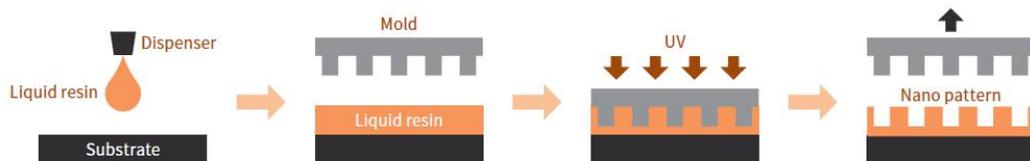


Nano Imprint Resin

Model	Curing conditions			Refractive index (after hardening) @589nm	Viscosity (mPa·s)	Tg (°C)	Optical transmittance (Thickness:2µm) 450nm, 540nm, 630nm
	Pre Baking	Irradiation level(UV) ^{W1}	Time (min)				
#18247	—	100	1	1.710	138	125	95%, 96%, 97%
#18210	115°C 1min	100	5	1.725	15	100	94%, 95%, 95%

Process Image of UV nanoimprinting



Items and Methods of Measurement used for this catalog

Measurement Item	Method of Measurement	Measurement Item	Method of Measurement
Uv curing condition	Light source: Metal halide lamp (Center wavelength 365 nm) Heat-treating: Conditions as described in the instruction manual	Optical transmittance	UV Spectrophotometer (Sample thickness 1mm)
Refractive index	Abbe refractometer (at 25°C)	Hardness (Shore d, a)	Hardness meter
Viscosity	E-type viscometer (at 25°C)	Thermal expansion coefficient	TMA (Thermomechanical analysis)
Glass transition temperature	Maximum peak temperature of viscoelastic spectrum tanδ	Shrinkage during curing	Calculated from the difference in density before and after curing
		Water vapor transmission rate	Transmittance measuring instrument (Sample thickness 0.5mm)
		Pot life	Time for confirmation of fluid flow to ø3mm SUS tube

Feel free to contact us if you have any questions about adhesives, customization, measurement and testing services.

Measurement and Testing Services for Adhesives

The Optical characteristics	Refractive index, Optical transmittance, Absorbance	The Thermal characteristics	Thermal expansion coefficient, Thermogravimetric analysis
The Electrical characteristics	Permittivity, Resistivity	The Material characteristics	Viscosity, Density, Shrinkage during curing etc.
The Mechanical characteristics	Bond Strength, Viscoelasticity etc.	Various environmental tests	Longevity tests, Durability tests

Notes:

- All company names, product names, etc., indicated herein are trademarks or registered trademarks of each respective company.
- Please understand that all comments and data recorded herein may be subject to change without prior notification.
- Catalog descriptions: as of June, 2019

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For more information, please contact <http://www.ntt-at.com/product/adhesive/>

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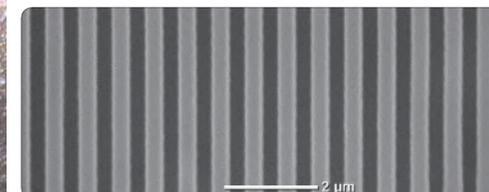
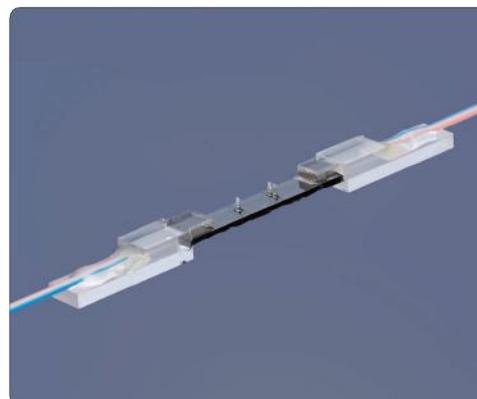
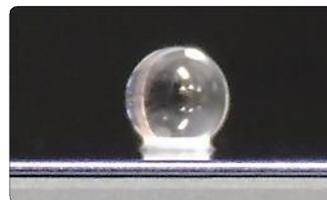


Optical Adhesives Lineup

Adhesives, Resins, and Sealants
for Optical Component Assembly



Ask NTT-AT, the experts with more than 30 years of experience and know-how, for the optical adhesives and sealants perfect for your needs.



Development Support

<http://www.ntt-at.com/product/adhesive/>

Adhesives for Optical Paths

For Optical Telecommunications



Model [Main ingredient]	Curing conditions (UV)		Refractive index (after hardening) @589nm	Viscosity (mPa·s)	T _g (°C)	Optical transmittance (%) @1.3μm	Bond strength (kgf/cm ²)	Special features
	Irradiation level ^{※1}	Time (min)						
E3810 [Epoxy]	10	10	1.438	100	103	90	>61	Low refractive Index Low viscosity
GA700H (High-Tg type) [Epoxy]	30	10	1.458	280	145	91	>247	Refractive index adjusted to match silica glass (at 1.55μm), High-Tg
GA700L (Low-Tg type) [Epoxy]	10	5	1.456	250	46	94	>154	Refractive index adjusted to match silica glass (at 1.55μm), Low-Tg
AT6001 [Acrylate]	10	5	1.505	470	0	91	99	Complies with Telecordia Standards (High Temperature/High Humidity), High Elasticity
AT8224 [Acrylate]	10	5	1.505	145	115	89	>209	Complies with Telecordia Standards (High Temperature/High Humidity), High-Tg

T_g: Glass transition temperature

High Refractive Index / Low Refractive Index

Model [Main ingredient]	Curing conditions (UV)		Refractive index (after hardening) @589nm	Viscosity (mPa·s)	T _g (°C)	Hardness (Shore D)	Bond strength (kgf/cm ²)
	Irradiation level ^{※1}	Time (min)					
#18165 [Acrylate]	10	5	1.675	9	113	67	>48
#6205 [Acrylate]	100	5	1.720	20	68	70	35
E3754 [Epoxy]	100	5	1.603	1,200	73	76	>280
#7200 [Epoxy]	100	10	1.627	7,000	63	83	55
#18204 [Acrylate]	10	1	1.375	7	18	20	27
#18114 [Acrylate]	10	5	1.400	25	94	72	26

Customized Adhesives

Customized range of GA700H/GA700L

Model [Main ingredient]	Curing conditions (UV)		Refractive index (after hardening) @589nm	Viscosity (mPa·s)	T _g (°C)	Optical transmittance (%) @1.3μm	Bond strength (kgf/cm ²)	Special features
	Irradiation level ^{※1}	Time (min)						
HT**** [Epoxy]	30	10	1.458~1.567	250~2000	140~150	89~90	>100	High Tg
LT**** [Epoxy]	10	10	1.458~1.567	200~560	40~50	86~90	>100	Low Tg

More customizing is available other than shown above, so please feel free to ask.

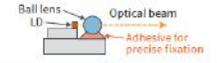
Possible to customize for UV/Heat curing, Viscosity, Refractive Index

Please consult with us regarding each detail.

*Values in this catalog don't constitute actual specifications but rather are measured values.

High Precision Adhesives

Precise Fixing



Model [Main ingredient]	Curing conditions (UV)		Shrinkage during curing (%)	Viscosity (mPa·s)	T _g (°C)	Thermal expansion coefficient (ppm/°C)	Bond strength (kgf/cm ²)	Special features
	Irradiation level ^{※1}	Time (min)						
AT3862P [Epoxy]	100	2	0.5	500,000	195	20	>210	Low Shrinkage Rate
AT3916P [Epoxy]	100	5	0.9	20,000	233	18	>220	Low Viscosity

Adhesives for Fiber Arrays

V-groove Fixing



Model [Main ingredient]	Curing conditions (UV)		Refractive index (after hardening) @589nm	Viscosity (mPa·s)	T _g (°C)	Hardness (Shore D)	Bond strength (kgf/cm ²)	Special features
	Irradiation level ^{※1}	Time (min)						
AT3925M [Epoxy]	100	10	1.519	200	219	88	>99	Mechanical polishing is available, Ultra-Hard, Heat-Resistant Adhesive
AT9390 [Epoxy]	30	10	1.492	600	131	81	>194	Mechanical polishing is available, Good Transparency
AT9968 [Epoxy]	100	10	1.512	70	181	85	>143	Mechanical polishing is available, Low Viscosity
AT3727E [Epoxy]	10	10	1.574	400	107	83	>147	Mechanical polishing is available, Humidity-Resistant, High-Tg
AT3728E [Epoxy]	10	10	1.573	400	55	20	>232	Mechanical polishing is available, Humidity-Resistant, Low-Tg

Adhesives for Fiber Array (Fixing the end of the Optical Fiber)

Fiber-end Fixing



Model [Main ingredient]	Curing conditions (UV)		Viscosity (mPa·s)	T _g (°C)	Hardness (Shore D)	Bond strength (kgf/cm ²)	Special features
	Irradiation level ^{※1}	Time (min)					
AT9575M [Epoxy]	100	10	paste	42	35	>221	High Durability, Nonfluxional
AT8105 [Acrylate]	10	5	paste	103	78	>226	

Sealants for Optical Devices



Heat curable Sealants

Model	Curing conditions	Pot life (min)	Water vapor transmission Rate ^{※2}	Hardness (Shore D)	Bond strength ^{※3} (kgf/cm ²)	Ratio of mixing (Weight A/B)	Main component	Conditions before hardening	Special features
OS5958	RT 24hr or 80°C 1hr	120	1.6×10 ⁻⁸	47	131	10:3	A: Epoxy Resin B: Amine Hardener	A: White paste B: Yellow transparent fluid	High Moisture Proof Long Pot Life
OS5962	RT 24hr or 80°C 1hr	120	0.7×10 ⁻⁸	66	146	21:3	A: Epoxy Resin B: Amine Hardener	A: White paste B: Yellow transparent fluid	High Moisture Proof, High Viscosity, Long Pot Life
OS5980	80°C 1hr	120	30×10 ⁻⁸	20	24	1:2	A: Amine Hardener B: Epoxy Resin	A: Transparent paste B: Black paste	High Flexibility
OS-48	RT 24hr or 100°C 1hr	180	1×10 ⁻⁸ (75°C 90%)	66 (Shore A)	11	1:1	A/B: Butylene Resin	A: White paste B: Black paste	Long Pot Life

※1: [mW/cm²] ※2: [CC·cm/cmHg·cm²·s]@85°C 85% ※3: Shear adhesion strength of SUS / SUS (All other cases are glass / glass)