

SPUR⁺ PSA 3.0

pressure sensitive adhesive

SILANES - ADHESIVE & SEALANTS ADDITIVES



SPUR⁺ PSA 3.0 is a pressure sensitive adhesive supplied as an ethyl acetate solution at 40 percent adhesive solids and may be further diluted with ethyl acetate, butyl acetate, MEK, or MIBK solvents. SPUR⁺ PSA 3.0 pressure sensitive adhesive has been found useful in coating of film, fabric, and rubber substrates for manufacturing pressure sensitive tapes and labels. Tapes and labels using SPUR⁺ PSA 3.0 pressure sensitive adhesive exhibit excellent resistance to solvents such as aromatic, aliphatic, anti-freeze, alcohols, brake fluid, acidic/basic aqueous solutions; high temperature shear resistance and adhesion to a variety of substrates. It is particularly suitable for high performance tape and label applications.

Key Features and Typical Benefits

- excellent solvent resistance for Automotive & Industrial (Gasoline, Diesel, Oil), Medical (Xylene, DMSO, Acids, Alkalis) & Aerospace (Jet Fuel, Hydraulic Fluid) applications
- wide temperature range performance; maintains good shear and tack properties at intermittent temperatures up to 356°F / 180°C
- adhesion to a wide variety of surfaces including low energy surfaces (polyoxymethylene, polyolefins, PVC, PMMA, PC)
- cures on thermally sensitive substrates
- resistance to moisture and weathering (ozone, sunlight)
- excellent balance of tack and peel properties
- can be processed with traditional PSA coating equipment
- accepts extending filler for cost reduction
- can be further formulated with other PSA's (acrylic, silicone) and adhesive modifiers (tackifiers), however solvent resistant properties may be compromised.

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Typical Physical Properties

Property	Value
Solids, %	40-42
Viscosity @ 25°C (77°F), cps ⁽¹⁾	2,000-10,000
Solvent	Ethyl acetate
Specific Gravity, 25°C (77°F)	0.90
Color	Clear, straw color

(1) Brookfield RVF, #4 Spindle @ 50 rpm

Typical Cured Adhesive Properties	Value
Tack, 2 mil PET, g/cm ² (2)	400
Loop Tack, 2 mil PET, g/in / g/25mm	5875
Quick Stick, g/in ⁽⁵⁾ / g/25mm ⁽⁵⁾	460
Peel from Stainless Steel, g/in ⁽⁴⁾ / g/25mm ⁽⁴⁾	770
Peel from Stainless Steel, g/in ⁽³⁾ / g/25mm ⁽³⁾	1130
Peel from PVC, g/in ⁽³⁾ / g/25mm ⁽³⁾	1800
Peel from HDPE, g/in ⁽³⁾ / g/25mm ⁽³⁾	1291
Peel from BOPP, g/in ⁽³⁾ / g/25mm ⁽³⁾	1078
Peel from PMMA, g/in ⁽³⁾ / g/25mm ⁽³⁾	1860
Peel from Lexan [‡] , g/in ⁽³⁾ / g/25mm ⁽³⁾	1150
Peel from Aluminum, g/in ⁽³⁾ / g/25mm ⁽³⁾	1355
Peel from Polyoxymethylene, g/in ⁽³⁾ / g/25mm ⁽³⁾	1000
Peel from Glass, g/in ⁽³⁾ / g/25mm ⁽³⁾	1155
SAFT, 1Kg, °C	275

(2) Polyken™ Probe Tack with 100 g/cm² "A" weight, 1cm/s, 1 sec. contact time, 1.0 mil (25 microns) dry adhesive thickness, 0.1% water added, cure cycle: 1.5 minutes at 80°C (176°F)

(3) 180° peel off substrate using 2 mil (50 microns) PET facestock @ 12 inches (305 mm) per minute after 1 hour dwell, 1.0 mil (25 microns) dry thickness, 0.1% water added, cure cycle: 1.5 minutes at 80°C (176°F)

(4) 90° peel off substrate using 2 mil (50 microns) PET facestock @ 12 inches (305 mm) per minute after 1 hour dwell, 1.0 mil (25 microns) dry thickness, 0.1% water added, cure cycle: 1.5 minutes at 176°F (80°C)

(5) PSTC-5

‡ Lexan is a registered trademark of SABIC Innovative Plastics IP.

Instructions for Use

Application

SPUR⁺ PSA 3.0 pressure sensitive adhesive is supplied at a viscosity suitable for conventional tape coating equipment. If necessary, it may be thinned with ethyl acetate, butyl acetate, MEK, MIBK or other compatible solvents. After the adhesive is applied to the backing, it is exposed to a two-step process: solvent removal and curing.

Formulation and Bathlife

A starting point formulation consists of a coating bath prepared by thoroughly mixing 0.2 wt% of water into a 30% solids solution of the adhesive. When curing at lower temperatures (below 100°C) 0.02 wt% Fomrez[†] UL-28 catalyst can be added to further assist in the cure. Typical formulation bathlife at ambient conditions is nominally 8 hours.

†Fomrez is a trademark of Chemtura Corporation

Any opened partial containers should be nitrogen purged then resealed to exclude moisture.

Solvent Removal and Curing Process

To achieve optimum adhesive properties, it is essential to optimize the drying step of the process in order to assure that solvent is removed from the adhesive prior to the curing step of the process. Improper drying will result in residual solvent entrapment within the adhesive. Residual solvent will reduce cure rate and possibly affect adhesive properties. Typical temperature range for the drying and curing is 176°F / 80°C to 302°F / 150°C, >1.5 minutes oven dwell time. Initial off-coater cure is green and requires ~1 week to develop final high performance properties.

Release Liner

Formulated adhesive may be direct or transfer coated to a facestock. Selection of SilForce^{*} SL6161, SilForce SL6961, SilForce SL6625, SilForce SL7025 or SilForce SL8861 release coatings for Europe were shown to give stable release of approximately 30-60 g/2in (30-60 g/50 mm), 300 in/min at 180° peel adhesion for 2 mil (50 microns) PET facestock from 2 mil (50 microns) PET liner.

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Patent Status

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