



# Automotive Sealants

## Scotch-Grip™ Thread Sealant 4291

Data Sheet

June 2000

### General Description



3M™ Automotive Scotch-Grip™ Thread Sealant 4291 is a water-based product designed to be pre-applied to threaded fasteners. It has excellent resistance to automotive fluids and can withstand high temperatures and pressures. Typical applications are threaded fasteners for the engine compartment.

Product Features	Performance Advantages	Customer Benefits
Synthetic polymer chemistry	Extended shelf life (12 months on coated fasteners)	Robust sealing performance
	Excellent resistance to automotive fluids, high temperatures (up to 300°F / 149°C) and pressures (up to 150 psi / 10.5 kg/cm <sup>2</sup> )	
	Can be used on both pipe and straight threads	
Water-based	No VOCs	
Flow-coatable formula	Allows controlled application to fasteners; viscosity can be adjusted to achieve target coating weights	Broad handling, dispensing and drying windows for the applicators

### Physical Properties (prior to application)

<b>Color</b>	White
<b>% solids</b>	59% by weight (approximate)
<b>Flash point</b>	None
<b>Density</b>	9.25 lbs/gallon (1110 kg/m <sup>3</sup> )
<b>Viscosity<sup>1</sup></b>	400-1200 cps
<b>Form</b>	Flowable liquid

<sup>1</sup>Brookfield viscometer, RVF #4 spindle at 20 rpm.

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## Handling/Process Properties

### Bulk sealant 4291

Container sizes	5 gallon (18.9 liter) pails
Shelf life	6 months from date of receipt by customer
Storage conditions	Store pails at 60°- 80°F (15°-27°C)

**PROTECT FROM FREEZING;** storage below 32°F (0°C) for extended periods will freeze the sealant and make it unusable. Storage above 120°F (49°C) will shorten the shelf life of the sealant. Inventory should be rotated on a FIFO (first in, first out) basis.

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### Coated fasteners 4291

Shelf life	12 months
Storage conditions	Store coated fasteners at 40°-100°F (4°- 38°C)

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## Performance Properties

### Chemical Resistance<sup>1</sup> 4291

gasoline (room temperature)	No leaks
motor oil (300°F/149°C)	No leaks
transmission fluid (300°F/149°C)	No leaks
anti-freeze (266°F/130°C)	No leaks
brake fluid (300°F/149°C)	No leaks
diesel fuel #2 (room temperature)	No leaks
hot water (200°F/93°C)	No leaks
toluene (room temperature)	No leaks

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### Fluid Tightness<sup>2</sup>

gasoline (room temperature)	150 psi / no leaks
motor oil (300°F/149°C)	150 psi / no leaks
transmission fluid (300°F/149°C)	150 psi / no leaks
anti-freeze (250°F/121°C)	150 psi / no leaks
hot water (200°F/93°C)	150 psi / no leaks

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### High Pressure Resistance<sup>3</sup>

1200+ psi (84+ kg/cm <sup>2</sup> )	No leaks
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**Note:** These properties are representative of the product's performance and are supported by laboratory test data. However, the values reported are not intended to be used for specification purposes.

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**Test Methods**

<sup>1</sup> 3/8 inch (9.5 mm) pipe plugs were coated with 4291 and then installed into 3/8 inch (9.5 mm) pipe tees at a seating torque of 20 inch-lbs (2.3 Nm). The assemblies were then immersed for 42 days in the specified solvents/chemicals. After the conditioning period, the assemblies were pressurized with air to 58 psi (4.1 kg/cm<sup>2</sup>) and immersed in water to check for leaks.

<sup>2</sup> 3/8 inch (9.5 mm) bolts were coated with 4291 and then installed in the mating nuts. The assemblies were then immersed for 28 days in the specified solvents/chemicals. After the conditioning period, the assemblies were tested to MIL-S-46163 (Fluid Tightness Test for Anaerobic Adhesive/Sealants), where the assemblies are placed in a test fixture with pressurized soapy water. Assemblies are required to pass 50 psi (3.5 kg/cm<sup>2</sup>) with no leaks.

<sup>3</sup> 3/8 inch (9.5 mm) bolts were coated with 4291 and then installed in a 3/8 inch (9.5 mm) thick test plate. The test plate was immediately attached to a test fixture and hydraulic (water) pressure was slowly applied until water leakage occurred.

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**Health and Safety**

**Health and Safety Information:** Read all Health Hazard, Precautionary, and First Aid statements found in the Material Safety Data Sheet and/or product label prior to handling or use.

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