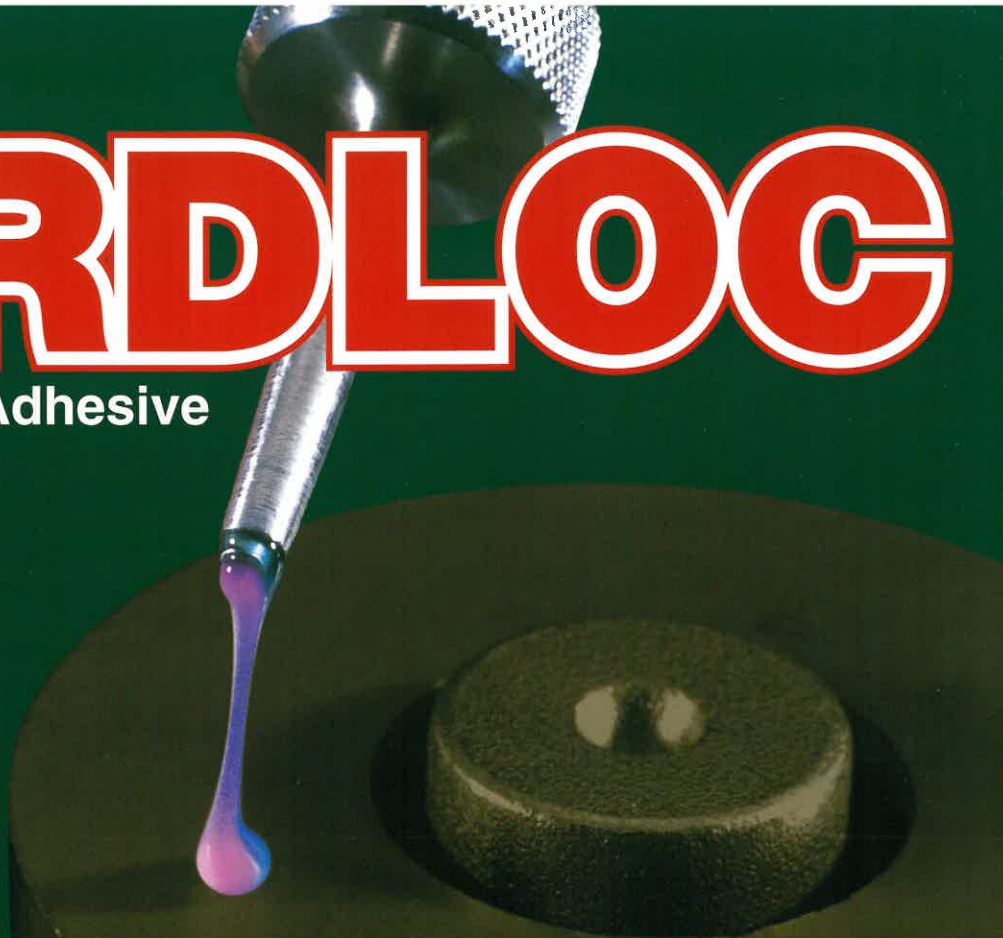


HARDLOC

High Performance Adhesive



SGA

HARDLOC is a two-part acrylic adhesive developed by DENKA and classified as a second-generation acrylic adhesive (SGA). Because of its excellent adhesive qualities and long durability, HARDLOC has been successfully applied in various fields, including loudspeakers, transformers, motors, and other electrical components, elevators, automobiles, metal cabinets, construction materials, etc.

UV Curing Adhesives

HARDLOC OP and HARDLOC UV series are single-liquid type UV curing adhesives, which were developed through DENKA's original technology. The OP1000 and OP1500 series, with their excellent optical properties, are widely used as adhesives for optical lenses and prisms. OP-3010P and the UV series adhesives have excellent non-tacking, durability and flexibility, and show good results in various coating applications, including art glass adhesion.

HARDLOC Characteristics

Classification	Characteristics
SGA	<ul style="list-style-type: none">• Rapid curing at room temperature• Excellent shear peeling and impact resistance• Allow bonding of oily surfaces• Allow bonding of different materials• Allow bonding with a rough two-part mixture• Solventless adhesives
OP/UV series	<ul style="list-style-type: none">• One-part adhesive, so no mixing or measurement is required.• Less shrinkage and excellent flexibility in the bonded object after curing minimizes distortion in the adhesion surface.• Ideal for lens adhesion due to its excellent optical properties.• Excellent resistance to heat and cold.• Non-tacking, aerobic.

Using HARDLOC

1. SGA

(1) Preparing the substrate surface

Remove contaminants from the surface of the substrate. (To obtain sufficient bond strength, simply wipe off oils from the surface with a cloth. Bond strength is improved dramatically when the surface is polished with sandpaper.)

(2) The bonding process

- 1- Overlap component A and B on one surface. Otherwise, apply Component A to one surface and B to the other surface.
- 2- Rub the parts to be bonded together against each other. This ensures even coverage and increased efficiency. Adjust to desired location for bonding and apply pressure with weight or clamp.

-3- Handling strength is obtained in 5 to 15 minutes, after which weights, clamps and other fastening tools may be removed, enabling further work to be performed.

(3) Working with application devices

The ease of working with single liquid type adhesives is achieved when HARDLOC applicators and dispensers are used.

2. OP/UV

A commercial UV lamp can be used. Use an illuminometer to measure the intensity of the UV light to which the adhesive is exposed and set the optimum UV irradiation period.

UV frequency: 365 nm

Amount of UV irradiation required for final hardening: 2000-3000 mJ/cm²

HARDLOC FAMILY

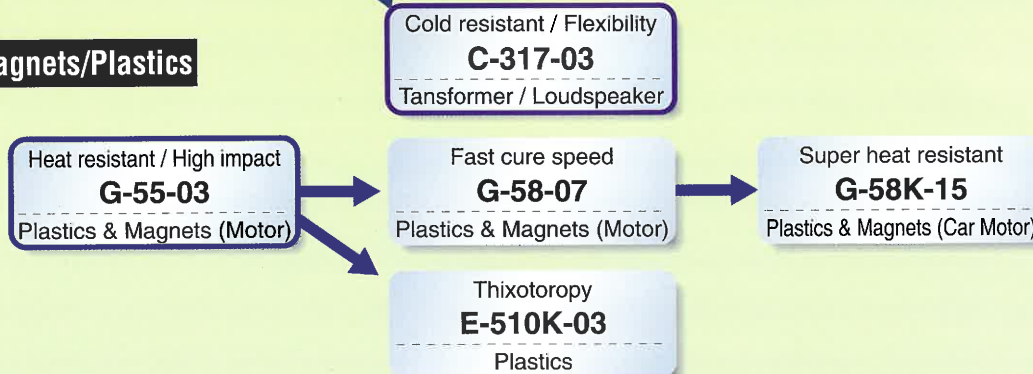
Substrate

METAL



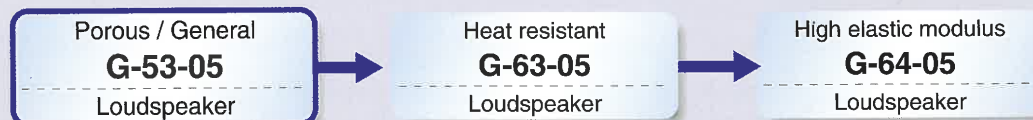
• LDC-141
Low strain (for hair lined or mirror stainless steel)

Magnets/Plastics



• C-315-03
Fast curing for mass production for Loudspeaker
• G-55SK-03
Wide range of substrates, long work life

Porous materials



Optical parts





Physical Properties of HARDLOC SGA

Substrate	Product	Viscosity (mPa·s)	Color	Mix Ratio	Specific Gravity	Bonding Range Set Time	Mixed Work time	Durometer Hardness	Steel (sand-blasted)			Transport Packing Group	Remarks
		Part A /Part B @23°C	Part A /Part B	By Volume /By Weight		Minutes @23°C	Minutes @23°C	@23°C	Shear Strength (MPa) @23°C	T-Peel Strength (kN/m) @23°C	Impact Strength (kJ/m²) @23°C	IATA	
Metal	C-333-08	8,000	green/red	1:1	0.9-1.1	12	3	A-63	8.2	2.2	12.5	P.G.3	Low strain
	C-355-20	20,000	green/red	1:1	0.9-1.1	12	3	D-58	22.3	5.4	22.7	P.G.2	Construction/Metal box
	C-356-08	8,000	gray/white	1:1	0.9-1.1	12	3	D-64	22.8	5.1	22.3	P.G.2	Heat resistant (post painting)
	M-600-08	8,000	green/white	1:1	0.9-1.1	8	2	D-34	18.9	4.5	19.8	P.G.2	Durable
	NS-600-08	8,000	brown/green	1:1	0.9-1.1	8-10	2	D-54	19.1	3.3	13.6	No regulation	Low odor
Magnets/Plastics	C-317-03	3,000	green/red	1:1	0.9-1.1	5	1	D-45	11.0	2.4	13	P.G.3	Cold resistant
	E-510-07	7,000	green/white	1:1	0.9-1.1	6	1	D-61	26.3	3.7	22.9	P.G.2	Thixotropy
	E-510K-03	3,000	green/white	1:1	0.9-1.1	8	2	D-70	27.0	3.6	24.7	P.G.2	Plastics
	G-55-03	3,000	clear/green	1:1	0.9-1.1	12	3	D-78	30.2	2.8	16.4	P.G.2	Plastics & Magnets
	G-58-07	7,000	clear/green	1:1	0.9-1.1	3	0.5	D-80	30.4	2.9	20.4	P.G.2	Fast cure
Porous materials	G-58K-15	15,000	clear/green	1:1	0.9-1.1	3	0.5	D-78	31.9	2.7	16.8	P.G.2	Super heat resistant
	G-53-05	5,000	clear/red	1:1	0.9-1.1	6	1	D-62	15.4	2.4	13.8	P.G.2	Porous
	G-63-05	4,750/5,750	red/green	1:1	0.9-1.1	5	1	D-75	31.6	3.8	34.5	P.G.2	Porous/Heat resistant
	G-64-05	4,250/5,250	red/green	1:1	0.9-1.1	4	1	D-74	28.9	1.7	27.9	P.G.2	Porous/High elastic modulus
	Notes	JIS K-6833						JIS K-7215	JIS K-6850	JIS K-6854	JIS K6855		

These data should be considered representative or typical only and should not be used for specification purposes.

Physical properties of HARDLOC OP/UV

Grade	Appearance	features of adhesives after curing										Transport Packing Group	Remarks
		Viscosity (cps) @25°C	Specific gravity of liquid	Bonding Range SetTime (seconds) 5mW/cm²	Durometer Hardness	Index of refraction (nD) Abbe's refractometer @25°C	Shrinkage ratio (%)	Glass transition temperature (°C) DSC	Elongation percentage (%)	Young's modulus (MPa)	Packaging		
OP-1030M	colorless transparent	300	1.27	20	D-35	1.548	6.5	6	70	7.8	100g	No regulation	General for lenses
OP-1505	colorless transparent	500	1.13	12	A-50	1.549	5.3	-30	30	2.6	100g	No regulation	Durable
OP-3010P	colorless transparent	1,000	0.98	50	D-63	-	7.9	-	80	119.6	100g	No regulation	General for glass bonding

These data should be considered representative or typical only and should not be used for specification purposes.

Various Substrates (◎ : Most suitable, ○ : Suitable, △ : Not very suitable, × : Not suitable)

Substrate	Product	Steel	Stainless steel	Aluminum	Bakelite	ABS	PST (HI)	FRP (EPOXY)	Polycarbonate
Metal	C-333-08	◎	◎	◎	×	○	×	×	△
	C-355-20	◎	◎	◎	◎	○	×	○	△
	C-356-08	◎	◎	◎	×	○	×	×	△
	M-600-08	◎	◎	◎	◎	○	△	○	○
	NS-600-08	◎	◎	◎	◎	○	△	○	○
Magnets/Plastics	C-317-03	◎	◎	◎	○	○	×	×	×
	E-510-07	◎	◎	◎	◎	○	△	○	○
	E-510K-03	◎	◎	◎	◎	◎	×	○	×
	G-55-03	◎	◎	◎	◎	◎	△	○	◎
	G-58-07	◎	◎	◎	○	○	△	○	○
Porous materials	G-58K-15	◎	◎	◎	△	○	×	○	○
	G-53-05	△	×	×	◎	○	△	○	○
	G-63-05	◎	△	△	◎	◎	○	○	◎
	G-64-05	◎	△	△	◎	◎	○	○	◎



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Shelf Life

1. SGA

When stored at 20°C or below, unopened containers, these products have a shelf life of three months from the date of shipment.

When stored at 30°C or below, unopened containers, these products have a shelf life of two months from the date of shipment.

2. OP/UV

Storage: Store at -15°C - 5°C or below.

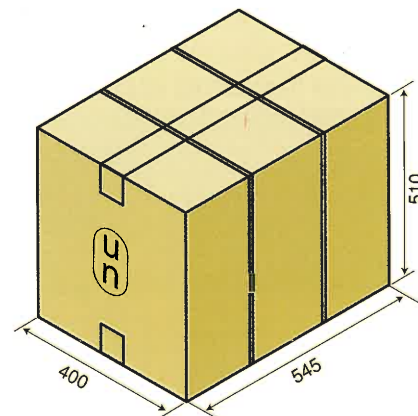
Shelf Life: When stored at the recommended temperatures in the original, unopened containers, these products have a shelf life of two months from the date of shipment.

Shipment Unit

Most of the grades of Hardloc / SGA are classified as inflammable, dangerous objects. The packing shown below in case of airplane or ship transportation. This pack conforms to the UN specifications for packaging and passes the official test administered by transportation authorities.

27 1-kilogram packages = 27 kg/box

12 2.5-kilogram packages = 30 kg/box



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DENKA

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