Opti-tec 5007-1
Clear Epoxy Adhesive for Optics

Description

Opti-tec 5007-1 is a two component, low viscosity clear epoxy adhesive with a two hour pot life, capable of curing within 20 minutes at 75°C. Opti-tec 5007-1 has excellent sealing and bonding characteristics due to its viscosity and wetting properties. Cured material has high shock and impact resistance with outstanding chemical, moisture and thermal resistance.

The adhesive is designed for fibre optic terminating (pot and polish of fibre optic connectors), where its ability to cure at ambient or minimal raised temperatures gives process enhancements. It can be used for bonding and potting optical components such as prisms, lenses, LED displays and fibres, and for general precision bonding.

Features & Benefits

- Clear adhesive with a viscosity of 1000 cps
- Also available in a blue version (Opti-tec 5007B-1) for ease of inspection in fibre terminating
- Two hour pot life after mixing and cures within 16-24 hours at room temperature. Cure can be achieved in 20 minutes at 75°C or 5 minutes at 100°C.
- High surface energy and low viscosity allows it to readily wet and wick between optical fibres. It develops strong adhesion to most materials used in fibre optics and optics, including metals, ceramics, glass and many plastics.
- Good impact and thermal shock resistance
- Low exotherm, low shrinkage, low stress cure
- Excellent chemical and moisture resistance with a very low exotherm, making it suitable for small potting and encapsulation applications
- Used for Telcordia GR-326-CORE compliant assemblies (General Requirements for Singlemode Optical Connectors and Jumper Assemblies – formerly Bellcore), where its high Tg and environmental robustness allow the termination to meet the specification. Note: optimal cure schedule required.
- Opti-tec 5007B-1, when cured, is considered non-cytotoxic and meets the requirements of the Elution Test, ISO 10993-5.

Applications

- Fibre optic terminating, multimode fibres
- Endoscope manufacture and repair
- Optical potting & bonding
- Medical device assembly – ISO 10993-5
- Glass bonding

Contact us for more information about our adhesives

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Specifications

Part number change: as of version 4.0, April 2021, the part number of this product changed from OPT5007 to OPT5007-1 and OPT5007B to OPT5007B-1. This is due to an unavoidable change in a formulation component. This change does not affect the product data-sheet specifications. The new formulation has passed internal testing and is deemed to be equivalent.

Typical Properties	
Colour	Opti-tec 5007-1 – clear Opti-tec 5007B-1 – blue
Mix ratio	100:25 resin to hardener
Mix viscosity	500-1500 cps
Shelf life	12 months from date of manufacture
Pot life	2 hours @ 23°C (4g mix)
Shrinkage on cure	2-3%
Cured Properties (5 minutes @ 100°C)	
Glass transition temperature (Tg)	105°C
Specific gravity	1.1
Hardness	Shore D 85
Temperature resistance	-60 to 200°C
CTE	55 ppm/°C
Refractive index	1.55
Surface tension	42-44 mN/m

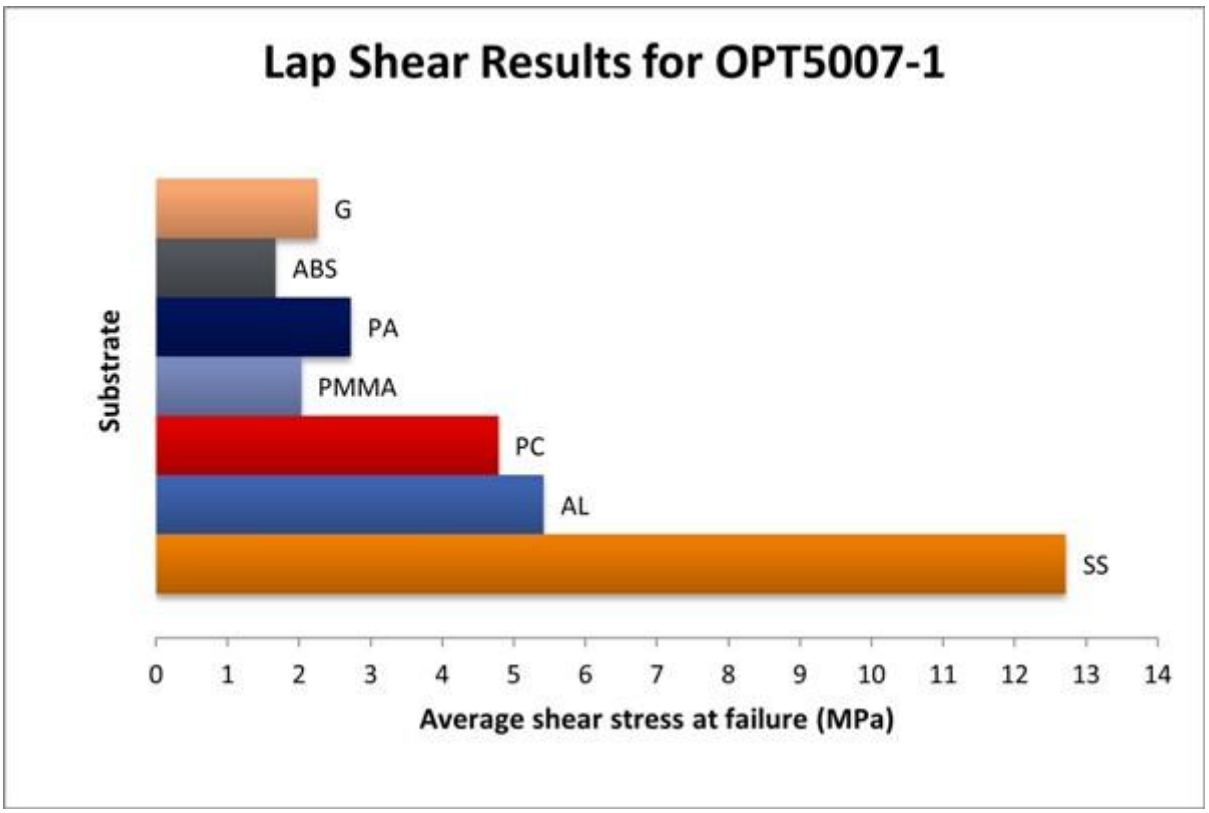
Cure Schedule

Bondline Temperature	**Time**
25°C	16-24 hours
75°C	20 mins
100°C	5 mins

Cure time will depend on cross sectional area, ambient conditions, and mixing method. The above data is given as a guide only. Hotter temperatures may be used for faster cure but will result in higher post cure shrinkage and higher cure exotherm. Experimentation and testing is suggested to avoid side effects.

Lap Shear Adhesion

Stainless steel	12.7 MPa
Aluminium 6082 T	5.4 MPa
Polycarbonate	4.8 MPa
PMMA	2.0 MPa
Nylon 6/6	2.7 MPa
ABS	1.7 MPa
Glass	2.3 MPa



Storage and Shelf Life

12 months at 25 +/- 10 °C

Many epoxy resin systems are prone to crystallization as epoxy resin is a super-cooled fluid. This condition may give the product a gritty or grainy appearance (or hazy in clear products). Products in this state will not usually cure to normal and expected properties. In extreme cases it may appear solid and cured. Fluctuating temperatures (within 5 to 50 °C) aggravate this phenomenon. Heating the individual component to 50 to 60 °C while stirring can usually restore products to original state.

Health and Safety

Epoxy resin systems may cause sensitisation by skin contact or inhalation may be corrosive, harmful or toxic. It is therefore strongly recommended that skin and eye contact is avoided by the using of appropriate personal protective equipment such as gloves, safety glasses or goggles and overalls.

Wash any contamination from the skin immediately and thoroughly and do not eat, smoke or drink in the working vicinity. Under normal working conditions a good source of ventilation is adequate, however if the material is heated, or where vapour levels are likely to exceed the occupational exposure limits appropriate respiratory protection must be worn.

Local exhaust ventilation (LEV) may be required especially for curing ovens or where large volumes of material are curing.

The above is given as a guide only; please refer to OPT 5007-1 safety data sheet individual/specific advice.

Useful Resources

Product webpage

Warranty

Statements, technical information and recommendations contained herein are based on tests we

believe to be reliable but they are not to be construed in any manner as warrantees expressed or implied. The user shall determine the suitability of the product for his intended use and the user assumes all risk and liability whatsoever in connection therewith.