



Technical Data Sheet

3M™ Nitrile Industrial Adhesive 4491



[Regulatory Info/SDS](#)

Product 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.

Technical Information Note

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

Typical Uncured Physical Properties

| Attribute Name | Value |
|----------------|---------------------|
| Net Weight | 7 — 7.4 lb/gal |
| Base | Synthetic Elastomer |

Typical Physical Properties

| Attribute Name | Temperature | Value |
|--------------------|---------------|----------------------------|
| Color | | Light Tan (wet and dry) |
| Solvent Resistance | | Acetone and Cyclohexanone |
| Bonding Range | | Up — 20 min ¹ |
| Flash Point | | -18 °C (0 °F) ² |
| Viscosity | 22 °C (72 °F) | 200 — 325 cP ³ |

¹ 10 mil wet film 2 surfaces

² TCC

³ Brookfield Viscometer RVF #2 spindle @ 20 rpm

Typical Performance Characteristics

180° Peel Adhesion

Substrate: Canvas to Steel

| Dwell Time | Temperature | Value |
|------------|-----------------|-----------|
| 24 h | 22 °C (72 °F) | 264 oz/in |
| 72 h | 22 °C (72 °F) | 416 oz/in |
| 120 h | 22 °C (72 °F) | 376 oz/in |
| 168 h | 22 °C (72 °F) | 440 oz/in |
| 2 week | 22 °C (72 °F) | 496 oz/in |
| 3 week | 22 °C (72 °F) | 480 oz/in |
| 3 week | -34 °C (-29 °F) | 280 oz/in |
| 3 week | 66 °C (150 °F) | 112 oz/in |
| 3 week | 82 °C (180 °F) | 56 oz/in |

Overlap Shear Strength

Substrate: Aluminum to Aluminum

Dwell Time: 30 min

Environmental Condition: +100 psi

| Temperature | Test Condition | Value |
|-----------------|----------------|--------------------------|
| 177 °C (300 °F) | 93°C (200°F) | 607 lb/in ² |
| 121 °C (250 °F) | | 467 lb/in ² |
| 177 °C (300 °F) | 82°C (180°F) | 643 lb/in ² |
| 177 °C (300 °F) | 66°C (150°F) | 897 lb/in ² |
| 177 °C (300 °F) | 22°C (72°F) | 1,306 lb/in ² |
| 177 °C (300 °F) | -34°C (-30°F) | 3,409 lb/in ² |
| 177 °C (300 °F) | -55°C (-67°F) | 2,989 lb/in ² |

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.

Application Equipment

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.

2 To 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.

Storage and Shelf Life

Store under normal conditions of 16° to 27°C (60° to 80°F) and 40 to 60% relative humidity in the original, unopened packaging, out of direct sunlight. Lower temperatures cause increased viscosity of a temporary nature. For best performance, use this product within 24 months from date of manufacture.

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

Automotive Disclaimer

Select Automotive Applications:

This product is an industrial product and has not been designed or tested for use in certain automotive applications, such as automotive electric powertrain battery or high voltage applications, which may require the product to be manufactured in a IATF certified facility, meet a Ppk of 1.33 for all properties, undergo an automotive production part approval process (PPAP), or fully adhere to automotive design or quality system requirements (e.g., IATF 16949 or VDA 6.3). Customer assumes all responsibility and risk if customer chooses to use this product in these applications.

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ISO Statement

This product was manufactured under a 3M quality system registered to ISO 9001 standards.

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