



3M™ Fastener Adhesive 2510 and 2510N

Technical Data Sheet



General Description

3M™ Fastener Adhesives 2510 (orange) and 2510N (neutral) are microencapsulated, room-temperature-curing adhesives that enhance the anchorage of threaded fasteners. The adhesives are designed to be coated on the fasteners and dried; they remain dormant until the shearing action of engaging the fastener into a nut or threaded cavity breaks the capsules and allows the adhesive to cure. Typical applications are fasteners for the engine compartment or safety-related parts.

Plastics prone to stress-cracking should not be used in proximity to 3M Fastener Adhesives.

3M Fastener Adhesives 2510 and 2510N are designed for applications with continuous service temperatures up to 149°C (300°F) or intermittently up to 204°C (400°F).

**The 2510/2510N products can be exposed to temperatures as high as 177°C (350°F). At the higher temperatures there will be loss of adhesion but no damage to the adhesive. When the temperature is lowered again, adhesion will be regained.*

Physical Properties

3M™ Fastener Adhesive		
Bulk Adhesive	2510	2510N
Color	Orange	Neutral
Solvent Base	Toluene and Isopropyl Alcohol	

Bulk Adhesive Storage and Handling

Container Sizes	18.9 liter (5 gallon) pails
Shelf life	Fifteen months from date of manufacture. Rotate inventory on first-in, first-out) basis.
Storage conditions	Store pails at 4°- 38°C (40°- 100°F). Store in a facility rated for storage of flammable liquids. Check local codes. PROTECT FROM FREEZING. Exposure to low temperatures makes a component of this formulation less soluble in toluene. When the adhesive solids settle quickly and sink below the toluene dilution solvent, correct by adding Isopropyl Alcohol (IPA).*

* Note: When using solvents, extinguish all ignition sources, including pilot lights and follow the manufacturer's precautions and directions for use.

Bulk Adhesive Storage and Handling (continued)

Mix before use	Adhesive solids settle to bottom of pail. Mix prior to use. Use stirrer, pail-shaker or pail-tumbler rated for flammables.
Dilution to target viscosity	Dilute with 90/10 mixture of toluene/IPA. Dilution with toluene only will cause rapid settling of solids once the IPA concentration becomes too low.

Coated Fastener Storage and Handling

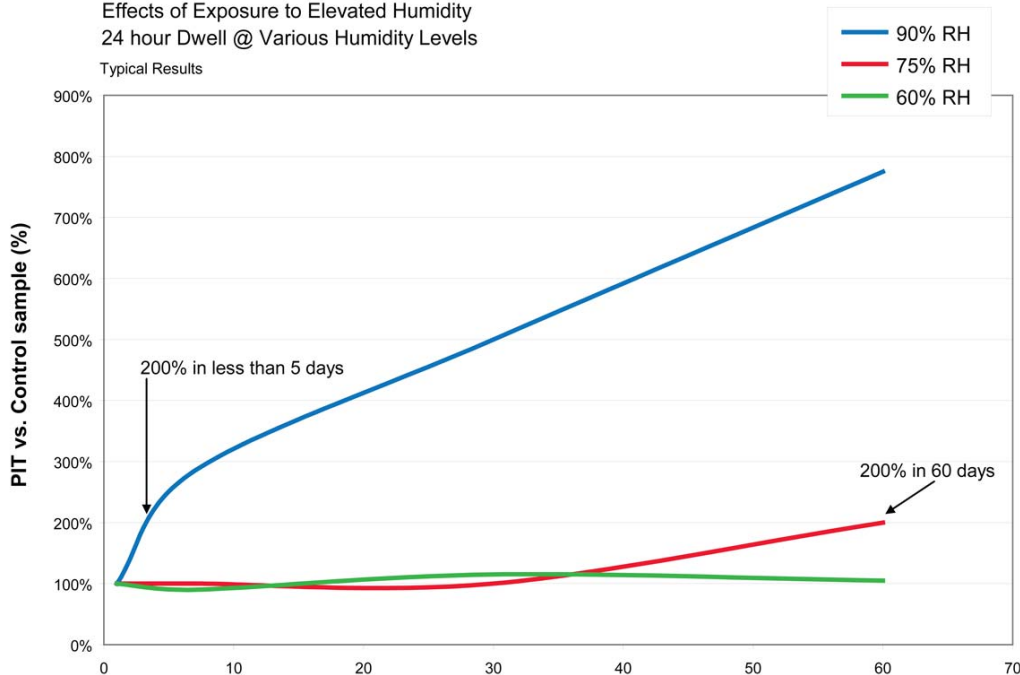
Shelf life	One year from date of adhesive application. Shelf life can be as long as four years, depending on the storage conditions. Fasteners which are more than one year from the date of adhesive application should be checked for performance prior to use.
Storage conditions	Store coated fasteners at 4°-38°C (40°- 100°F) at or below 60% relative humidity (RH). PROTECT FROM HUMIDITY; exposure to condensation or high humidity affects the adhesive. This rapidly impacts shelf life, prevailing in torque and out torque. Use plastic bags and absorbent to protect coated fasteners from humidity. Exposure for 24 hours at 75% RH shortens shelf-life to 30 days, with Prevailing In Torque (PIT) doubling by 60 days. Increased PIT is accompanied by decreased out torques. Higher humidity speeds the precure: 24 hours at 98% RH doubles PIT in only four days.

Effects of Elevated Humidity

3M™ Fastener Adhesive 2510

Effects of Exposure to Elevated Humidity
24 hour Dwell @ Various Humidity Levels

Typical Results



Performance Properties

These properties are representative of the products' performance, and are supported by laboratory test data. However, the values reported are not intended to be used for specification purposes. All testing, unless otherwise stated, was performed on 3/8" x 16" plain steel bolts with matching plain steel nuts.

Prevailing In Torque (PIT) - Initial¹	2 ft-lbs (2.7 Nm)
Break-Loose Torque (BLT) - Initial¹	35 ft-lbs (47.6 Nm)
Break-Away Torque (BAT) - Initial¹	12 ft-lbs (16.3 Nm)
Heat aging ²	25 ft-lbs (34.0 Nm)
Cycles ³	32 ft-lbs (43.5 Nm)
Water immersion ⁴	33 ft-lbs (44.9 Nm)
Gasoline immersion ⁵	24 ft-lbs (32.6 Nm)
Hot motor oil immersion ⁶	23 ft-lbs (31.2 Nm)
Transmission fluid immersion ⁷	32 ft-lbs (43.5 Nm)
Anti-freeze immersion ⁸	25 ft-lbs (34.0 Nm)
At 275°F/135°C	7 ft-lbs (9.5 Nm)
Prevailing Out Torque (POT) - Initial¹	9 ft-lbs (12.2 Nm)

¹ 72 hours at room temperature

² 3 weeks at 150°C (302°F)

³ Conditioned under 3 of the following cycles: 1 hour at 150°C, 2 hours at -30°C (-22°F), and 1 hour at 24°C (75°F)

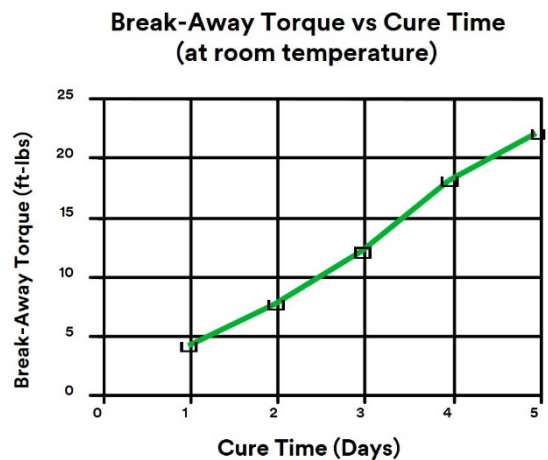
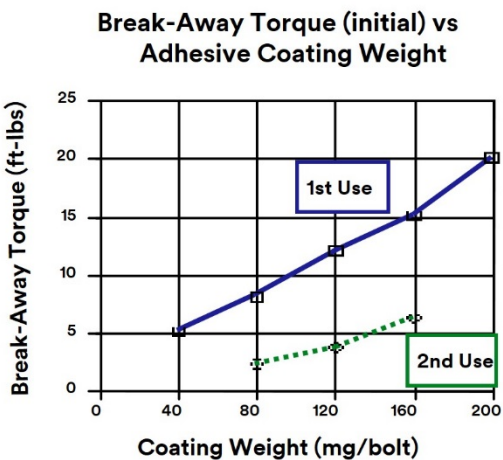
⁴ Immersion in distilled water for 1 week at 24°C (75°F)

⁵ Immersion in regular, unleaded gasoline for 1 week at 24°C (75°F)

⁶ Immersion in SAE 30 motor oil for 1 week at 150°C (302°F)

⁷ Immersion in transmission fluid for 1 week at 150°C (302°F)

⁸ Immersion in a 50% solution of ethylene glycol in water for 1 week at 100°C (212°F)



Features, Advantages, and Benefits

Product Features	Performance Advantages	Customer Benefits
Epoxy chemistry	<ul style="list-style-type: none">• High torque values on coated fasteners• Environmental resistance (to heat, automotive fluids, vibration, thermal and mechanical shock)	Robust, structural bonding performance
Two-part (microencapsulated)	<ul style="list-style-type: none">• Extended shelf life (bulk adhesive and coated fasteners)• Controlled reactivity (adhesive activates and cures upon insertion)• Reusability (additional capsules break with each re-insertion)*	Convenient handling by the end-users
Flow coatable formula	<ul style="list-style-type: none">• Allows controlled application to fasteners; viscosity can be adjusted to achieve target coating weights• Penetrates oil coatings• Fast drying• Bonds to a broad range of fastener finishes	Broad handling, dispensing and drying windows for the applicators

* Reuse performance varies by application. The establishment of number of uses requires application testing.

Contact Information

The information provided in this technical document is intended as a guide for this product. For more information or help in selecting a 3M product for an application, please contact your 3M technical service representative or call 1-800-328-1684.

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