

PERMABOND[®] HM128



**High Strength, Medium Viscosity
Anaerobic Threadlocker**

Ref #: 011408PBHM128

TYPICAL APPLICATIONS

General Maintenance and Assembly

Replaces lockwashers
Seals fasteners against water and chemicals
Permanent Thread Locking for Tamper
Resistance

Typical Industries Served

Furniture
Automotive
Appliances
Construction

FEATURES & BENEFITS

- ◆ Full Cure at Room Temperature
- ◆ Thixotropic Rheology
- ◆ Easy to Use & Apply
- ◆ Low Shrinkage During Cure
- ◆ Resistance to Vibration Loosening
- ◆ Environmentally Friendly-100% Solids
- ◆ Controlled Off-Torque
- ◆ Superior Environmental Resistance

GENERAL DESCRIPTION

PERMABOND HM128 Threadlocker is a high strength adhesive for permanent assembly.

PERMABOND HM128 Threadlocker is typically used for preventing vibration loosening of bolts, studs and cap screws. Full cure to a cross-linked plastic is achieved reliably and fast on steel and all common bolt platings. Additional application areas include machinery, equipment, and electric motor manufacturers.

PERMABOND HL128 Threadlocker replaces lock washers.

PHYSICAL PROPERTIES OF THE UNCURED ADHESIVE

<u>Properties</u>	
Base Resin	Methacrylate Esters
Solids, %	100
Color	Red
Viscosity, cP, 25°C (77°F)	500
Consistency	Liquid
Gap Filling, in	0.006
Specific Gravity	1.09
Flash Point, ° C (°F)	>110 (230)
Shelf life stored at or below 27°C (80°F), months*	12

*Package sizes greater than one liter, six months.

Non-Warranty: The information given and the recommendations made herein are based on our research and are believed to be accurate but no guarantee of their accuracy is made. In every case we urge and recommend that purchasers before using any product in full-scale production make their own tests to determine to their own satisfaction whether the product is of acceptable quality and is suitable for their particular purpose under their own operating conditions. **THE PRODUCTS DISCLOSED HEREIN ARE SOLD WITHOUT ANY WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED.**

No representative of ours has any authority to waive or change the foregoing provisions but, subject to such provisions, our engineers are available to assist purchasers in adapting our products to their needs and to the circumstances prevailing in their business. Nothing contained herein shall be construed to imply the non-existence of any relevant patents or to constitute a permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of this patent. We also expect purchasers to use our products in accordance with the guiding principles of the Chemical Manufacturers Association's Responsible Care[®] program.

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SPEED OF CURE

Speed of Cure*	
Fixture Strength, minutes	5
Full Strength, hours	24

*Measured on clean M10 steel bolts and steel nuts.

BEHAVIOR ON DIFFERENT SUBSTRATES

PERMABOND's HM128 Threadlocker 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 5 minutes on active metals and 10 minutes on passive metals. Cure speed and strength 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's ASC10** Surface Conditioner will accelerate cure rates, but may affect ultimate strength with up to a 25% strength reduction. **PERMABOND's ASC10** Surface Conditioner may also be used for inducing cure on non-metals.

Activity of Materials and Finishes

Super Active	Active	Inactive	Passive
Brass Copper Magnesium	Iron Steel Nickel Aluminum Stainless steel Titanium Zinc	Anodized aluminum Cadmium finishes Chrome finishes Passivated metals	Ceramics Glass Plastics Painted finishes
Super Active Active Inactive Passive	Very fast cure Fast cure Slow cure No cure without PERMABOND's 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	275 (31)
Prevail, lb-in (N·m)	
M10 steel nuts and bolts	350 (40)
Compressive shear strength, ISO 10123 (Steel pin and collars)	2500 psi (17) N/mm ²

THERMAL PROPERTIES

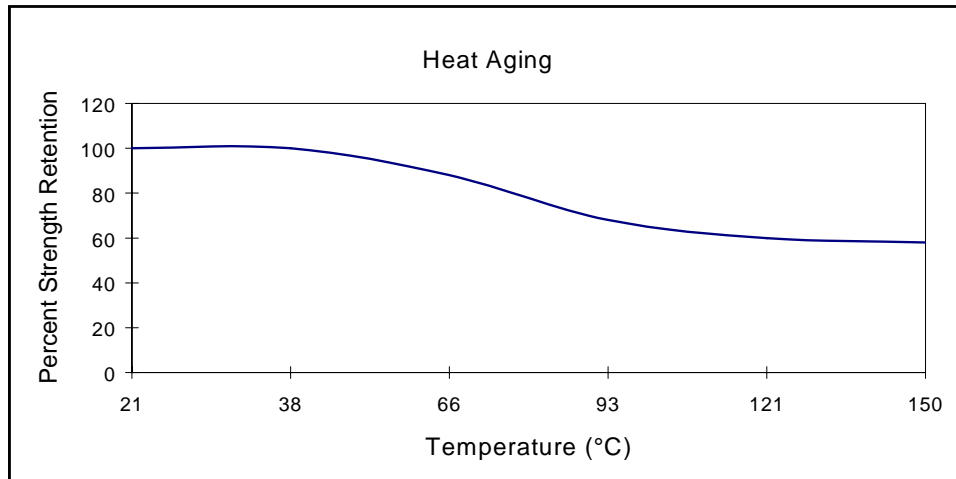
Operating Temperature Range, °C (°F)	< 150 (300)
Thermal Conductivity, W/mK	0.19
Thermal Expansion Coefficient, in/in/°C	90×10^{-6}

HEAT RESISTANCE

PERMABOND HM128 Threadlocker 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).

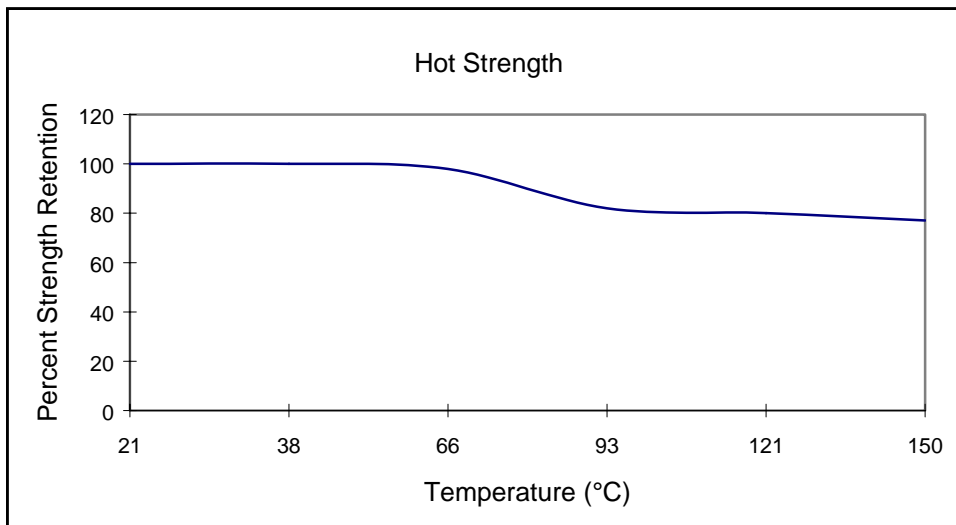
HEAT AGING

The strength retention of **PERMABOND HM128** Threadlocker measured at room temperature after 1000 hours aging at elevated temperatures is shown:



HOT STRENGTH

The strength retention of **PERMABOND HM128** Threadlocker measured at elevated temperatures following 2 hours aging is shown:



ELECTRICAL PROPERTIES

Dielectric Strength, MV/m 11
Electrical Resistance, Ωm 10^{17}

CHEMICAL RESISTANCE

When fully cured and crosslinked, **PERMABOND HM128** Threadlocker 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 HM128** Threadlocker is not recommended for use in the severe environment of pure oxygen, or extremely strong acids and alkalis.

340 Hour Immersion	Temperature, °C (°F)	Full Strength Retained, %
Water	75 (168)	98
Butyl alcohol	75 (168)	94
Toluene	75 (168)	98
Motor oil	75 (168)	100
Hydrocarbon test fluid	75 (168)	96
JP4-jet fuel	75 (168)	100
JP5-jet fuel	75 (168)	90
Ethylene glycol	75 (168)	96

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

VIBRATION RESISTANCE

The primary use of **PERMABOND HM128** Threadlocker is to prevent loosening of fasteners under vibration, in addition to providing a controlled off-torque. **PERMABOND HM128** Threadlocker exceeds the performance of lockwashers, springwashers, nylon patches, and other mechanical vibration resistant locking systems.

VISCOSITY & GAP FILLING PROPERTIES

The viscosity of **PERMABOND HM128** Threadlocker provides an optimum balance between gap filling and ease of dispensing.

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. Prevent the tip from touching metal surfaces during application.
4. When working with thru holes, dispense a bead of material across the contact length of the treads.
5. When working with blind holes, apply several drops down the threads to the bottom of the hole.
6. Assemble and torque the parts as necessary.

PERMABOND HM128 Threadlocker may be readily dispensed from the bottle directly onto the parts. However, application via automated dispensing equipment is feasible.

STORAGE & HANDLING

PERMABOND HM128 Threadlocker should be stored in the original unopened 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 HM128 Threadlocker has a shelf life of one year when stored at or below 27°C (80°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.