

## SilForce™ SS4331

### Product Description

SilForce SS4331 is a solvent solution of reactive dimethyl siloxane polymers found useful as a release coating on paper, foil and plastic substrates. The dispersion is one component of a three component addition cure system. SilForce SS8010 platinum catalyst is the second component. The level of SS8010 catalyst in the formulated bath may be either increased or decreased from the standard SS8010 catalyst level to affect processing and/or cost advantages. SilForce SS4300C poly (methyl-hydrogen) siloxane crosslinker is the third component.

The SS4331 system gives excellent bath life at solids levels typically used in dispersion coating. A wide variety of organic solvents may be used in dilution of the bath with aliphatic solvents providing the maximum bath life.

### Key Features and Typical Benefits

- Premium release
- Low temperature/high speed cure
- Long bath life
- Non-blocking
- Capable of high solids coating
- Good adhesion to plastic substrates
- Formulating flexibility

### Typical Physical Properties

Property	SS4331	SS8010	SS4300c
Silicone Solids, %	29-31	NA	94-100

Volatiles, %	69-71	Greater than 99	0-6
Specific Gravity @ 25°C(77°F)	0.8	0.9	1.01
Density, lbs/gal	6.7	7.6	8.34
Viscosity, cps @ 25°C(77°F)	8,000-16,000	NA	15-30
Flash point, Pensky-Martens (350) Closed Cup °C(°F)	10(50)	4(40)	177(350)
Solvent	VM& P Naphtha	Toluene	None

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

NA - Not Applicable

### Caution

SS4300c crosslinker will generate flammable hydrogen gas upon contact with strong acids, bases or oxidizing agents. Do not reuse container.

The warranty period is 12 months from date of shipment from Momentive Performance materials if stored in the original unopened container at 25°C (77°F).

### Processing Recommendations

#### Application Procedures

SS4331 silicone dispersion may be applied by any of the conventional methods now used for solvent based silicone release products. They include direct gravure, Mayer rod, reverse roll and roll coating.

Heat should be applied immediately after coating to evaporate solvent and initiate cure. The SS4331 release coating system contains a platinum catalyst which is sensitive to contamination. Potential contaminants include conventional tin catalysts, rust, sulfur compounds and amines. It is therefore recommended that all coating equipment be cleaned and inspected for possible sources of contamination before use. The preferred situation is to use this system on equipment dedicated to platinum addition cure materials only.

### Bath Preparation

To prepare the coating bath, the following procedure is suggested:

1. Dilute the SS4331 dispersion to the desired silicone concentration with solvent and stir until completely dispersed. For maximum bath life, an aliphatic solvent is suggested.
2. Add the required amount of SS8010 platinum catalyst and mix thoroughly. See Table 1.
3. For applications requiring tighter release a Controlled Release Additive such as SS4335 or SL4405 or SL4406 additive may be added at this step. Mix thoroughly. See Momentive Performance Materials data sheets on these products for other properties and formulations.
4. Add the required amount of SS4300C cross-linker. See Table 1. The bath is now ready to use.

**Table 1: Bath Formulation Options**

	<b>Lower Cost</b>	<b>Standard</b>	<b>Lower Temp/Faster Cure</b>
SS4331	100	100	100
Solvent		As Required	
SS8010	1.4	1.8	2.2
SS4300C	1.0	1.0	1.0

**Bath Life**

The Bath Life of these systems is influenced by a number of factors, each of which is controllable. These factors and their effect are listed in Table 2.

**Table 2: Factors Affecting Bath Life**

<b>Factor</b>	<b>Effect</b>	<b>Controls</b>
% Solids of Bath	<ul style="list-style-type: none"> <li>• High Solids shorten bath life</li> <li>• Low Solids extend bath life</li> </ul>	Scale batch size and % solids to meet production requirements.
Bath Temperature	- Higher temps shorten bath life	Provide cooling to the bath.
Platinum Level (as SS8010)	<ul style="list-style-type: none"> <li>• Higher Platinum levels shorten bath life</li> <li>• Lower Platinum levels extend bath life</li> </ul>	Scale batch size & platinum level to meet production requirements. Add additional inhibitor to extend bath life.
Solvent Type	<ul style="list-style-type: none"> <li>• Aromatic Solvents shorten bath life</li> <li>• Aliphatic Solvents extend bath life (SEE TABLE 3)</li> </ul>	Select solvent to meet production requirements.

**Table 3: Viscosity Build Vs. % Solids**

SS4331	100	67	33	33	17
Toluene	--	33	67	--	83
Hexane	--	--	--	67	--
SS8010	1.4	0.93	0.47	0.47	0.24
SS4300c	1.0	0.67	0.33	0.33	0.17
% Solids	30	20	10	10	5
INITIAL VISCOSITY (CPS)	14800	2300	130	58	20
10 minutes	Gelled	4800	--	--	--
15 minutes		7200	--	--	--
20 minutes		13000	200	85	22
1 hour			270	100	23
2 hours			380	130	23
4 hours			610	170	27
5 hours				210	--
7 hours					28
22 hours					40

Note: Ratio of SS4331, SS8010 and SS4300c is constant in all these formulations.

### 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](http://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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