

## Epoxy & Adhesives



**ÅNGSTRÖM***Bond*®

### Advanced Polymers for High-Tech Applications

Choosing the correct adhesive for an application is critical and Ångström*Bond*® premium quality adhesives offer a wide range of solutions for any requirement. Adhesives are often generalized and end up being used in the wrong application resulting in disastrous effects. One adhesive does not work well in all applications.

Ångström*Bond*® offers its own line of single and multi component specialty adhesive systems as well as systems from your favorite adhesive manufacturers. Most material can be supplied in easy to use 2-part packets, premixed and frozen syringes or cartridges, jars, vials, quarts, gallons or other specialty packing as required.

### 2-Part Packets (bi-packs)

Small, 2-part packets promote minimal waste but are also key to ensuring proper mix ratios, as mix ratio is essential to epoxy performance. If the ratio is off by even a small amount, failures may occur immediately or at anytime during operation. All our packaging maintains a strict mix ratio of at least +/- 1%. Our packaging materials are also of the highest quality to ensure that the adhesives will remain consistent throughout their shelf life.

### Premixed & Frozen

Our premixed and frozen adhesives loaded in syringes or cartridges are accurately pre-weighed, de-aired and flash frozen, so you do not have to do it. All of these steps ensure maximum adhesive performance, while flash freezing guarantees the maximum working time. Using premixed and frozen adhesives greatly reduces the potential for errors, and the end result is simply a safer material that yields increased quality at lower costs.

### Epoxy Dispensing Machines

When using an automatic dispensing machine, further costs can be saved and product consistency improved with either the pre-weighed packets or the premixed and frozen packages. A system can be devised which can reduce operator variability to ensure the same amount of adhesive is injected each time. The unit will also decrease the repetitive motion that can sometimes lead to Carpal Tunnel Syndrome. Premixed and frozen can be packaged in an automatic cartridge that fits your dispensing machine, thus adding to your savings.

### A Solution to Any & All Epoxy Related Problems

Our goal is to supply the best possible material for your application. By using Ångström*Bond*® supplied material, you can minimize the typical adhesive related problems outlined below.

- Defective Epoxy
- Wrong Epoxy for the Application
- Incorrect Mix Ratio by Packager
- Incorrect Mix Ratio by User
- Expired Shelf Life
- Use Beyond Working Life
- Inappropriate Cure Schedule
- Inadequate Packaging Affects Chemistry
- Improper Storage (temp, light)
- Incomplete Dispensing into Substrate
- Inappropriate or Defective Dispensing Equipment
- Improper Cleaning of Epoxy Work Surfaces
- Skin Reactions (Dermatitis)
- Unavailability - Not in Stock

Fiber Optic Center offers Epoxies & Adhesives in the following areas. Please contact us with your application and we will be happy to find you the appropriate material.

- Room Temperature Cure
- Extended Use / Heat Cure
- Quick Cure Field Termination Adhesives
- UV Cure Adhesives
- Specialty Adhesives

## Room Temperature Cure Epoxy



**ÅNGSTRÖM Bond®**

### Two-Part Room Temperature Cure Epoxy

Low stress epoxies that can be cured overnight at room temperature or faster with mildly elevated temperatures. There is a room temperature cure epoxy excellent for any type of termination.

#### Single Mode and Multimode Terminations

Part Number	Cured Color	Viscosity	Working Time	Cure Schedules		
				25°C	65°C	90°C
AB9112-2.5G*	Dark Blue	2000 cps	40 Minutes	18 h	1 h	15 m
AB9113SC-2.5G	Dark Blue	2000 cps	20 - 30 Minutes	18 h	1 h	15 m
0151-2.5G	Clear	400 - 1000 cps	30 Minutes	1-3 days	2 h	1.5 h
0151BLUE-2.5G	Dark Blue	400 - 1000 cps	30 Minutes	1-3 days	2 h	1.5 h

\*Mil Spec Approved

#### MT-RJ and MT Terminations

Part Number	Cured Color	Viscosity	Working Time	Cure Schedules		
				25°C	65°C	90°C
AB9001MT-2.5G	Dark Blue	55K - 65K cps	30 Minutes	18 h	1 h	15 m
AB9001MTUP-2.5G	Clear	55K - 65K cps	30 Minutes	18 h	1 h	15 m
AB9112-2.5G*	Dark Blue	2000 cps	40 Minutes	18 h	1 h	15 m

\*Mil Spec Approved

#### Plastic Fiber Terminations

Part Number	Cured Color	Viscosity	Working Time	Cure Schedules	
				25°C	65°C
AB9110LV-2.5G	Clear	500 cps	60 Minutes	18 h	1 h

Most materials can be supplied in easy to use 2-part packages, premixed and frozen syringes or cartridges, jars, vials, quarts, gallons or other specialty packaging as required. Please contact FOC for information.

Specifications may change without notice

## Extended Use / Heat Cure Epoxy



**ANGSTRÖM**Bond®

### Two-Part Extended Use / Heat Cure Epoxy

Extended Use / Heat Cure Epoxies allow for long working times but can also have fast cure times when used with a heat source. Other benefits include resistance to high temperatures, and high bond strengths. The disadvantage to heat cure systems is that they can cause stress during the curing process and can cause fiber core cracking and pistoning in multimode connectors. **AB9320** addresses this problem with its unique formulation as a low stress, heat cure epoxy and delivers excellent performance in both multimode and single mode applications.

### Single Mode and Multimode Terminations

Part Number	Cured Color	Viscosity	Working Time	TG	Cure Schedules	
					80°C	100°C
AB9320-2.5G*	Blue	900 cps	1.5 hours	124 °C	30-120 m	10-30 m
AB9328-2.5G	Blue	2000 cps	1.5 hours	124 °C	30-120 m	10-30 m

\*NASA Approved

### Single Mode Terminations

Part Number	Cured Color	Viscosity	Working Time	TG	Cure Schedules	
					100°C	150°C
AB9123-2.5G	Red	2000 cps	3 - 4 hours	120 °C	5 m	1 m
AB9123BLUE-2.5G	Blue	2000 cps	3 - 4 hours	120 °C	5 m	1 m
ET353ND-2G	Red	2000 cps	3 - 4 hours	120 °C	5 m	1 m
ET353ND-4G	Red	2000 cps	3 - 4 hours	120 °C	5 m	1 m
ET353NDBLK-2.5G	Black	2000 cps	3 - 4 hours	120 °C	5 m	1 m
ET353NDT-2.5G	Dark Amber	9000 - 15000 cps	4 hours	120 °C	5-10 m	1 m
AB9119-2.5G*	Red	2000 cps	2 hours	105 °C	5 m	1 m
ET383ND-2.5G	Red/Amber	4500 cps	8 hours	120 °C	15 m	5 m

\*NASA Approved

Most materials can be supplied in easy to use 2-part packages, premixed and frozen syringes or cartridges, jars, vials, quarts, gallons or other specialty packaging as required. Please contact FOC for information.

## Quick Cure Field Termination Adhesives



**ÅNGSTRÖMBond®**

### Two-Part Quick Cure Field Termination Adhesive Kits

Field termination adhesives, sometimes referred to as “anaerobic adhesives”, are easy to use and very fast without the use of heat. With most fiber optic terminations, the two parts of the epoxy are mixed together and then injected into the connector. However, with the following systems, the adhesive is injected into the connector by itself without the need for any mixing. Then, just prior to insertion, the fiber is dipped in the primer so it activates the adhesive as it slides through the connector. Once activation occurs, connectors are ready to polish in as little as 30 seconds.

**AB101** is a traditional anaerobic system which will behave similar to many of the other adhesive/primer, field termination systems that are currently on the market.

**AB202** is an exclusive ÅngströmBond® black adhesive that has all the benefits of a traditional anaerobic system without any of the drawbacks. The process in which you apply **AB202** is exactly the same as **AB101** but because it is NOT anaerobic it will cure on its own over time. True anaerobic systems will only cure in the absence of oxygen or if it comes in contact with the primer so there is always potential for uncured adhesive when using such systems. **AB202** also has the distinction of being U.S. Navy approved.

### Ordering Information

Part Number	Cured Color	Working Time	Kit
AB101-10mL	Clear Amber	30 seconds	10 ml bottle of adhesive 2 oz. bottle of primer
AB202-20mL*	Black	2-3 minutes	20 ml bottle of adhesive 3 oz. bottle of primer
AB202-PRIMER	NA	NA	3 oz. bottle of primer only

\* U.S. Navy approved

## UV Cure Adhesives



**ANGSTRÖM Bond®**

### One Part UV Cure Adhesives

Systems designed to cure under UV radiation (310 - 400 nm). These are fast curing systems with a wide variety of properties for optical and fiber optic applications. These adhesives are loosely categorized in the following tables but we recommend that you speak with one of our application engineers to ensure you have the right product for your application.

- Fiber Re-Coating
- Optical Adhesives
- Low Refractive Index
- Optical Positioning
- Temporary Fixturing
- Flexible
- High Power Laser
- High Tg
- Plastic Bonding
- Silicone UV Adhesive
- Biocompatible
- UV & Blue Light Cure
- Hybrid UV & Heat Cure Adhesive
- General Purpose

#### Fiber Re-Coating

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
DSM950-200-10Z or -20Z	Clear	1.55	2,500 cps	5%	1.0 J*CM <sup>2</sup> for a 75µm Film
DSMDF0007-10Z or -20Z	Clear	1.38	4,000 cps	--	1.0 J*CM <sup>2</sup> for a 75µm Film
DSM953-005-20Z		--	4,850 cps	--	25s @ 150 mW/cm <sup>2</sup>

#### Optical Adhesives

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
OP-29-3ML	Clear	1.50	2,500 cps	2.8 %	2-5s @ 150 mW/cm <sup>2</sup>
OP-29-GEL-3ML	Clear	1.50	20,000 cps	2.8 %	2-5s @ 150 mW/cm <sup>2</sup>
OP-30-3ML	Clear	1.51	400 cps	2.3 %	5-30s @ 200 mW/cm <sup>2</sup>
OP-32-3ML	Clear	1.51	4,500 cps	2.3 %	10-30s @ 200 mW/cm <sup>2</sup>
OP-4-20632-3ML	Clear	1.55	500 cps	< 0.2 %	1-10s @ 150 mW/cm <sup>2</sup>
OP-54-3ML	Clear	1.51	100 cps	1.8 %	1-4s @ 150 mW/cm <sup>2</sup>
OG142-3CC	Clear	1.59	9,000 cps	--	1-2 min @ 100 mW/cm <sup>2</sup>

#### Low Refractive Index

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
AB9022-1.34-3CC	Clear	1.34	1,000 cps	--	15s - 5m @ 100-300 mW/cm <sup>2</sup>
AB9022-1.36-3CC	Clear	1.36	1,000 cps	--	15s - 5m @ 100-300 mW/cm <sup>2</sup>
AB9022-1.38-3CC	Clear	1.38	1,000 cps	--	15s - 5m @ 100-300 mW/cm <sup>2</sup>
AB9022-1.40-3CC	Clear	1.40	1,000 cps	--	15s - 5m @ 100-300 mW/cm <sup>2</sup>
R221-3CC	Clear	1.41	125 cps	3.9 %	1s @ 1 J/cm <sup>2</sup>
AB9053-3CC	Clear	1.41	6,000 cps	3.9 %	1s @ 150-300 mW/cm <sup>2</sup>
OG134-3CC	Clear	1.42	< 100 cps	--	1-2m @ 100 mW/cm <sup>2</sup>
OG146-3CC	Clear	1.48	< 40 cps	--	1-2m @ 100 mW/cm <sup>2</sup>

Section continued on next page

Specifications may change without notice

EPOXY & ADHESIVES / B-5

## UV Cure Adhesives (continued)

### Optical Positioning

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
OP-4-20632-GEL-3ML	Clear	1.55	50,000 cps	< 0.2 %	1-10s @ 150 mW/cm <sup>2</sup>
OP-54-3ML	Clear	1.51	100 cps	1.8 %	1-4s @ 150 mW/cm <sup>2</sup>
OP-67-LS-3ML	Opaque	--	135,000 cps	< 0.1 %	

### Temporary Fixturing

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
OP-18-3ML	Clear	1.50	48,000 cps	2.0 %	5s @ 100 mW/cm <sup>2</sup>

### Flexible

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
OG116-41-3CC	Tan	--	13,619 cps	--	1-2m @ 100 mW/cm <sup>2</sup>

### High Power Laser

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
AB9061-3CC	Clear	1.55	9,000 cps	< 0.3 %	5-20s @ 100 mW/cm <sup>2</sup>

### High Tg

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
AB9028-3CC	Clear	1.57	1,000 cps	< 0.5 %	30-50s @ 150 mW/cm <sup>2</sup>
AB9028MV-3CC	Clear	1.58	4,000 cps	< 0.2 %	30-50s @ 150 mW/cm <sup>2</sup>
DSM956-105-3CC	Clear	1.53	1,100 cps	4.0 %	1-2m @ 100 mW/cm <sup>2</sup>
ET90-87-6-3CC	Clear	1.50	350 cps	< 1.0%	1-2m @ 100 mW/cm <sup>2</sup>
ET90-112-1-3CC	Clear	1.54	2,000 cps	--	1-2m @ 100 mW/cm <sup>2</sup>
OG147-3CC	Black	--	200,000 cps	--	1-2m @ 100 mW/cm <sup>2</sup>
OG157-10CC	Slight Yellow	1.57	98,500 cps	--	1-2m @ 100 mW/cm <sup>2</sup>
OP-4-20632-3ML	Clear	1.55	500 cps	< 0.2 %	1-10s @ 150 mW/cm <sup>2</sup>
OP-4-20632-GEL-3ML	Clear	1.55	50,000 cps	< 0.2 %	1-10s @ 150 mW/cm <sup>2</sup>

### Plastic Bonding

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
AB9042-3CC	Clear	--	50,000 cps	2.0 %	5-30s @ 150-300 mW/cm <sup>2</sup>
AB9088LV-3CC	Clear	--	450 cps	--	5-20s @ 150-300 mW/cm <sup>2</sup>
OP-21-3ML	Clear	1.50	600 cps	2.7 %	1-15s @ 150 mW/cm <sup>2</sup>

Section continued on next page

## UV Cure Adhesives (continued)

### Silicone UV Adhesives

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
AB5091-3CC	Translucent	--	5,500 cps	--	20s @ 30 mW/cm <sup>2</sup>

### Biocompatible

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
OG603-3CC	Clear	1.48	300 cps	--	10s @ 100 mW/cm <sup>2</sup>

### UV & Blue Light Cure

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
OG178-3CC	Clear	1.56	500 cps	--	60s @ 100 mW/cm <sup>2</sup> (Visible Light)
OP-30-3ML	Clear	1.51	400 cps	2.3 %	5-30s @ 200 mW/cm <sup>2</sup>
OP-32-3ML	Clear	1.51	4,500 cps	2.3 %	10-30s @ 200 mW/cm <sup>2</sup>

### Hybrid UV & Heat Cure Adhesive

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
ET-90-127-3	--	--	300 cps	--	2m @ 100 mW/cm <sup>2</sup>
ET-90-130	--	--	26,500 cps	--	2m @ 100 mW/cm <sup>2</sup>
OP-24-REV-B-3ML	Clear	1.50	800 cps	3.7 %	10-20s @ 150 mW/cm <sup>2</sup>

### General Purpose

Part Number	Cured Color	I.R.	Viscosity	Shrinkage	Cure Schedules*
AB1297-3CC	Clear	1.49	30,000 cps	--	15s @ 150 mW/cm <sup>2</sup>
AB9047-3CC	Pale Yellow/Green	1.52	2,500 cps	< 1.0 %	1-10s @ 150-300 mW/cm <sup>2</sup>
DSM4D6-225-3CC	Clear	1.49	325 cps	< 3.0 %	60-90s @ 150-200 mW/cm <sup>2</sup>
DSM956-104-3CC	Clear	1.53	2,400 cps	3.0 %	60s @ 25 W/cm <sup>2</sup>
NOA61-3CC	Clear	1.56	300 cps	1.5 %	5-10s @ 150-300 mW/cm <sup>2</sup>
NOA81-6CC	Clear	1.56	300 cps	--	5-20s @ 150-300 mW/cm <sup>2</sup>
OP-20-3ML	Clear	1.46	1,000 cps	2.7 %	1-3s @ 150 mW/cm <sup>2</sup>

\* The required intensity and cure time should be determined during the initial process validation stage. Factors that should be considered during process validation which can effect the adhesive cure rate and depth of cure include: part geometry, bond-gap size, percent of light transmittance through the substrate at 365nm and/or 436nm, distance from the light source to the adhesive bond area, UV and visible light intensity and spectral output of the light source, the desired margin of safety to be built into the process, etc. For specific technical recommendations relating to the application, please call FOC.



23 Centre Street New Bedford, MA USA 02740-6322  
Toll Free: 800-IS-FIBER / Tel: 508-992-6464 / Fax: 508-991-8876  
e-mail : sales@focenter.com  
[www.focenter.com](http://www.focenter.com)

## Specialty Epoxy & Adhesives



**ANGSTRÖM Bond®**

### Specialty Epoxy & Adhesives

These adhesives are loosely categorized in the following tables, but we recommend that you speak with one of our application engineers to ensure you have the right product for your application.

- Electrically Conductive
- Thermally Conductive
- Boot Bonding
- Flexible
- Spectrally Transparent
- Cyanoacrylate (Quick Cure)
- General Bonding

#### Electrically Conductive

Part Number	Cured Color	Viscosity	Working Time	Cure Schedules		
AB2902-2.5G	Silver	Creamy Paste	2 - 3 Hours	24h @ 25°C	1-2h @ 65°C	30m @ 100°C
ETH20E-2.5G	Silver	2200 - 3200 cps	2 - 3 Days	90m @ 80°C	15m @ 120°C	5m @ 150°C

#### Thermally Conductive

Part Number	Cured Color	Viscosity	Working Time	Cure Schedules		
AB9578-2.5G	Grey	8,200 cps	30 minutes	8-12h @ 25°C	2h @ 60°C	1h @ 80°C
ETH70E-2.5G	Silver	4000 - 7000 cps	4 Days	90m @ 80°C	15m @ 120°C	5m @ 150°C

#### Boot Bonding

Part Number	Cured Color	Viscosity	Working Time	Cure Schedules	
				25°C	65°C
AB9245-2.5G	Clear Amber	4,000 cps	2 hours	18 h	1-2 h
AB9247-2.5G	Clear Amber	5,500 cps	2 hours	18 h	1-2 h

#### Flexible

Part Number	Cured Color	Viscosity	Working Time	Cure Schedules		
				25°C	65°C	90°C
AB9195-2.5G	Clear Yellow	200 cps	3-4 hours	24 h	3-4 h	30m
AB1620-3CC	Translucent	32,000 cps	16 minutes	24 h	--	--
AB1624-3CC	Translucent	55,000 cps	13 minutes	24 h	--	--

#### Spectrally Transparent

Part Number	Cured Color	Viscosity	Working Time	Cure Schedules	
				25°C	65°C
ET305-2.5G	Clear	100 - 300 cps	20 minutes	8-12 h	1 h
AB9110LV-2.5G	Clear	500 cps	60 Minutes	18 h	1 h

Section continued on next page

Specifications may change without notice

EPOXY & ADHESIVES / B-9

CONSUMABLES

## Specialty Epoxy &amp; Adhesives (continued)

## Cyanoacrylate (Quick Cure)

Part Number	Cured Color	Viscosity	Working Time	Cure Schedules
ND362-2G	Clear	5,000 cps	Not Applicable as these cure in seconds when the resin comes in contact with the primer	
ND330100-1G	Clear	90 - 120 cps		

## High Temperature

Part Number	Cured Color	Viscosity	Working Time	Cure Schedules		
				100°C	120°C	160°C
AB9310-10Z	White	1,000 cps	5 Days	30 min @ 135 °C + 30 min @ 175 °C		
ET364-2.5G	Slight Yellow	30,000 cps	4 hours	30 min	15 min	5 min
OD2002-2.5G	Amber	36,000 cps	4 hours	15 min		

## General Optical Bonding

Part Number	Cured Color	Viscosity	Working Time	Cure Schedules		
				25°C	65°C	90°C
AB9110LVBLUE-2.5G	Black	500 cps	60 Minutes	18 h	1 h	
AB9190-2.5G	Clear	150 cps	2-3 hours	18 h	1-2 h	20 m
AB9226-2.5G	Clear	13,000 cps	5 minutes	18 h	1 h	
AB9263-2.5G	Amber	30,000 cps	90 minutes	16 h	1-2 h	
AB9282-2.5G	Gray	8,000 cps	2-4 hours	24 h	1 h	30 m
ET301-2.5G	Clear	100 - 200 cps	30 - 50 minutes	12 h	2 h	
ET301-2-2.5G	Clear	125 cps	8 hours	48 h		1 h
ET301-2FL-2.5G	Clear	300 - 600 cps	12 hours	72 h		1 h
ET302-3M-2.5G	Clear	800 - 1,600 cps	90 - 120 Minutes	12 h	1.5 h	
ET320-2.5G	Black	1,000 cps	1.5 hours	18 - 24 h	1.5 h	
ET320LV-2.5G	Black	200 cps	1.5 hours	18 - 24 h	1.5 h	

Most materials can be supplied in easy to use 2-part packages, premixed and frozen syringes or cartridges, jars, vials, quarts, gallons or other specialty packaging as required. Please contact FOC for information.

Specifications may change without notice