

3M Nitrile Industrial Adhesive 4491

Technical Data

March, 2015

Features

- Low viscosity grade for spray application.
- Fast drying.
- Provides strong, flexible bonds.
- Resists weathering, water, fuels, oil and plasticizers.
- Bonds vinyl extrusions and sheeting. (May stain light colored vinyls.)
- Also bonds fabrics, leather, foams and many plastics. (Not recommended for polyolefin plastic bonding.)
- May be heat cured to obtain superior physical properties.

Typical Physical Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Viscosity (approx.): Brookfield RVF @ 77°F (25°C)	200 - 325 cps. (#2 sp @ 20 rpm)
Solids Content (by wt.):	22 - 26%
Base:	Synthetic elastomer
Color (wet & dry):	light tan
Net weight (approx.): (lbs./gallon)	7.0 - 7.4 lbs./gal.
Flashpoint (TCC):	0°F (-18°C)
Solvent:	Acetone and Cyclohexanone
Bonding Range: (10 mil wet film 2 surfaces)	Up to 20 minutes

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Handling/Application Information

Directions for Use:

- 1. Surface Preparation:** Remove all dust, dirt, oil, grease, wax, loose paint, etc. Wiping with methyl ethyl ketone (MEK)* or 3M™ Citrus Base Cleaner* will aid in preparing the surface for bonding.
- 2. Application Temperature:** For best results, the temperature of the adhesive and surfaces should be at least 65°F (18°C).
- 3. Application:** Stir well before using.
Porous Surface(s): Brush, flow or spray a thin, even coat of adhesive to one or both surfaces. Coating both surfaces is preferred since it gives greater strength and permits longer open time before bonding. Very absorbent materials may require more than one coat. Bond while adhesive is still wet or aggressively tacky. Join surfaces with firm pressure.
Non-Porous Surface(s): Brush, flow or spray a thin, even coat of adhesive to both surfaces. Allow adhesive to dry until tacky. Join surfaces with firm pressure.
- 4. Drying Time:** Drying time depends on temperature, humidity, air movement, and porosity of the materials bonded. Greater immediate strength may be obtained by heat or solvent reactivation. See Reactivation below.
- 5. Reactivation:** To solvent reactivate, coat both surfaces with adhesive. Allow to dry tack-free. Lightly wipe one surface with a solvent such as acetone.* Complete bond within 30 seconds.
To heat reactivate, coat both surfaces with adhesive. Allow adhesive to dry completely. Reactivate by heating one or both surfaces to a minimum of 180°F (82°C). Assemble immediately (while hot), using firm pressure to ensure contact.
- 6. Curing:** This product may be heat cured to obtain superior properties. Cure assembled parts at time and temperature listed using 100 psi pressure on the bond line.

Temperature of Bondline	Time for Minimum Cure
200°F (93°C)	120 minutes
240°F (116°C)	40 minutes
280°F (138°C)	12 minutes
320°F (160°C)	8 minutes
360°F (182°C)	5 minutes
400°F (204°C)	2 minutes

- 7. Cleanup:** Excess adhesive may be removed with acetone,* preferably while adhesive is still wet.

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

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Application Equipment Suggestions

Note: Appropriate application equipment can enhance adhesive performance. We suggest the following application equipment for the user's evaluation in light of the user's particular purpose and method of application.

1. Pumping:

5 Gallon or less dispensing system:

Pressure pot 100 psi operating pressure. Fluid hose should be nylon lined.

55 Gallon dispensing system:

Pump – 2:1 ratio, double acting, ball type checks, bung mounting, divorced design.

*Pump packings and seals must be resistant to the solvent in this adhesive. Nylon, compar, and PTFE lined or coated parts are suggested.

2. Spray:

Production Type Spray Equipment

Spray Gun	Air Cap	Fluid Nozzle	Air Pressure	Approximate Air Requirement ¹	Fluid Flow ²
Binks: 95, 2001	63PH	63BSS	65-80 psi	23 scfm @ 80 psi	6 fl. oz./min.
DeVilbiss: JGA, MSA	777	FX	65-80 psi	24 scfm @ 80 psi	6 fl. oz./min.

Note: This adhesive is not recommended for airless spraying.

¹2-3 H.P. Compressor for intermittent use.

4 H.P. Compressor for continuous use.

²To Measure Fluid Flow: Pressurize fluid source only; pull trigger; flow material into measuring device for 60 seconds, increase or decrease fluid source pressure to obtain desired fluid flow.

3. Hoses: All material hoses should be nylon or PVA lined.

4. Brush/Roller: Typical brushes designed for oil based paints may be used.

Typical Adhesive Performance Characteristics

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

180° Peel Strength Canvas/Steel			Overlap Shear Strength* Alum./Alum.	
Time @75°F (24°C)	Test Temp.	Value (lbs./in. width)	Test Temp.	Value (psi)
1 day	75°F (24°C)	16.5	-67°F (-55°C)	2989
3 days	75°F (24°C)	26	-30°F (-34°C)	3409
5 days	75°F (24°C)	23.5	75°F (24°C)	1306
7 days	75°F (24°C)	27.5	150°F (66°C)	897
2 weeks	75°F (24°C)	31	180°F (82°C)	643
3 weeks	75°F (24°C)	30	200°F (93°C)	607
After 3 weeks	-30°F (-34°C)	17.5	250°F (121°C)	467
After 3 weeks	150°F (66°C)	7	—	—
After 3 weeks	180°F (82°C)	3.5	—	—

*Bonds heat cured @ 300°F (177°C) for 30 minutes with 100 psi pressure on the bondline.

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Storage Store product at 60-80°F (16-27°C) for maximum storage life. Higher temperatures can reduce normal storage life. Lower temperatures can cause increased viscosity of a temporary nature. Rotate stock on a “first in-first out” basis.

Shelf Life When stored at the recommended conditions in the original, unopened container this product has a shelf life of 15 months from date of shipment.

Precautionary Information Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, call 1-800-364-3577 or (651) 737-6501.

Technical Information The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

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