

AnchorSil™ 2000

AnchorSil* 2000

Description

AnchorSil 2000 anchorage additive is a 100% active organo-functional reactive polymer designed to improve anchorage of Momentive thermally cured solventless silicone release coatings to polyester films.

Key Features and Benefits

- Improves anchorage on a variety of treated and untreated polyester films
- Improves anchorage of formulations with and without controlled release additive
- Compatible with all Momentive thermally cured solventless silicone release coatings
- Easily mixes with Momentive thermally cured solventless silicone release coatings
- Does not adversely affect release performance, coverage and bath life of release coatings

Typical Physical Properties

| Property | Value | Unit of Measure |
|--------------------|-------|------------------|
| Viscosity @ 25°C | 215 | cst, 25°C (77°F) |
| Density | 8.819 | Lbs./gal |
| Specific Gravity | 1.060 | - |
| Hydride Content | 0.7 | weight % |
| Flash Point (PMCC) | 82 | °C |

Potential Applications

AnchorSil 2000 anchorage additive may be used with all Momentive vinyl functional

solventless thermally cured silicone release coatings for improved anchorage on a variety of polyester films.

Patent Status

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Product Safety, Handling and Storage

The limited warranty period is 3 months from date of shipment from Momentive Performance Materials if stored in the original unopened container below 4°C (39°F). Note that Anchorsil 2000 anchorage additive is a reactive product and can evolve hydrogen over time if stored at temperatures greater than 4°C (39°F) (See Figure 4). Storage at temperatures greater than 4°C (39°F) will also shorten storage life (see Figure 5). If frozen, care should be taken not to introduce moisture from condensation. Opened, partially used containers should be tightly recapped and returned to storage below 4°C (39°F) when not in use. Introduction of moisture should be avoided and if capable, a dry nitrogen atmosphere should be replaced in order to ensure optimum storage stability.

Figure 4: AnchorSil 2000 Anchorage Additive Hydrogen Evolution Versus Storage Temperature

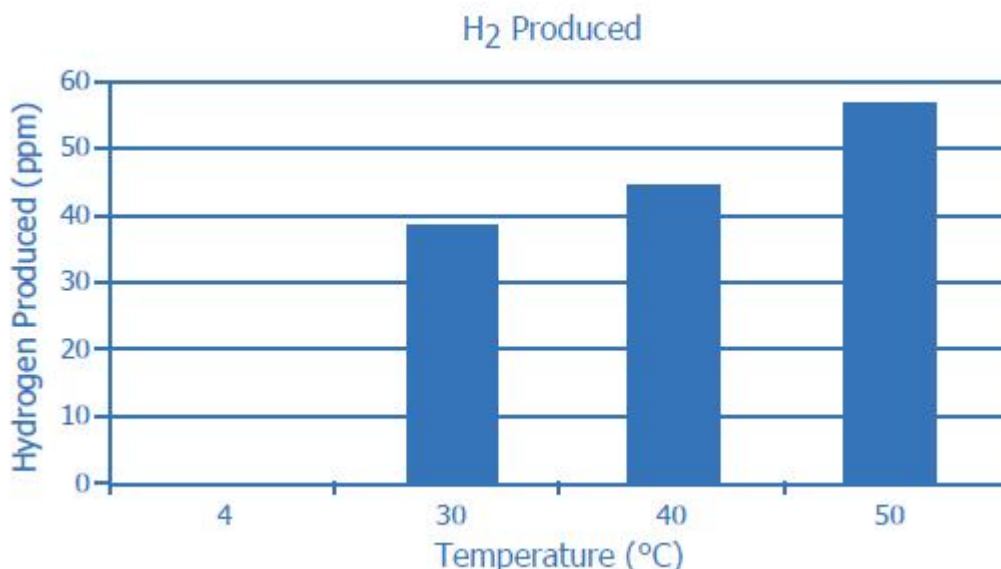
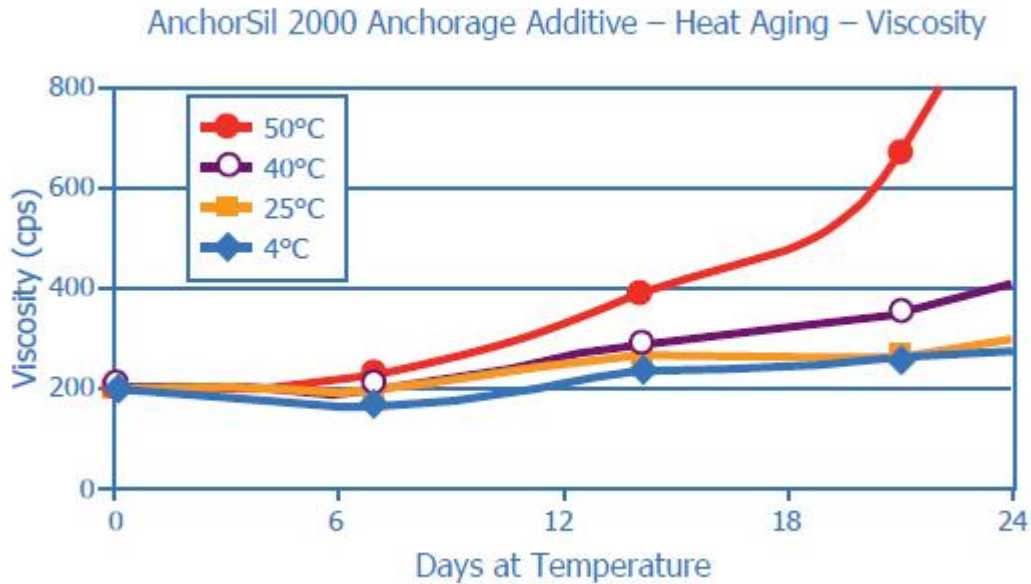


Figure 5: AnchorSil 2000 Anchorage Additive Viscosity Stability Versus Storage

Temperature



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Processing Recommendations

AnchorSil 2000 anchorage additive is compatible with all Momentive thermally cured solventless silicone release coatings. For best results, it should be added to the silicone formulation at the same time the crosslinker is added and thoroughly mixed prior to use. The level of addition will depend on the type of polyester film and actual curing conditions. In general, 2 to 4 parts per hundred (pph) polymer addition of AnchorSil 2000 anchorage additive is sufficient to obtain optimum anchorage, but the actual required concentration should be established and optimized during extensive machine trials by the customer.

Table 1: Typical Starting Formulations for SL6625/SL6635 Release Coating System

| | AnchorSil 2000 Anchorage Additive Concentration | | | | | | | |
|-----------------------------------|---|-----|-------|-----|-------|-----|-------|-----|
| | 0 pph | | 2 pph | | 3 pph | | 4 pph | |
| Component | Parts by Weight | | | | | | | |
| SL6625 | 100 | 75 | 100 | 75 | 100 | 75 | 100 | 75 |
| SL6635 | 0 | 25 | 0 | 25 | 0 | 25 | 0 | 25 |
| AnchorSil 2000 anchorage additive | 0 | 0 | 2 | 2 | 3 | 3 | 4 | 4 |
| SS4300C ⁽¹⁾ | 3.3 | 4.3 | 2.4 | 3.5 | 2.0 | 3.0 | 1.6 | 2.6 |

(1)SS4300C concentrations adjusted for hydride content in AnchorSil 2000 anchorage additive to maintain a constant SiH:Vi ratio. Contact your local Momentive technical or sales representative for further assistance.

Table 2: Typical Starting Formulations for SL7025 Release Coating System

| | AnchorSil 2000 Anchorage Additive Concentration | | | |
|-----------------------------------|---|-------|-------|-------|
| | 0 pph | 2 pph | 3 pph | 4 pph |
| Component | Parts by Weight | | | |
| SL7025 | 100 | 100 | 100 | 100 |
| AnchorSil 2000 anchorage additive | 0 | 2 | 3 | 4 |
| SS4300C ⁽²⁾ | 4 | 3.1 | 2.7 | 2.3 |

(2)SS4300C concentrations adjusted for hydride content in AnchorSil 2000 anchorage additive to maintain a constant SiH:Vi ratio. Contact your local Momentive technical or sales representative for further assistance.

Note: Since AnchorSil 2000 anchorage additive contains hydride, the final amount of crosslinker in the formulation needs to be adjusted to maintain equal hydride to vinyl (SiH:Vi) ratio in formulations. This is particularly important in pressure sensitive constructions utilizing adhesives that are sensitive to hydride level. Thorough evaluation of the finished product performance is recommended before large quantities of material are manufactured.

AnchorSil 2000 anchorage additive improves the anchorage of thermally cured solventless silicone release coatings to a variety of polyester films. Higher web temperature, longer dwell time and in-line corona treatment have been found to further

improve anchorage. On some substrates and at specific curing conditions, corona treatment may be optional although still recommended as illustrated in Table 3 and Table 4.

Table 3: SL7025 Anchorage on Polyester Film at Various Web Temperatures and Oven Dwell Times.

| | | SL7025 with 3 pph AnchorSil 2000 Anchorage Additive | SL7025 with 3 pph AnchorSil 2000 Anchorage Additive | SL7025 only |
|------------------|---------------|---|---|---------------------------|
| Exit Web Temp | Dwell Time | With Corona | Without Corona | With Corona |
| (°F) | (sec) | (2W/ft ² /min) | – | (2W/ft ² /min) |
| 250 | 6 | No Rub Off | No Rub Off | Rub Off |
| 250 | 4 | No Rub Off | No Rub Off | Rub Off |
| 250 | 3 | No Rub Off | No Rub Off | Rub Off |
| 250 | 2 | No Rub Off | Rub Off | Rub Off |
| 280 | 6 | No Rub Off | No Rub Off | Rub Off |
| 280 | 4 | No Rub Off | No Rub Off | Rub Off |
| 280 | 3 | No Rub Off | No Rub Off | Rub Off |
| 280 | 2 | No Rub Off | Rub Off | Rub Off |

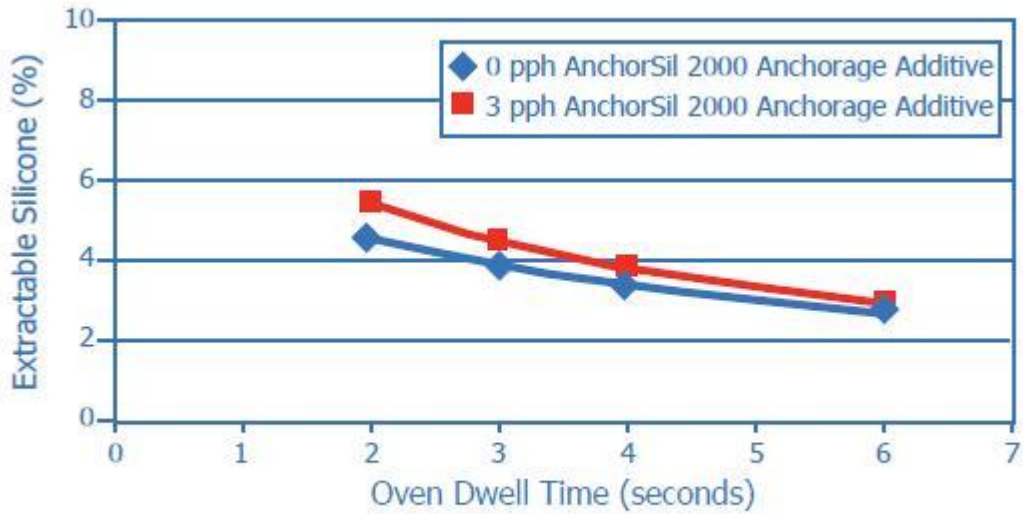
Note: Black Clawson 5 roll coater, 142 gauge SKC polyester film, 95% RH chamber, 24 hours at 600°C

Table 4: SL6625 Anchorage on Polyester Film at Various Web Temperatures and Oven Dwell Times.

| | | SL6625 with 3 pph AnchorSil 2000 Anchorage Additive | SL6625 with 3 pph AnchorSil 2000 Anchorage Additive | SL6625 only |
|------------------|---------------|---|---|---------------------------|
| Exit Web Temp | Dwell Time | With Corona | Without Corona | With Corona |
| (°F) | (sec) | (2W/ft ² /min) | – | (2W/ft ² /min) |
| 250 | 6 | No Rub Off | Rub Off | Rub Off |
| 250 | 4 | No Rub Off | Rub Off | Rub Off |
| 250 | 3 | No Rub Off | Rub Off | Rub Off |
| 250 | 2 | No Rub Off | Rub Off | Rub Off |
| 280 | 6 | No Rub Off | No Rub Off | Rub Off |
| 280 | 4 | No Rub Off | No Rub Off | Rub Off |
| 280 | 2 | No Rub Off | Rub Off | Rub Off |

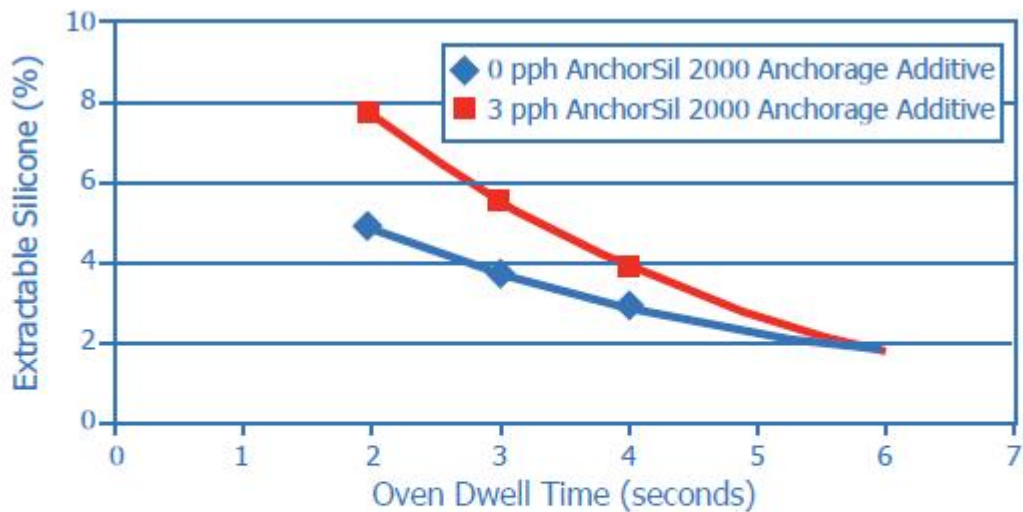
AnchorSil 2000 anchorage additive does not affect coverage or bath life of formulated release coatings. At higher web temperatures, cure is not affected (see Figure 1). At lower web temperatures and shorter dwell times (e.g. higher line speeds), the cure is slower for formulations containing 3 pph AnchorSil 2000 anchorage additive versus the control formulation (see Figure 2). AnchorSil 2000 anchorage additive concentration and cure conditions should be optimized to maintain the desired level of extractable silicone at the best possible anchorage.

Figure 1: SL7025 With and Without 3 pph AnchorSil 2000 Anchorage Additive – Cure Profiles at 280°F Web Temperature



Note: Black Clawson pilot coater, 1.5 mil polyester film, 0.6 lbs/ream coating weight

Figure 2: SL7025 With and Without 3 pph AnchorSil 2000 Anchoage Additive - Cure Profiles at 250°F Web Temperature

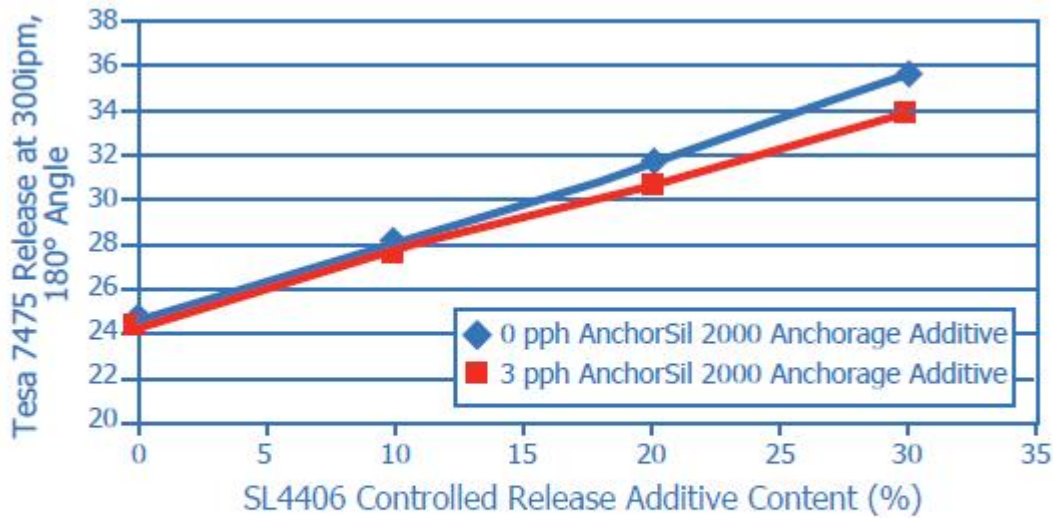


Note: In order to obtain comparable cure between formulations with and without AnchorSil 2000 anchoage additive, it may be necessary to adjust crosslinker level. In doing so however, thorough evaluation of the finished product performance is recommended especially in the case where hydride sensitive adhesives are being used.

When fully cured at higher web exit temperatures, comparable release performance of

SL6625 easy release coating with various levels of SL4406 controlled release additive with and without AnchorSil 2000 anchorage additive at equal hydride to vinyl ratios is illustrated in Figure 3.

Figure 3: Release Performance of SL6625 with SL4406 Controlled Release Additive Tested with Tesa 7475 Tape After 4 Weeks RT Aging - Comparison Between Formulations With and Without 3 pph AnchorSil 2000 Anchorage Additive



Note: Pilot coater, 3 roll Differential Offset Gravure, 142 gauge SKC polyester film, coatings formulated at constant hydride to vinyl ratio of 2.3:1, Tesa 7475 applied offline and aged for 4 weeks at standard RT conditions

Limitations

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