Screen Printable UV Curing Pressure Sensitive Adhesive

SP7202

Technical Data Sheet **November, 2021**

Product Description

Unique UV curable liquid, solvent-free, 100% solids Pressure Sensitive Adhesive (PSA) solution for directly printing shapes. Bring additional value by increased throughput, reduced waste, reduced labor & cost.

This high-performance PSA provides high peel adhesion and static shear strength. SP7202 Adhesive is suitable for flatbed screen or stencil printing. SP7202 is low in viscosity and is designed for printing on parts or substrates such as polycarbonate, PET, and inks.

Adhesive Properties

- Optimal adhesive coverage with 100% solids. No solvents or water.
- Excellent printability - thixotropic viscosity.
- Excellent wetting.
- No drying in the screen*. Production stops between 1 and 3 hours are possible.
- Excess adhesive left in the screen can be returned to original packaging and used at a later date.
- Easy cleaning of adhesive in the screen after printing

Product	Adhesive Type	Format	Color	Adhesive Viscosity (10 1/s Pa-s)	Density (g/ml)
SP7202	Acrylic	Liquid	Transparent	13.78	1.034

*Provided adhesive isn't exposed to UV generating light sources

Usage

3M™ SP7202 is provided in liquid form and must be UV cured with a mercury ("H") bulb UV reactor to convert from liquid into a Pressure Sensitive Adhesive tape. Please refer to the 3M™ SP7202 Screen Printable Adhesive Process Guide for specifics.

Once properly cured the SP7202 adhesive behaves like a typical Pressure Sensitive Adhesive.

3M™ Screen Printable UV-Cured Pressure Sensitive Adhesive SP7202

Typical Physical Properties and Performance Characteristics

I. Adhesion Peel: ASTM D-3330 (Modified)

a. Stainless Steel substrate and 5 mil PET Backing

2 mil (50 micron) caliper	15 minute dwell (± 5 minutes)	72 hour dwell @ RT
90° Peel Angle	38 oz/in (10 N/25 mm)	70 oz/in (19 N/25 mm)
180° Peel Angle	62 oz/in (17 N/25 mm)	105 oz/in (29 N/25 mm)

b. After environmental aging - 180° Peel Angle

72 hour Dwell @ 158F. Peel @ RT	Ultimate Dwell. 1 week @ 158 F (70 C). Peel @ RT	Temperature Cycled. 10 cycles of: 4 hours @ -40C, 4 hours @ 23C, 4 hours @ 80C. Then cool to RT for 1 Hour.
101oz/in (28 N/25 mm)	106 oz/in (29 N/25 mm)	107 oz/in (29 N/25 mm)

c. Additional Surfaces – 180° Peel Angle

2 mil (50 micron) caliper	15 minute dwell (± 5 minutes)	72 hour dwell @ RT
ABS	90 oz/in (25 N/25mm)	97 oz/in (26 N/25mm)
Acrylic (PMMA)	98 oz/in (27 N/25mm)	89 oz/in (24 N/25mm)
Aluminum	71 oz/in (19 N/25mm)	105 oz/in (29 N/25mm)
Glass	95 oz/in (26 N/25 mm)	104 oz/in (26 N/25mm)
PET	63 oz/in (17 N/25mm)	87oz/in (24 N/25mm)
Polycarbonate	73 oz/in (20 N/25mm)	72oz/in (27 N/25mm)
Polyimide	76 oz/in (21 N/25mm)	112 oz/in (31 N/25mm)
Rigid PVC (unplasticized)	43 oz/in (12 N/25mm)	68 oz/in (19 N/25mm)

II. **Static Shear: ASTM D-3654 (Modified)** 2 mil (50 micron) adhesive caliper, 2 mil PET Backing, 24-hour dwell time,

Temperature	Size	Weight (g)	Minutes
72°F (22°C)	1" x 1"	1000	10,000*
158°F (70°C)	1" x 1"	1000	10,000*

***Test concludes at 10,000 Minutes.**

Electrical and Thermal Performance

Property	SP7202
Insulation Resistance (test voltage = 100 VDC) Mil-I-46058C	>1.1 x 10^{14} ohms
Dielectric Strength – (500 vac, rms[60 hz/sec]) ASTM D149-92	1,833 volts/mil
Breakdown Voltage	3,667 volts
Dielectric Constant (at 1kHz) ASTM D150-92	4.28
Dissipation Factor	0.067

Application Techniques

▶ **Clean:** Most substrates are best prepared by cleaning with a 50:50 mixture of isopropyl alcohol (IPA*) and water prior to applying 3M™ Tapes.

Exceptions to the general procedure that may require additional surface preparation include:

- **Heavy Oils:** A degreaser or solvent-based cleaner may be required to remove heavy oil or grease from a surface and should be followed by cleaning with IPA/water.
- **Abrasion:** Abrading a surface, followed by cleaning with IPA/water, can remove heavy dirt or oxidation and can increase surface area to improve adhesion.
- **Adhesion Promoters:** Priming a surface can significantly improve initial and ultimate adhesion to many materials such as plastics and paints.
- **Porous surfaces:** Most porous and fibered materials such as wood, particleboard, concrete, etc. need to be sealed to provide a unified surface.

***Note**: These cleaner solutions contain greater than 250 g/l of volatile organic compounds (VOC). Please consult your local Air Quality Regulations to be sure the cleaner is compliant. When using solvents, be sure to follow the manufacturer's precautions and directions for use when handling such materials.

► **Pressure:** Bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure develops better adhesive contact and helps improve bond strength. Typically, good surface contact can be attained by applying enough pressure to ensure that the tape experiences approximately 15 psi (100 kPa) pressure. Either roller or platen pressure can be used. Note that rigid surfaces may require 2 or 3 times that much pressure to make the tape experience 15 psi.

► **Temperature:** Ideal application temperature range is 70°F to 100°F (21°C to 38°C). Pressure sensitive adhesives use viscous flow to achieve substrate contact area.

- Minimum suggested application temperature is 50°F (10°C).

Note: Initial tape application to surfaces at temperatures below these suggested minimums is not recommended because the adhesive becomes too firm to adhere readily. However, once properly applied, low temperature holding is generally satisfactory. To obtain good performance with all 3M™ Pressure Sensitive Tapes, it is important to ensure that the surfaces are dry and free of condensed moisture.

► **Time:** After application, the bond strength will increase as the adhesive flows onto the surface (also referred to as "wet out"). At room temperature approximately 60% of ultimate bond strength will be achieved after 20 minutes, 90% after 24 hours and 100% after 72 hours. This flow is faster at higher temperatures and slower at lower temperatures. Ultimate bond strength can be achieved more quickly (and in some cases bond strength can be increased) by exposure of the bond to elevated temperatures (e.g. 150°F [66°C] for 1 hour). This can provide better adhesive wet out onto the substrates. Abrasion of the surfaces or the use of primers/adhesion promoters can also have the effect of increasing bond strength and achieving ultimate bond strength more quickly.

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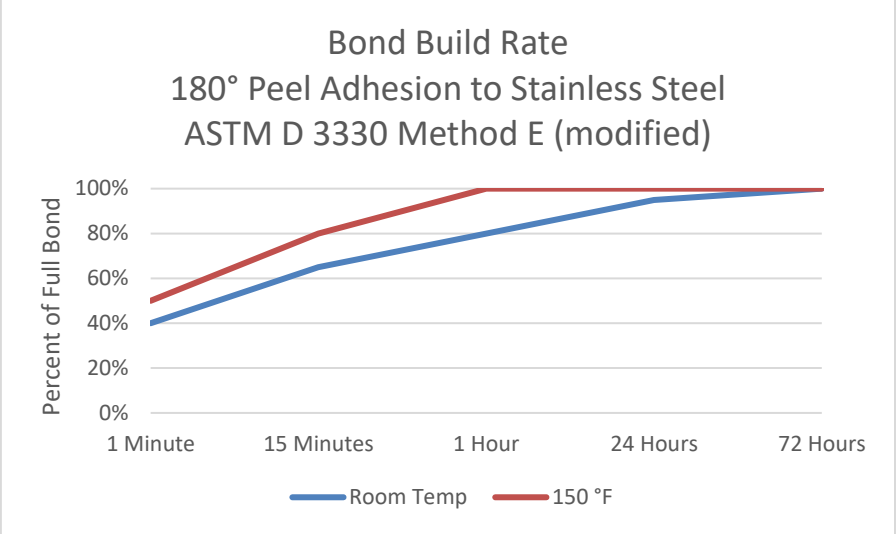

Storage	• Store in the original container, close cap tightly for storage. • Avoid direct sunlight and other UV-light sources. • Storage temperature should not exceed 104°F (40°C).
Print Guidelines	• Ready to use. • Do not use diluents or additives e.g. defoamer. • Do not stir; stirring can induce bubbles in the adhesive. • Residual adhesive in the screen can be returned to the container. • Screens made from steel, polyester, or nylon with a mesh count of 50 to 200 threads per inch can be used. • Stainless steel stencils can be used in place of a traditional screen. This can be helpful for thick prints or narrow thin features. • For coating, masking, and cleaning of the screens the usual materials for U.V. inks can be used.
Shelf Life	If stored properly, product retains its performance and properties for 18 months from the date of manufacture.

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Recognition/Certification

SDS: Is available upon request.

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Sustainability Advantages in Manufacturing:

- Reduction in Scope 3 GHG emissions
- Increase in throughput, reduced labor and cost
- UV Curable: Solvent-free

Sustainability Advantages in Use: Waste reduction in the use of PSA and liner elimination.

Technical Information

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