

# PERMABOND<sup>®</sup> HH167

*High Strength, High Viscosity  
Metal Repair Anaerobic Compound*

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Ref.#: 022908PBHH167

## TYPICAL APPLICATIONS

### General Maintenance

Retaining keys and bearings  
Restores correct fit  
Repairs worn machine parts

### General Assembly

Reduces the cost required for highly finished surfaces  
Seals against corrosion between two closely fitting parts  
Eliminates the need to heat assemblies for press fits

## FEATURES & BENEFITS

- ◆ Reduces cost by allowing the use of lighter press fits
- ◆ Prolongs bearing life by reducing the stress on bearings caused by press fits
- ◆ Prevents corrosion between mated parts by excluding air and moisture from the joint
- ◆ Improves alignment by filling space between bearing rings and housings
- ◆ Excellent gap filling capability
- ◆ Keeps machinery on line by dressing worn parts
- ◆ Strengthens the joint by augmenting the press fit used to assure concentricity of the shafts and bearings
- ◆ Prevents corrosion between mated parts by excluding air and moisture from the joint
- ◆ Prevents loosening caused by vibration and thermal expansion

## GENERAL DESCRIPTION

**PERMABOND<sup>®</sup> HH167** is a high viscosity retaining compound that cures when confined between metal parts to form a tough, hard plastic. It is best suited to repair worn parts and to restore correct fits. The high viscosity and thixotropic effect of the material allows for larger tolerances. In the uncured, liquid, state the adhesive wets the metal surfaces, keying into all surface irregularities and fills the space between the mated parts.

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## PERMABOND

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Once cured, the anaerobic adhesive fills the space between the parts preventing loosening from vibration or thermal expansion. When cured, **HH167** seals the joint against attack by harsh environments.

**PHYSICAL PROPERTIES OF THE UNCURED ADHESIVE**

<u>Properties</u>	
Base Resin	Methacrylate
Solids, %	100
Color	Silver
Viscosity, cP, 25°C (77°F)	500,000
Gap Filling, mm (in)	0.30 (0.012)
Specific Gravity	1.1
Flash Point, °C (°F)	>100 (212)
Shelf Life stored at or below 25°C (77°F), months*	12

\*Package sizes greater than one liter, six months.

**CURING PROPERTIES**

Cure Speed*	
Fixture time (min)	15
Full Cure (hours)	24

\*Measured on clean M10 steel nuts & bolts.

**BEHAVIOR ON DIFFERENT SUBSTRATES**

**PERMABOND® HH167** retaining compound performs best on clean steel but will perform satisfactorily on most metals including anodized aluminum, stainless steel, brass, oily and “as received” finishes, and plated fasteners. When used on “inactive and passive” materials, speed of cure is slowed and ultimate strength may be reduced. Generally, fixturing strength is achieved in approximately 15 minutes on active metals and 30 minutes on passive metals. Cure speed and strength development may be accelerated by heat (up to 121°C [250°F]). Conversely, when temperatures during cure are below 21°C (70°F), speed of cure will be reduced. Use of **PERMABOND® ASC10** Surface Conditioner will accelerate cure rates, but may affect ultimate strength with up to a 25% strength reduction. **PERMABOND® ASC10** Surface Conditioner may also be used for inducing cure on non-metals.

### Activity of Materials and Finishes

Super	Active	Inactive	Passive Active
Brass Copper Magnesium	Iron Steel Nickel Aluminum	Anodized aluminum Cadmium finishes Chrome finishes Passivated metals Painted finishes Stainless steel Titanium Zinc	Ceramics Glass Plastics
Super Active Active Inactive Passive	Very fast cure Fast cure Slow cure No cure without PERMABOND® ASC10 Surface Conditioner		

### PERFORMANCE PROPERTIES OF THE CURED ADHESIVE

Cured at 25°C for 24 hours	
Torque, ISO 10964	
Breakaway, lb-in (N·m)	
M10 steel nuts and bolts	280 (32)
Prevail, lb-in (N·m)	
M10 steel nuts and bolts	400 (45)
Compressive shear strength, ISO 10123 (Steel pin and collars)	4700 psi (32 N/mm <sup>2</sup> )

### ELECTRICAL PROPERTIES

Dielectric Strength, MV/m	11
Electrical Resistance, Ωm	10 <sup>17</sup>

### THERMAL PROPERTIES

Thermal Conductivity, W/mK	0.19
Thermal Expansion Coefficient, in/in/°C	90 x 10 <sup>-6</sup>

## HEAT RESISTANCE

**PERMABOND® HH167** Retaining compound cures to a crosslinked, thermoset plastic with excellent resistance to environmental conditions and high temperatures. The maximum temperature recommended for use is 150°C (300°F).

## CHEMICAL RESISTANCE

When fully cured and crosslinked, **PERMABOND® HH167** Retaining compound resists most chemicals, even at elevated temperatures. Chemical washes of any kind will have no effect on the adhesive as they are of short duration. **PERMABOND® HH167** Retaining compound is not recommended for use in the severe environment of pure oxygen, or extremely strong acids and alkalis.

340 Hour Immersion	Temperature, °C (°F)	Initial Strength Retained, %
Water	75 (168)	100
Butyl alcohol	75 (168)	100
Toluene	75 (168)	99
Motor oil	75 (168)	99
Hydrocarbon test fluid	75 (168)	100
JP4-jet fuel	75 (168)	93
JP5-jet fuel	75 (168)	100
Ethylene glycol	75 (168)	99

For additional chemicals, consult the **PERMABOND®** Bulletin: "PERMABOND® Anaerobic Adhesives and Sealants Chemical Compatibility List."

## VIBRATION RESISTANCE

The primary use of **PERMABOND® HH167** Retaining compound is to prevent loosening of fasteners under vibration, in addition to providing a controlled off-torque. **PERMABOND's** HH167 Retaining compound exceeds the performance of lockwashers, springwashers, nylon patches, and other mechanical vibration-resistant locking systems.

## VISCOSITY & GAP FILLING PROPERTIES

**PERMABOND® HH167** Retaining compound is a high viscosity adhesive, and allows filling of larger gaps such as coarse threaded fasteners.

## APPLICATION & DISPENSING

1. For best results, clean all surfaces with a cleaning solvent and allow to dry.
2. If the substrates being used are inactive metals or the cure speed is too slow, then spray the parts with **PERMABOND ASC10** and allow to dry.
3. On slip fitted assemblies, apply adhesive on the leading edge of the pin and on the inside of the collar. Assemble with twisting action.
4. On press fitting assemblies, apply the adhesive on the pin and collar. Assemble using a press.
5. On shrink fitted assemblies, apply the adhesive to the pin, heat the collar to create enough clearance and assemble.
6. Allow the parts to fixture before disturbing them.

**PERMABOND® HH167** Retaining compound may be readily dispensed from the bottle directly onto the parts. However, application via automated dispensing equipment is feasible.

**STORAGE & HANDLING:**

**PERMABOND® HH167** Material should be stored in the original container in a cool place away from sparks, flame, excessive heat and sunlight. Handling should be done using plastic gloves and proper eye protection. Skin contact should be avoided. If skin contact occurs, the affected area should be washed thoroughly with soap and water. Eye contact should be treated by thorough washing with water followed by medical attention. Adequate ventilation is necessary to prevent inhalation of vapors. Proper Personal Protective Equipment is always recommended when using chemicals. **For more information, consult the Material Safety Data Sheet.**

**PERMABOND® HH167** Retaining compound has a shelf life of one year when stored at or below 25°C (77°F). Do not freeze. Product removed from original container might be contaminated during use. Do not return this material to the original container.

**FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN.**