SilGrip™ PSA529 Pressure Sensitive Adhesives

Product Description

SilGrip™ PSA529 silicone pressure sensitive adhesive is a toluene solution of polysiloxane gum and resin. It is supplied at 55 percent silicone solids and may be further diluted with aromatic, aliphatic or chlorinated solvents. PSA529 may be blended with SR545 resin dispersion or with other methyl-based silicone pressure sensitive adhesives to obtain specific performance properties.

PSA529 has an overall balance of peel strength, cohesion, lap shear strength and high temperature holding power, which provides a versatility that makes this product useful in a wide variety of applications, including fastening and bonding of dissimilar materials.

Key Features and Typical Benefits

- Wide temperature range performance, maintains good shear and tack properties at intermittent temperatures up to 500° F
- Adhesion to a wide variety of surfaces (stainless steel, anodized aluminum, steel) including low energy surfaces (silicones, fluoropolymers, polyolefines)
- Resistance to moisture, weathering (ozone, sunlight), chemical (acids, alkalis, oils) and biological (fungus) attack
- Elastomeric properties after curing with SRC18 catalyst
- Creep resistance

Typical Physical Properties

Property	Value
Silicone Solids, %	55
Specific Gravity	0.99
Density, lbs/gal	8.2
Viscosity @ 25° C (77° F), cps (Brookfield RVF, #3 Spindle, 20rpm)	2,500
Color	Light Straw, Translucent
Flash Point, TCC, ° C (° F)	1.6 (35)
Solvent	Toluene

Typical cured adhesive properties

Peel Adhesion (1), grams/inch	2350
Tack (2), g/cm2	440

1. 2 mil dry adhesive thickness, 2 mil polyester film, uncatalyzed, curing cycle: 10 minutes air dry, 10 minutes at 150° C, stainless steel, 12 inches/minute, 180° C angle.
2. Polyken Tack Tester, 1000g weight, 1second dwell time, cm/second draw speed, 2 mil dry adhesive thickness, 2 mil polyester film, uncatalyzed, curing cycle: 10 minutes air dry, 10 minutes at 150° C.

Processing Recommendations Laminating Applications

PSA529 silicone adhesive is supplied at a viscosity suitable for conventional coating equipment. If necessary, it may be thinned with toluene, xylene or other compatible solvents. After the adhesive is applied to the substrate, it is exposed to a two-step process: solvent removal and curing.

Processing of PSA529 Catalyzed with Benzoyl Peroxide Solvent Removal

To achieve optimum adhesive properties, it is essential to optimize the drying step of the process in order to assure that the solvent is removed from the adhesive film before the curing step of the process starts. Improper drying will result in residual solvent entrapment within the adhesive. If the adhesive is then exposed to temperatures higher than 93.5o C (200o F), decomposing peroxide catalyst can cause crosslinking reaction between solvent and adhesive through methyl groups on siloxane chains and on solvent molecules and adversely affect the properties of the adhesive. Typical temperature range for the drying step of the process is 83o C (180o F) to 90o C (194o F). A typical drying cycle is 2 minutes at 90o C (194o F).

Curing Process

Once the solvent is removed from the adhesive film, the peroxide cure should be initiated by exposure to heat. A typical curing cycle is 2 minutes at 165o C (329o F). Longer exposure time and higher temperature, up to 204o C (400o F), can be used without adverse effects. The exact conditions required to achieve a complete cure will depend on oven length and efficiency, peroxide type and type of substrate used, and should be established during experimental trials on the machine.

Catalysts

High purity, 98% benzoyl peroxide (3) in the quantity of 1 to 3% based on silicone solids, has been found to give the most consistent results in curing of silicone pressure sensitive adhesives. In applications requiring low temperature cure, 2,4 - dichlorobenzoyl peroxide, which is activated at 132° C (270° F), can be used. It should be noted that 2,4-dichlorobenzoyl peroxide may generate polychlorinated biphenyls during the curing process. Please refer to Code of Federal Regulations, title 40, part 761 regarding incidental PCB byproducts if 2,4- dichlorobenzoyl peroxide is utilized.

The peroxide should be dispersed in solvent before it is mixed with the adhesive. Thorough mixing of the peroxide and adhesive to achieve homogeneous dispersion is essential for consistency of finished product.

3. Available from: Elf Atochem North America, Inc.

Processing of PSA529 Catalyzed with SRC18

Room temperature curing can be obtained by catalyzing PSA529 adhesive with SRC18 amino functional silane.

Note: It is necessary (for maximum physicals) to add an amount of SRC18 catalyst that will eventually cause complete cure of PSA529 adhesive. Completely cured PSA529 adhesive is tack free and is not useful for pressure sensitive adhesive applications. When using SRC18 catalyst with PSA529 adhesive for laminating (bonding) dissimilar materials, follow SRC18 catalyst data sheet (document #CDS5187) precautions carefully.

Bonding Applications

Catalyzed adhesive may be applied with a brush, roller or any suitable coating device. Thinning, if required, may be done with toluene or paint thinner. Both surfaces to be bonded should be thoroughly cleaned with alcohol, the adhesive should be applied to them and allowed to dry either in room temperature or in an elevated temperature. The length of drying time will depend on solvent used, adhesive thickness and temperature it is exposed to. The recommended adhesive thickness is 3 to 4 mils dry. After the solvent is completely evaporated from the adhesive, the surfaces to be bonded should be firmly pressed together and the adhesive should be allowed to cure.

Cure is a function of time and temperature. Room temperature cure at 21° C-25° C (70° F-77° F) will require 3-7 days for the catalyzed adhesive to develop maximum strength. The cure time can be shortened by elevating temperature to a maximum 165° C (329° F). A typical shortened cure cycle is 24 hours at 25° C (77° F) followed by 24 hours at 100° C (212° F). Note: Use adhesive in a well- ventilated area.

Blending Instructions

Typical Formulation	
PSA529	100.0 parts by weight
SRC18	3.3 parts by weight

SRC18 catalyst should be added to the adhesive and stirred well before using (consult Material Safety Data Sheets prior to use).

Store catalyzed adhesive in tightly closed containers and use within 48 hours. Where longer pot life is required, dilute the adhesive mixture to approximately 30% silicone content with toluene or paint thinner. Diluted mixtures are useful up to three months.

Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

Product Safety, Handling and Storage

Customers should review the latest Safety Data Sheet (SDS) and label for product safety information, safe handling instructions, personal protective equipment, if necessary, emergency service contact information, and any special storage conditions required for safety. Momentive Performance Materials (MPM) maintains an around-the-clock emergency service for its products. SDS are available at www.momentive.com or, upon request, from any MPM representative. For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center. Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

Limitations

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

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