ThreeBond

Three Bond International, Inc.
Technical Data Sheet

Three Bond 3164F - UV CURABLE SILICONE ADHESIVE/SEALANT

Information

Three Bond 3164F is an UV curing silicone with secondary moisture cure, combining the quick curing speed of UV adhesives with the excellent temperature resistance of silicone sealants. The adhesive has two curing mechanisms: portions of this product directly exposed to UV rays cure in seconds; other portions in the shadow regions can cure with atmospheric moisture.

Compared with acrylic UV adhesives, TB3164F has improved high and low temperature resistance and improved elasticity. Compared with RTV silicone, TB3164F has a faster cure rate due to UV curing, shortening the processing time. TB3164F does not produce corrosive byproducts from the UV cure nor the moisture cure mechanisms, making the adhesive an excellent choice for situations where metal is exposed to the curing byproducts.

After curing, TB3164F becomes an elastic rubber which can be used for sealing, coating, potting, bonding, especially for electric/electronic components. TB3164F has good adhesion to many different substrates including metals and plastics.

TB3164F maintains flexibility, tensile strength and good adhesion to substrates during rapid heating and cooling cycles as well as long term heat and cold conditions. TB3164F is resistant to automatic transmission fluid; it maintains exemplary flexibility and does not experience complete loss of strength.

Features

- Excellent UV curing properties
- 1-component, solvent-free
- Rapid surface cure with UV radiation
- The portion of this product not directly exposed to UV rays can cure by moisture in the air (alcohol by-product).
- Excellent for deep curing or shadowed applications
- Excellent high and low temperature resistance
- Excellent automatic transmission fluid resistance (ATF)
- Excellent bonding to many substrates

Applications

TB 3164F is best for potting or bonding, especially for electric/electronic components needing a deep cure or shadow area cure and good adhesion to metal and plastic. TB 3164F can also be used for sealing, coating, and end sealing applications where good adhesion and rapid cure is needed.

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Typical Properties

1. Uncured State:

Property	Units	Value	Test Method	Remarks
Appearance	-	White	3TS-2100-001	-
Viscosity	Pa·s (P)	4.0 (40)	3TS-2F00-007	DV-III Ultra; CPE51, 20 rpm
Specific gravity	-	1.01	3TS-2500-002	25°C
Flash Point	°C	112	ASTM D93-11	Pensky Martens Test Method

2. Characteristics of Cured Product:

UV Light Source: High pressure mercury lamp ('D' Type Bulb or 'H' Type Bulb)
UV Exposure: 4000 mJ/cm^2,
Projection distance: 15 cm
Peak Irradiance: 4.7 W/cm^2
Moisture cured: 25^{o}C × 55% RH × 7 days

2.1. UV + Moisture cured Properties:

Cured Condition: 4000 mJ/cm^2 + (25^{o}C , 55% RH)× 7 days

Property	Units	Value	Test Method
Hardness (Shore A)	-	10	3TS-2B00-004
Hardness (Shore C)	-	30	3TS-2B00-004
Tensile strength	MPa	0.2	3TS-4190-05
Elongation	%	150	3TS-4190-05
Heat Shock Stability	-40°C to 130°C	144 x 1 hour cycles	3TS-9400-007

2.2. Heat Aging at 150°C×168 Hours in forced air oven :

Cured Condition: 4000 mJ/cm^2 + (25^{o}C , 55% RH)× 7 days

Property	Unit	Initial	150°C	Test Method
Hardness (Shore C)	---	27	34	3TS-2B00-004
Tensile strength	MPa	0.25	0.25	3TS-4190-05
Elongation	%	192	120	3TS-4190-05

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2.3 ATF Resistance {(150°C) ×(0, 168) Hours in pressure pot with ATF}
Cured Condition: 4000 mJ/cm^2 + (25^{o}C , 55% RH)× 7 days

Property	Unit	Initial	168 h	Test Method
Hardness (Shore C)	---	27	10	3TS-2B00-004
Tensile strength	MPa	0.25	0.05*	3TS-4190-05
Elongation	%	192	400*	3TS-4190-05

*Testing machine reached max extension before sample failure occured.

These are typical results and not specifications.

General Use Application Instructions for Adhesive

A) For industrial use only.
B) Use localized ventilation to maintain exposure of byproduct to below the allowable concentration limits.
C) Clean the surface of parts to be bonded. This surface should be free of water, oil and other contaminates.
D) Apply the specific amount of adhesive for the application without air bubble.
E) Use appropriate worker safety equipment to shield against stray UV damage to skin or eyes.
F) Full-Cure Schedule: 3000mJ/cm^2 of UV Exposure by Mercury type 'D' or Mercury type 'H' Bulb followed by 7 days at 25°C and 55%RH
G) In case of skin exposure or eye contact, please read the (M)SDS ((Material) Safety Data Sheet) for this product

Storing Instructions

After receipt, resin should be stored with the lid closed, in the original container, in the following conditions: 5-10°C to maintain product stability in a dark or UV free area to prevent exposure to UV radiation. Samples will be very stable if the above listed storage conditions are followed.

Disposal method

Handle uncured adhesive in accordance with local hazardous waste provisions.

Disclaimer

Data included in this technical data sheet are typical when the UV-moisture cured sealant is used according to its use instructions. Product properties for specific applications should be confirmed in lab testing and from actual trial run results.