

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.

Contact Information

For product prices, availability, or order placement, contact our customer service at Momentive.com/CustomerService/

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

DISCLAIMER:

THE MATERIALS, PRODUCTS AND SERVICES OF MOMENTIVE PERFORMANCE MATERIALS INC. AND ITS SUBSIDIARIES AND AFFILIATES (COLLECTIVELY "SUPPLIER"), ARE SOLD SUBJECT TO SUPPLIER'S STANDARD CONDITIONS OF SALE, WHICH ARE INCLUDED IN THE APPLICABLE DISTRIBUTOR OR OTHER SALES AGREEMENT, PRINTED ON THE BACK OF ORDER ACKNOWLEDGMENTS AND INVOICES, AND AVAILABLE UPON REQUEST. ALTHOUGH ANY INFORMATION, RECOMMENDATIONS, OR ADVICE CONTAINED HEREIN IS GIVEN IN GOOD FAITH, SUPPLIER MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, (i) THAT THE RESULTS DESCRIBED HEREIN WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN INCORPORATING ITS PRODUCTS, MATERIALS, SERVICES, RECOMMENDATIONS OR ADVICE. EXCEPT AS PROVIDED IN SUPPLIER'S STANDARD CONDITIONS OF SALE, SUPPLIER AND ITS REPRESENTATIVES SHALL IN NO EVENT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS OR SERVICES DESCRIBED HEREIN.

Each user bears full responsibility for making its own determination as to the suitability of Supplier's materials, services, recommendations, or advice for its own particular use. Each user must identify and perform all tests and analyses necessary to assure that its finished parts incorporating Supplier's products, materials, or services will be safe and suitable for use under end-use conditions. Nothing in this or any other document, nor any oral recommendation or advice, shall be deemed to alter, vary, supersede, or waive any provision of Supplier's standard Conditions of Sale or this Disclaimer, unless any such modification is specifically agreed to in a writing signed by Supplier. No statement contained herein concerning a possible or suggested use of any material, product, service or design is intended, or should be construed, to grant

SilForce* SL6031

any license under any patent or other intellectual property right of Supplier covering such use or design, or as a recommendation for the use of such material, product, service or design in the infringement of any patent or other intellectual property right.

*SilForce is a trademark of Momentive Performance Materials Inc.1033

Momentive and the Momentive logo are trademarks of Momentive Performance Materials Inc.