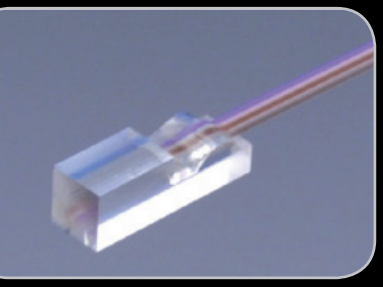
amsTECHNOLOGIES
where technologies meet solutions

OPTICAL ADHESIVES

Strong bonds to glass, metal, ceramics and plastics



- Adhesives for Optical Path Link-up
- Adhesives for Array Assemblies
- High Precision Adhesives
- High/Low Refractive Index Adhesives
- Sealant for Optical Parts
- Optical Waveguide Formation Resin

OPTICAL TECHNOLOGIES

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Optical Adhesives for glass, metal, ceramics and plastics

**Gluing is an essential technological process in many industrial technologies. The state-of-the-art adhesives are especially designed to meet the wide range of applications, while highly specialized.
They are simplifying bonding processes, guaranteeing high processing speed combined with high reliability.**

They are used for bonding of optical components where the adhesive is index matched to the components which has to be glued together. Special glues are developed to fix fiber in v-grooves. The refractive index is precisely controlled and can very from low to high realizing a perfect optical match of materials.

Another group of adhesives is designed for sealing of optical components. To improve long-term reliability in mechanical protection and moisture prevention, optical devices are housed in protective cases of metal, plastic, etc. The reliability, especially in moisture resistance, of optical parts is greatly influenced by the characteristics of the sealant used for the openings and case junctions of the protective cases in the devices.
Curing conditions can be different, using either heat or UV light to reach the maximum on bonding power.

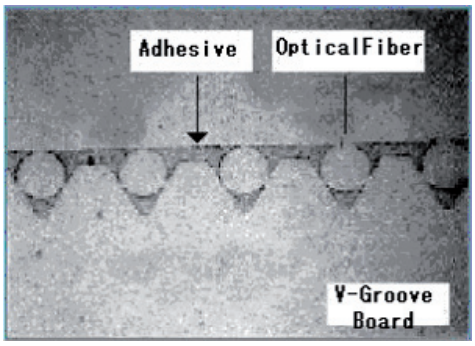
All adhesives shown in this brochure provide

- fast cure
- strong bonds to glass, metal, ceramics and plastics
- low shrinkage
- low stress

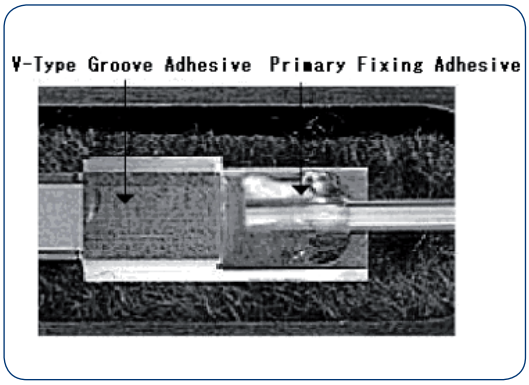
AMS Technologies is distributing the products of two optical adhesives suppliers NORLAND and NTT-AT, covering with their portfolio most of the applications.

NTT AT NORLAND PRODUCTS INC.

Usage Examples:



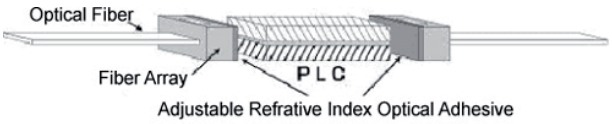
Cross-section view of V-type groove



Adhesive used for Array Assembly

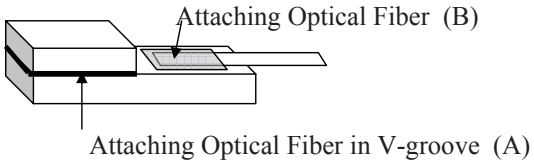
Adhesives for Optical Path Link-up

- The refractive index can be accurately controlled within a range of 1.46-1.57±0.005 (Na-D).
- Using ultraviolet ray curing makes alignment easy.
- Very little adhesion loss due to heat or moisture, providing high durability.



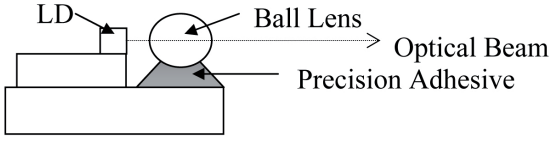
Adhesives for Array Assemblies

- Excellent durability
- Just the right viscosity for easy application
- For fiber fixation (AT9575M, AT8105) : non-liquid viscosity
- For fiber fixation into V-type groove (AT9968) : low viscosity fluid
- Heat proof temperature of over 200°C (AT3925M)



High Precision Adhesives

- Minimal position changes due to curing time and temperature change allowing for even submicron adhesion.
- AT9290F is transparent upon curing

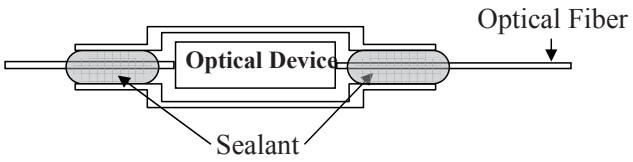


High/Low Refractive Index Adhesives

- Precision refraction index of 1.42-1.46±0.005 (Na-D) as the low RI and 1.57-1.70±±0.005 (Na-D) as the high RI provides controllability.
- Ultraviolet curing makes alignment easy.

Sealant for Optical Parts

- Minimal internal stress develops during hardening and the heat cycle.
- Low moisture absorption even at high temperatures



Optical Waveguide Formation Resin

- Superior optical transparency
- Main Ingredient: Epoxy Type
- Range of Refractive: Core: nD = 1.52±0.005
- Index Adjustment: Cladding: nD = 1.50±0.005
- Viscosity = 2,200cP Tg = 222°C
- n = 1.3%(@830nm)
- Viscosity = 2,900cP Tg = 198°C

Adhesive type	Article	Description	Cure	Viscosity at 25°C	Refractive Index	Modulus PSI	Tensile PSI	Elongation at failure	Shore D Hardness
UV Adhesives	NOA 60	General purpose adhesive for bonding doublets, prisms or mounting	UV	300 CPS	1.56	135	2,8	35%	81
UV Adhesives	NOA 61	Preferred adhesive for military optics. Meets MIL-A-3920. Used for optics	UV	300 CPS	1.56	150	3	38%	85
UV Adhesives	NOA 63	Cures well in thick sections. Use as fillet bond to hold lenses in place or for	UV	2,500 CPS	1.56	240	5	6%	90
UV Adhesives	NOA 65	Flexible adhesive suitable for low strain applications or for cold blocking of lenses.	UV	1,000 CPS	1.52	20	1,5	80%	50
UV Adhesives	NOA 68	Flexible adhesive for glass or plastics such as polycarbonate, CAB or	UV	5,000 CPS	1.54	20	2,5	80%	60
UV Adhesives	NOA 68T	Screen printable flexible adhesive for glass and plastic such as	UV	22,000 CPS	1.54	N/A	N/A	N/A	50
UV Adhesives	NOA 71	Provides a strong bond to glass surfaces and has excellent clarity for light	UV	200 CPS	1.56	55	1,3	43%	86
UV/VIS Adhesives	NOA 72	Low viscosity adhesive for bonding glass or plastics such as polycarbonate,	UV/ VIS	155 CPS	1.56	2,4	500	34%	75
UV Adhesives	NOA 73	Flexible adhesive with low viscosity for bonding delicate parts.	UV	140 CPS	1.56	1,6	200	16%	60
UV Adhesives	NOA 74	Low viscosity adhesive for bonding CAB, other plastics and glass	UV	80-95 cps	1.52	2900	217	10%	30
UV/VIS Adhesives	NOA 75	Low viscosity adhesive used for bonding polarized and polyester film, nylon,	UV/ VIS	80-95 cps	1.52	2610	164	7%	25
UV/VIS Adhesives	NOA 76	High viscosity adhesive for bonding glass to plastic. Cures with UV or visible	UV/ VIS	4,500 CPS	1.51	970	450	47%	60
UV/VIS Adhesives	NOA 78	High viscosity adhesive for bonding plastic to plastic. Cures with UV or visible	UV/ VIS	9,000 CPS	1.50	1140	649	57%	55
UV Adhesives	NOA 81	Fast curing adhesive for tacking or bonding. Excellent adhesion to glass	UV	300 CPS	1.56	200	3	25%	90
UV/Heat Adhesives	NOA 83H	Fast curing adhesive that will cure with UV or heat for tacking or bonding UV	UV/ HEAT	250 CPS	1.56	160	3,5	30%	85
UV/VIS Adhesives	NOA 84	Low refractive index, very low viscosity adhesive for bonding or coating glass	UV/ VIS	55 CPS	1.46	1,14	649	57%	55
UV Adhesives	NOA 85	Low refractive index, higher viscosity adhesive for bonding glass and plastic	UV	200 CPS	1.46	9,34	1,5	111%	40
UV/VIS Adhesives	NOA 86	Low viscosity adhesive that meets Bellcore specification of 85C/85RH for bonding	UV/VIS	200-300 CPS	1.55	360,4	7,834	2.8%	75
UV/VIS Adhesives / Heat	NOA 86H	Low viscosity adhesive that meets Bellcore specification of 85C/85RH for bonding	UV/VIS and or heat	200-300 CPS	1.55	360,4	7,834	2.8%	75
UV/VIS Adhesives	NOA 87	High viscosity adhesive that meets Bellcore specification of 85C/85RH for bonding	UV/VIS	900-1500 CPS	1.52	209,7	4,88	13%	50
UV Adhesives	NOA 88	Low outgassing adhesive for aerospace or electronic applications. Excellent	UV	250 CPS	1.56	112	1,9	43%	90
UV Adhesives	NOA 89	Low viscosity adhesive for spin coating and bonding delicate parts	UV	20 CPS	1.51	N/A	N/A	N/A	40
UV Adhesives	NOA 13685	Low viscosity adhesive with a refractive index of 1.3685 for bonding glass or plastic.	UV	15-25 CPS	1.3685	N/A	N/A	N/A	N/A
UV Adhesives	NOA 1375	Low viscosity adhesive with a refractive index of 1.375 for bonding glass or plastic.	UV	45-60 CPS	1.375	N/A	N/A	N/A	N/A
UV Adhesives	NOA 138	Low viscosity adhesive with a refractive index of 1.38 for bonding glass or plastic.	UV	45-60 CPS	1.38	N/A	N/A	N/A	N/A
UV Adhesives	NOA 142	Low viscosity adhesive with a refractive index of 1.42 for bonding glass.	UV	20-40 CPS	1.42	N/A	N/A	N/A	N/A
UV Adhesives	NOA 144	Adhesive with a refractive index of 1.44 for bonding glass.	UV	45-60 CPS	1.44	N/A	N/A	N/A	N/A
UV Adhesives	NOA 148	Adhesive with a refractive index of 1.48 for bonding glass.	UV	1500-2000 CPS	1.48	N/A	N/A	N/A	N/A
UV Adhesives	NOA 1625	Low viscosity adhesive with a refractive index of 1.625 for bonding glass.	UV	60-80 CPS	1.625	N/A	N/A	N/A	N/A

Adhesive type	Article	Description	Cure	Viscosity at 25°C	Refractive Index	Modulus PSI	Tensile PSI	Elongation at failure	Shore D Hardness
UV Adhesives	NOA 164	Low viscosity adhesive with a refractive index of 1.64 for bonding glass.	UV	60-80 CPS	1.64	N/A	N/A	N/A	N/A
UV Adhesives	NBA 107	UV curing adhesive for cold blocking and temporary bonding of lenses. Can be	UV	350 cps	1.51	800	78	5%	15
UV Adhesives	NBA 108	UV curing adhesive for cold blocking and temporary bonding of lenses. Can be	UV	550 CPS	1.51	710	101	18%	25
UV Adhesives	UVS 91	Screenable paste for bonding and sealing perimeters of liquid Paste	UV	Thixotropic	N/A	45	2,9	58%	55
Adhesives for Optical Path Link-up	Refractive Index Adjusting Material (High Tg) [Epoxy]	Modulate the refractive index to specific values for the best level of transparency.	30mW/cm2 10min	200~560 cP	1.46~1.57	120~>180 (kgf/cm2)	–	–	–
Adhesives for Optical Path Link-up	Refractive Index Adjusting Material (Low Tg) [Epoxy]	Modulate the refractive index to specific values for the best level of transparency.	10mW/cm2 10min	200~560 cP	1.45~1.57	>180 (kgf/cm2)	–	–	–
Adhesives for Optical Path Link-up	GA700H (High Tg) [Epoxy]	At λ1.55um, adjusted to match silica glass	30mW/cm2 10min	252 cP	1.46	94 (kgf/cm2)	–	–	–
Adhesives for Optical Path Link-up	GA700L (Low Tg) [Epoxy]	At λ1.55um, adjusted to match silica glass	10mW/cm2 5min	250 cP	1.46	>200 (kgf/cm2)	–	–	–
Adhesives for Optical Path Link-up	AT6001 [Acrylate]	Telecordia standard (strong under high temperature and humidity, flexible)	10mW/cm2 10min	440 cP	1.51	>150 (kgf/cm2)	–	–	–
Adhesives for Optical Path Link-up	AT8224 [Acrylate]	Telecordia standard (strong under high temperature and humidity, High Tg)	10mW/cm2 5min	180 cP	1.51	>122 (kgf/cm2)	–	–	–
Adhesives for Optical Path Link-up	AT6390 [Acrylate]	High endurance material, Tg > 100°C, High viscosity	10mW/cm2 5min	840 cP	1.51	156 (kgf/cm2)	–	–	–
Array Assembly Adhesive	AT3925M [Epoxy]	Highly heat resistant. Can grind mechanically	100mW/cm210min	284 CPS	1.52	>181 (kgf/cm2)	–	–	–
Array Assembly Adhesive	AT9390 [Epoxy]	Can grind mechanically.	30mW/cm210min	600 CPS	1.49	>181 (kgf/cm2)	–	–	–
Array Assembly Adhesive	AT9968 [Epoxy]	Low viscosity. Can grind mechanically.	100mW/cm210min	70 CPS	1.51	>202 (kgf/cm2)	–	–	–
Array Assembly Adhesive	AT7195M [Epoxy]	Can grind mechanically. High Tg.	100mW/cm210min	770 CPS	1.57	>129 (kgf/cm2)	–	–	–
Array Assembly Adhesive	AT9575M [Epoxy]	High durability. Non-liquidity.	100mW/cm210min	>20,000 (Paste)	–	>146 (kgf/cm2)	–	–	–
Array Assembly Adhesive	AT8105 [Acrylate]	High durability. Non-liquidity. High Tg.	10mW/cm25min	>20,000 (Paste)	–	>200 (kgf/cm2)	–	–	–
High Precision Adhesives	AT4291A [Epoxy]	Small curing shrinkage rate. Small thermal expansion coefficient rate.	50mW/cm2 10min	>20,000	–	>116 (kgf/cm2)	–	–	–
High Precision Adhesives	AT9290F [Epoxy]	Small curing shrinkage rate. Small thermal expansion coefficient rateLarge curing depth	50mW/cm2 10min	>20,000	–	>200 (kgf/cm2)	–	–	–
Sealant for Optical Parts	S3903 A: Amine, B: Denatured Epoxy	Flexible	A: Transparent Paste, B: White Paste	–	–	50 (kgf/cm2)	–	–	36
Sealant for Optical Parts	S3903-5 A: Amine, B: Denatured Epoxy	Flexible High Viscosity	A: Transparent Paste, B: Black Paste	–	–	121 (kgf/cm2)	–	–	39
Sealant for Optical Parts	OS-39 A: Amine, B: Denatured Epoxy	Flexible High Viscosity	A: Transparent Paste, B: Black Paste	–	–	58 (kgf/cm2)	–	–	26
Sealant for Optical Parts	14SI A: Epoxy Resin, B: Amine	High moisture proof, High bonding strength	A: White Paste, B: Yellow Transparent fluid	–	–	200 (kgf/cm2)	–	–	58
Sealant for Optical Parts	14SI-3 A: Epoxy Resin, B: Amine	High moisture proof, High bonding strength, High viscosity	A: White Paste, B: Yellow Transparent fluid	–	–	200 (kgf/cm2)	–	–	82
Sealant for Optical Parts	OS14 A: Epoxy Resin, B: Amine	High moisture proof, High bonding strength, High viscosity	A: White Paste, B: Yellow Transparent fluid	–	–	200 (kgf/cm2)	–	–	61
Sealant for Optical Parts	OS-48 Polybutylene system resin	Long PotLife	A: White Paste, B: Yellow Transparent fluid	–	–	11 (kgf/cm2)	–	–	66
High refractive index resin	Radical system #18165	–	10mW/cm2 5min	–	–	–	–	–	–
High refractive index resin	Radical system #18166	–	10mW/cm2 5min	–	–	–	–	–	–
High refractive index resin	Radical system #6205	Easily crystallized under low temperature	100mW/cm2 5min	–	–	–	–	–	–
High refractive index resin	Cationic systems #E3754	–	100mW/cm2 5min	–	–	–	–	–	–
High refractive index resin	Cationic systems #7200	–	100mW/cm2 10min	–	–	–	–	–	–

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WHAT CAN WE DO FOR YOU?

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