use. Never use the product for medical implants that may be embedded, injected or left in the body.
- We are not liable for personal injury or property damage caused by improper handling of this product. If the properties and usage of this product are unknown, never use it.
- For detailed safety information of the product, see the Material Safety Data Sheet (MSDS). To obtain the MSDS, contact our sales office or customer service center.
- Information in this technical document is subject to change at our discretion without notice.

Creating Our Future From a Single Drop
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- Customer Help Desk
  0120-56-1456

- We have established our own ThreeBond sales network with approximately 60 locations throughout Japan from Hokkaido to Okinawa, allowing us to provide comprehensive sales services.
- Overseas, we have offices in over 50 locations including the United States (Cincinnati and Los Angeles), Mexico, Brazil, France, the UK, Germany, Italy, the Czech Republic, Singapore, Thailand, Malaysia, the Philippines, India, Indonesia, China (Hong Kong, Zhuhai, Shanghai, and Dalian), Taiwan, Korea, and Australia, which allows us to provide comprehensive sales services.
- www.threebond.co.jp/en/

Your request: