

## Wingtack® STS

Hydrocarbon Resin is a Beneficial Alternative to Styrenated Terpenes and Rosin Esters in Butadiene-Based Elastomers



### Benefits

- Extremely low odor
- Excellent compatibility with polar elastomers
- Steep viscosity versus temperature curve

### Target markets

- Construction adhesives
- Pressure sensitive adhesives
- Hot melt adhesives

### Additional Information

MSDS/TDS: Wingtack® STS

### Description

Cray Valley has developed a new C5 hydrocarbon resin that shows excellent performance in adhesive formulations that have previously required styrenated terpenes or rosin esters.

Typical physical properties for Wingtack® STS are presented below.

### Typical Physical Properties

|                                 |                            |
|---------------------------------|----------------------------|
| Physical form                   | Flake, pastille, or molten |
| Ring & ball softening point, °C | 94                         |
| Ash content, %                  | <0.01                      |
| Mn                              | 1000                       |
| Mw                              | 1600                       |
| Tg, °C                          | 44                         |
| Color, Gardner                  | 3                          |

The following traditional styrene-butadiene-styrene (SBS) block copolymer adhesive formulation was used to evaluate peel adhesion in accordance with ASTM D 3330. Adhesives based on Wingtack STS, two competitive hydrocarbon resins (HCRs), a styrenated terpene, and a rosin ester were used to laminate polyethylene nonwoven to polyethylene film at a level of 5 gm/m<sup>2</sup>. When adhering low basis weight non-woven polyethylene to polyethylene film, only the formulations based on Wingtack STS and the styrenated terpene showed no “strike-through.” The odor of the adhesive using Wingtack STS was exceptionally low and judged equivalent to or better than that based on the styrenated terpene, while the competitive resins contributed unacceptably high odor.

## SBS Adhesive Formula

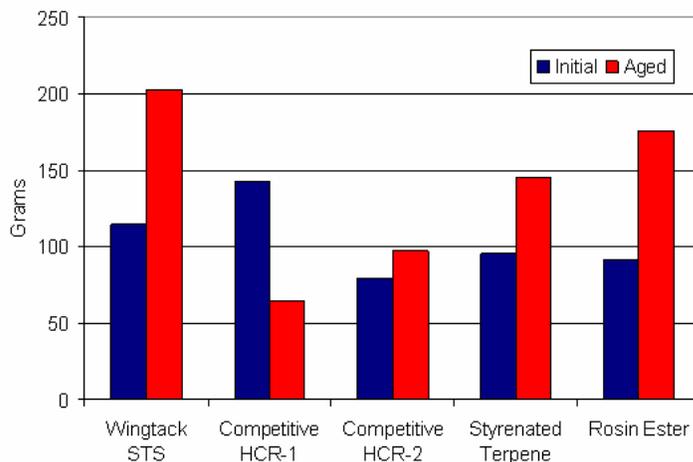
| Component          | Wt. % |
|--------------------|-------|
| Kraton® D 1102 (1) | 15.0  |
| Naphthenic oil     | 25.0  |
| Tackifying resin   | 59.5  |
| Irganox® 1010 (2)  | 0.5   |

- (1) Kraton is a registered trademark of Kraton Polymers  
 (2) Irganox is a registered trademark of Ciba Specialty Chemicals

As shown below, the formulation based on the Wingtack STS produced higher peel adhesion results than the styrenated terpene, two competitive hydrocarbon resins, and a typical rosin ester.

The following styrene-butadiene (SB)-based adhesive formulation was used to compare viscosity profiles related

**Peel Adhesion of Non-woven/Poly Laminate  
Spiral Spray SBS Adhesive**



Note: Aging cycle – 2 weeks at 50 °C

to Wingtack STS, a styrenated terpene, two competitive hydrocarbon resins, and a rosin ester.

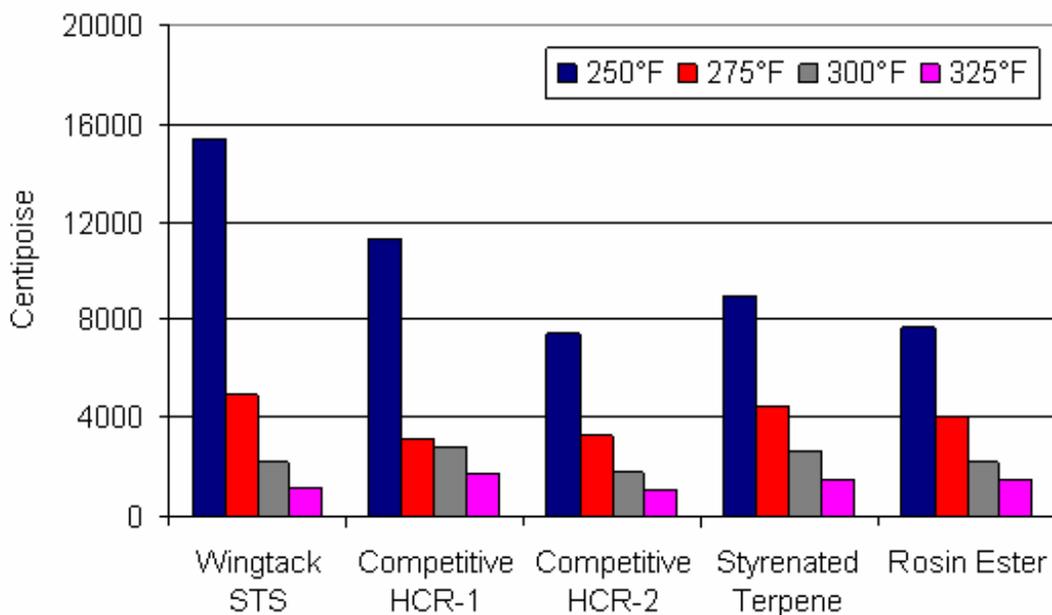
## High Styrene SB Formula

| Component        | Wt.% |
|------------------|------|
| Tackifying resin | 60   |
| Stereon® 840 (3) | 20   |
| Naphthenic oil   | 20   |

(3) Stereon is a registered trademark of Firestone Synthetic Rubber & Latex Co.

The chart below compares temperature versus viscosity profiles for Wingtack STS, a styrenated terpene, two competitive hydrocarbon resins, and a rosin ester using the above formulation. As shown, Wingtack STS demonstrates the fastest reduction in viscosity with increasing temperature. This steep viscosity curve is indicative of the adhesive's ability to set quickly and alleviate substrate strike-through.

## Viscosity Profile of "High Styrene SB" Adhesive



## Conclusions

- Some reformulation may be required to achieve optimum performance versus styrenated terpenes and rosin esters.
- For technical assistance, please contact  
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