

SilForce™ SL6031

CRA for Thermal Solventless System

Description

Silforce SL6031 is a general purpose Controlled Release Additive (CRA) for use with our base polymer pre-blends, such as SilForce SL6162, SL6962 and SL7562S, primarily in the manufacture of glassine and PE coated kraft papers to increase release force. It can also be used for Kraft paper and PET films by adjusting the level of catalyst accordingly and selecting the right cross-linker. When coating PET film the Anchorsil* 2000 adhesion promoter can be added into the bath as a candidate for untreated PET films.

Product References

- SilForce SL6162: Base polymer
- SilForce SL6031: Controlled release additive
- SilForce SL6210: Concentrated catalyst (Pt)
- SilForce SL4380: Cross-linker for papers and films (1)

(1) Depending on the substrate and/or processing conditions other cross-linkers may be considered.

Key Features and Typical Benefits

- System versatility for all release liners (papers & films)
- Lower-temperature curing enabled

- New generation of inhibitor for fast system
- High formulation flexibility
- Enhanced cross-linker for good anchorage of the release coating
- Productivity gain in terms of machine capacity

Typical Physical Properties

Table 1:

| Property | SilForce SL6162 | SilForce SL6031 |
|-------------------------|-----------------|-----------------|
| Viscosity, cstks, 25 °C | 170 - 300 | 1500 - 2700 |
| Density, kg/l | 0.97 | 1.04 |

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

Potential Applications:

SilForce SL6031 in combination with a base polymer coating, cross-linker and catalyst may be considered for use with standard liners used in the label industry, such as:

- Glassine papers
- SCK papers
- Clay-coated kraft papers
- PE coated papers
- PET films
- Polyolefin films

General Considerations for Use

The SL6031 CRA in combination with a solventless release base polymer (like SilForce SL6162 for example) can be applied by any of the methods now being used commercially for solventless silicone, including three rolls differential, offset gravure, and various multiple smooth rolls configurations. Heat should be applied immediately after coating to initiate cure. Best results are obtained with zoned ovens. Operating the first oven zone at 90-120 °C will allow the coating to level, forming a continuous film before cure is initiated. Subsequent oven zones should be sufficiently high to achieve the required web exit temperature. Actual temperatures required for complete cure will

be highly dependent on the performance of the oven and machine conditions. In general, minimum web temperature must be maintained a finite time (= dwell time) to obtain complete cure, such time being dependent on oven length and the line speed.

Table 2: Sample Starting Formulations for Glassine Papers at a Catalyst Level of 50 ppm

| Component | 0% CRA | 5% CRA | 10% CRA |
|-----------------|--------|--------|---------|
| SilForce SL6162 | 95 | 90 | 85 |
| SilForce SL6031 | - | 5 | 10 |
| SilForce SL4380 | 3.83 | 4.16 | 4.5 |
| SilForce SL6210 | 5 | 5 | 5 |

Table 3: Sample Starting Formulation for PET Films at a Catalyst Level of 50 ppm

| Component | 0% CRA | 5% CRA | 10% CRA |
|-----------------|--------|--------|---------|
| SilForce SL6162 | 95 | -90 | 85 |
| SilForce SL6031 | - | 5 | 10 |
| SilForce SL4330 | 3.5 | 3.8 | 4.1 |
| SilForce SL6210 | 5 | 5 | 5 |
| Anchorsil* 2000 | 3 | 3 | 3 |

Product formulations are included as illustrative examples only. Momentive makes no representation or warranty of any kind with regard to any such formulations, including, without limitation, concerning the efficacy or safety of any product manufactured using such formulations.

Important Note:

The sample starting formulations in Table 2 and 3 are based on cure optimization. Destabilized (high) release may occur with some adhesives, solution acrylics in particular, at the suggested crosslinker levels. Please contact a Momentive Technical Service Representative for further information and guidance.

Bath Life

The working life of an activated bath will vary depending on catalyst and inhibitor levels,

as well as ambient conditions. At levels shown in the sample formulations, the expected minimum bath life is 6-8 hours under normal processing conditions.

As the thin film bath life of the SilForce SL6162 system is significantly shorter than the thin film bath life of the SilForce SL6600, SL6625 etc. systems, the coating head should be cleaned if the machine is stopped for more than 20 minutes

Bath Preparation

To ensure consistent results and maximize bath life, components should be mixed in the following order:

1. Weigh and add polymers (SilForce SL6162 for example) to a clean, rust-free container/mixing vessel
2. Weigh and add the CRA SilForce SL6031
3. Agitate thoroughly
4. Weigh and add the crosslinker (for example SilForce SL4330) to above mix
5. Agitate thoroughly
6. Weigh and add the platinum concentrate (SilForce SL6210) to above mix
7. Agitate thoroughly
8. Weigh and add the Anchorsil* 2000 to above mix (when needed)
9. Agitate thoroughly for 10-15 minutes to ensure homogeneity.

Bath should be prepared just prior to use.

Coating Weight/Substrates

The optimal coat weight will depend on the hold out and resolution of the surface, but generally 0.8-1.6 g/m² will provide a continuous silicone film. Coat weights can be determined by X-Ray Fluorescence.

FDA Status

SilForce SL6031 controlled release additive is compositionally compliant with 21 CFR 175.320 (resinous and polymeric coatings for polyolefin films). The end user has sole responsibility for determining that its product complies with all applicable FDA specifications and limitations and is fit for food contact use.

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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For literature and technical assistance, visit our website at: www.momentive.com

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