Opti-tec 5054-1
High Temperature Epoxy Adhesive

Description

Opti-tec™ 5054-1 high-temperature epoxy adhesive is a two-component, low viscosity, heat curing epoxy. It is formulated for very high-temperature resistance and can operate up to 350°C for short periods. Its structure gives the material outstanding environmental resistance including superheated steam at 135°C. Opti-tec 5054-1 finds applications in fibre optic terminations where superior thermal and environmental resistance is required. It has passed ISO 10993-5 for medical device applications.

Opti-tec 5054-1 has a thixotropic, high viscosity version – Opti-tec 5054-T.

Features & Benefits

- Can withstand high temperature steam autoclaving and operate for short periods up to 350°C
- Very long pot life of 12 hours after mixing
- High surface energy low viscosity allows it to readily wet and wick between optical fibres
- Strong adhesion to most materials used in fibre optics and optics, including metals, ceramics, glass and most plastics
- Low shrinkage on cure, reducing internal stresses within the bond. It is therefore suitable for multiple fibre assemblies.
- Excellent impact and thermal shock resistance, with low internal stresses
- High glass transition temperature – excellent high temperature performance and creep resistance
- Very high resistance to moisture, vapours and most chemicals
- Low outgassing and low vapour pressure, making it an ideal sealing material for electronic and optical 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.
- When cured, is considered non-cytotoxic and meets the requirements of the Elution Test, ISO 10993-5. Further ISO 10993 and USP Class VI qualification pending.

Applications

- Fibre optic terminating
- Endoscope manufacture and repair
- Optoelectronics
- High temperature, high performance bonding
- Electronic sealing
- Medical devices and instruments
- Unitising voice coils

Contact us for more information about our adhesives

t 01865 842842
e info@intertronics.co.uk
www.intertronics.co.uk

Station Field Industrial Estate
Banbury Road, Kidlington
Oxfordshire, England OX5 1JD

Specifications

Part number change: as of version 6.0, April 2021, the part number of this product changed from OPT5054 to OPT5054-1. 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	
Mix ratio	100:85 resin to hardener
Mixed viscosity	500 – 1000 cps
Colour	Amber
Surface tension	40-44 mN/m
Pot life	12 hours @ 23°C

Cured Properties (5 minutes @ 150°C)	
Glass transition temperature (Tg)	>140°C
Density	1.20
Hardness	Shore D 92
Temperature range	-60 to 250°C
Modulus	2 GPa
Shrinkage on cure	<3.5%
CTE	55 ppm/°C
Lap shear (Al/Al)	11 MPa (@ 23°C)
Shelf life	12 months in original sealed containers

Cure Schedule

Bondline Temperature	**Time**
120°C	30 minutes
150°C	5-10 minutes

Note: Optimal cured properties are achieved by curing for 5 minutes at a bondline temperature of 150°C. Whilst lower cure temperatures are quoted, they are not recommended for best performance.

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 OPT5054-1 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.