MOMENTIVE™

Marketing Bulletin

SilGrip* PSA590LD
low dusting silicone pressure sensitive adhesive

COATINGS - PSA

SilGrip PSA590LD silicone pressure sensitive adhesive can reduce silica dust in thermal oxidizers by 75 percent. This toluene solution, composed of polysiloxane gum and resin, may be blended with SR545 resin dispersion or with other methyl-based silicone pressure sensitive adhesives to obtain specific performance properties.

Key Features and Typical Benefits

- Adheres to a wide variety of surfaces
- Is weather/chemical/moisture-resistant
- Maintains good shear and tack properties at intermittent temperatures up to 500 °F
- Accepts filler
- Low dusting

Potential Applications

SilGrip PSA590LD adhesive has been found useful in the coating of film and fabric substrates for manufacturing industrial pressure sensitive tapes. It may be an excellent choice for tapes designed to splice silicone release liners.

Typical Physical Properties	
Property	**Value**
Silicone Solids, %	60
Specific Gravity	0.99
Density, Lbs/gal	8.27
Viscosity @ 25 ºC (77 ºF), cPs (Brookfield RVF #5 spindle, 10 rpm)	18,000
Color	Light straw
Flash Point, PMCC, °C (°F)	2.0 (36)
Solvent	Toluene
Typical Cured Adhesive Properties	
Peel Adhesion(1), oz/inch	40
Tack(2), g/cm^2	870

(1) 2 mil dry adhesive thickness, 1 mil polyester film, 1.5% benzoyl peroxide, curing cycle: 10 minutes air dry, 90 seconds at 177 °C, stainless steel, 12 inches/minute, 180° angle.

(2) Polyken Tack Tester, 100g weight, 0.5 second dwell time, 0.5 cm/second draw speed, 2 mil dry adhesive thickness, 1mil polyester film, 1.5% benzoyl peroxide, curing cycle: 10 minutes air dry, 90 seconds at 177 °C.

Typical properties are average values and are not to be used as or to develop specifications.

Several factors - such as type and amount of catalyst, cure cycle, adhesive thickness, and backing type and thickness - affect the properties of a cured silicone adhesive. Higher benzoyl peroxide catalyst concentration will increase cohesive strength of the adhesive and improve shear strength, but it will reduce its adhesive strength, resulting in lower tack and peel values.

Processing Recommendations

Application

SilGrip PSA590LD silicone adhesive is supplied at a viscosity that typically can be used with conventional tape coating equipment. If necessary, it may be thinned with toluene, xylene or other compatible solvents. After the adhesive is applied to the backing, it is exposed to a two-step process: solvent removal and curing.

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 93.5 °C (200 °F), decomposing peroxide catalyst can cause a crosslinking reaction between the solvent and the adhesive through methyl groups on siloxane chains and on solvent molecules; this may adversely affect the properties of the adhesive. Typical temperature range for the drying step of the process is 83 °C (180 °F) to 90 °C (194 °F). A typical drying cycle is two minutes at 90 °C (194 °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 two minutes at 165 °C (329 °F). 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 percent benzoyl peroxide in the quantity of one to three percent 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.

Priming

In certain applications, the anchorage of the adhesive to the backing may be insufficient, and the coating of a primer prior to the adhesive coating may be required.

A typical formulation for a primer may be found in Table 1 below. It may need to be adjusted depending on required bath life, coating equipment and backing material. The primer may be coated by direct gravure, wire wound rod or another coating technique suitable for solvent-based coatings, and must be cured prior to adhesive application. The curing conditions will depend on equipment capabilities, substrate type and formulation used, and should be established during experimental trials on the machine.

Table 1. Typical Primer[3] Formulation

Component	Parts by Weight
SS4191A Gum solution	13.30
SS4191B Methyl hydrogen crosslinker	0.16
SS4192c Catalyst	0.50
SS4259c Accelerator	0.30
Solvent[4]	85.74

(3) Refer to Momentive SS4191A Silicone Release Coating System for more information.

(4) Typical solvents: toluene, heptane, toluene/heptane mixtures.

Formulations are included as illustrative examples only. Momentive makes no representation or warranty concerning the efficacy or safety of any product manufactured using such formulations.

Packaging

SilGrip PSA590LD is available in 5-gallon pails (40 lbs) and 55-gallon drums (300 lbs).

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 Material Safety Data Sheet (MSDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, and any special storage conditions required for safety. MSDS are available at www.momentive.com or, upon request, from any Momentive Performance Materials (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.

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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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