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## PRODUCT DATA SHEET: Polyphen TLHB Hot Stop Thermal Barrier

**Part#:** TLHB

### SELECTION DATA

#### PRODUCT DESCRIPTION:

Polyphen TLHB Thermal Barrier Coating is a thermally cured coating that makes use of a unique binding system to retain high temperature stability while reducing thermal transfer. The cured material is capable of providing increased thermal resistance while also providing a very slick surface.

TLHB is not affected by most chemicals. TLHB can aid in the more even distribution of heat as well as allow for more efficient operation of the protected part. Part life increase is also a benefit as well as increased corrosion resistance. TLHB has excellent resistance to lead free solder and will protect solder pots and pumps against damage.

The film thickness as applied ranges from .0005" to .003" and is not sensitive to the manner in which it is applied. If a run or other excessive film build occurs it will simply bubble and crack. The damaged surface may be lightly sanded and then put in service, as normally the coating is not damaged to the base metal level.

TLHB may be applied in multiple coats to achieve maximum thickness. Apply a single coat at a time, with a "flash" at 200°F for 10 minutes between coats. Allow to cool to ambient before applying the next layer of material.

**RECOMMENDED USES:** TLHB can be used on any surface that can handle the cure temperature and is subject to thermal or chemical attack. Automotive uses include exhaust systems, exhaust ports and brake system components. Industrial uses include lead free solder applications, mold release, thermal and electrical insulation of components. TLHB can be modified from its standard formulation to meet FDA requirements for food contact surfaces.

**CURE:** 300°F for 1 hour at temperature. (Note: special order version with a 200°F cure available.)

**TEMPERATURE RESISTANCE:** (non-immersion)  
700°F substrate, 1000°F maximum intermittent environmental

**APPLIED FILM THICKNESS:** .0005" to .00015"

**HRC (Equivalent Rockwell C Scale):** N/A

**ADHESION (Tape Test ASTM D 3359):** 5B

**PENCIL HARDNESS TEST:** 8+

**IMPACT TEST (ASTM D2794 2 lb. Weight):** pass at 48"  
(Circular stretch marks visible but no cracking or delamination).

**FLEXIBILITY/ BENDING ADHESION:** 90° bend: Pass

**THERMAL TEMPERATURE RESISTANCE:** 700°F  
constant and over 1000°F intermittent environmental.

**SALT SPRAY RESISTANCE:** 800+ hours.

**CORROSION TEST DATA:** Excellent.

**ACCEPTABLE SUBSTRATES FOR APPLICATION:**  
Ferrous and non-ferrous substrates, plastics and composites that can handle the cure temperature.

**ELECTRICAL PROPERTIES:** Non-Conductive.

**CHEMICAL RESISTANCE:** Excellent including aviation gasoline, hydraulic fluid, jet fuel, nitric acid 10%, hydrochloric acid 10%, hydrogen peroxide 3%, sulfuric acid.

#### **THERMAL SHOCK TESTING:**

1. Immersed in liquid nitrogen (-273°C) for 1 hour
2. Plates immediately heated to +1300°C
3. Plates re-immersed in liquid nitrogen
4. Continues cycle of test for 8 hours

**COATING ADHESION (ASTMD4541):** 4.5 excellent

**FLEXIBILITY (ASTMD522):** 180° full load: No failure.

**IMPACT (SABS 16):** 14 Jules: Coatings intact with no failure.

**DRY FILM EVALUATION ASTM D1186-87:** 11.6 1.46

**CONDENSATION WATER TEST (DIN 50'017):** No failure  
D1186-87: 11.6 1.46

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