



Fastener Adhesives 2510, 2510N

Technical Data Sheet

April 2009

Supersedes Tech Data Sheet dated December 2007

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.



3M Fastener Adhesives 2510 and 2510N are designed for applications where the service temperature might reach continuously 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

Bulk Adhesive	2510/2510N
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. Six to fifteen months after receipt by customer, dependent on date of manufacture. Rotate inventory on FIFO (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).*
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.

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

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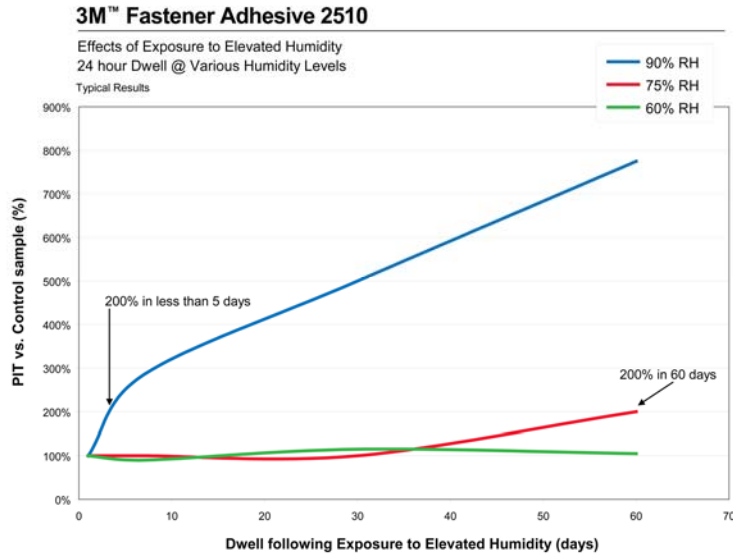
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Coated Fasteners Storage and Handling	Shelf life	One year from date of adhesive application.
	Storage conditions	Store coated fasteners at 4°-38°C (40°- 100°F) at or below 60% relative humidity (RH).

PROTECT FROM HUMIDITY; exposure to condensation or high humidity precures the adhesive. Use plastic bags and absorbent to protect coated fasteners from humidity. 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.

Shelf Life: Effects of Elevated Humidity



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Performance Properties	Prevailing In Torque (PIT)	2510/2510N
	Initial ¹	2 ft-lbs (2.7 Nm)
	Break-Loose Torque (BLT)	
	Initial ¹	35 ft-lbs (47.6 Nm)
	Break-Away Torque (BAT)	
	Initial ¹	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)	
	Initial ¹	9 ft-lbs (12.2 Nm)

NOTE: 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.

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)

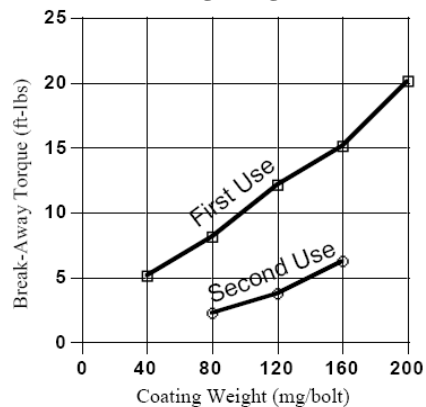
⁵ Immersion in regular, unleaded gasoline for 1 week at 24°C (75°F)

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

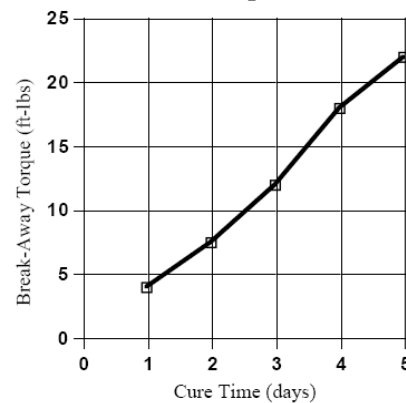
⁷ Immersion in transmission fluid for 1 week at 150°C (302°F)

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

Break-Away Torque (initial) vs Adhesive Coating Weight



Break-Away Torque vs Cure Time (at room temperature)



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Features, Advantages, 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

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