Nitrile High Performance Plastic Adhesives
1099 • 1099-L

Technical Data **March, 2015**

Features

- 3M™ Nitrile High Performance Plastic Adhesive 1099 is a medium viscosity grade for most brush or flow applications.
- 3M™ Nitrile High Performance Plastic Adhesive 1099-L is a 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, 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.

Product	**3M™ Nitrile High Performance Plastic Adhesives**	
	1099	**1099-L**
Viscosity (approx.): Brookfield RVF @ 80°F (27°C)	2000-4000 cps. (#3 sp @ 10 rpm)	200-325 cps. (#2 sp @ 20 rpm)
Solids Content (by wt.):	31 - 37%	22 - 26%
Base:	Nitrile Rubber	Nitrile Rubber
Color (wet & dry):	light tan	light tan
Net weight (approx.): (lbs./gallon)	7.3 - 7.5 lbs./gal.	7.0 - 7.4 lbs./gal.
Flashpoint (closed up):	0°F (-18°C)	0°F (-18°C)
Solvent:	Acetone	Acetone and Methyl Ethyl Ketone (MEK)
Bonding Range: (10 mil wet film 2 surfaces)	Up to 40 minutes	Up to 20 minutes
Coverage: (@ 2.5 gms./ft.^{2} dry wt.)	456 sq. ft./gal.	313 sq. ft./gal.

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 methyl ethyl ketone (MEK).***** 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:** 3M™ Nitrile High Performance Plastic Adhesive 1099 and 1099-L 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 methyl ethyl ketone (MEK)***** or 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 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:

3M™ Nitrile High Performance Plastic Adhesive 1099, 1099-L*

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.

*Synthetic materials such as packings, seals and hose lines must be resistant to the solvent in these adhesives. nylon, compar, and PTFE lined or coated parts are suggested.

2. Spray:

Plastic Adhesive 1099-L: Production

Type Spray Equipment

Spray Gun	Air Cap	Fluid Tip	Air Pressure	Approximate Air Requirement[1]	Fluid Flow[2]
DeVilbiss JGA, MSA	777	FX	65 psi	16 CFM	5 fl. oz./min.
Binks No. 95 or 2001	63PB	63BSS	65 psi	16½ CFM	6 fl. oz./min.

Note: This adhesive is not recommended for airless spraying.

[1]2-3 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.

All material hoses should be nylon or PVA lined.

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

Typical Adhesive Performance Characteristics

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Plastic Adhesives 1099 and 1099-L

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 (65°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.

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.

Product Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

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ISO 9001:2000

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