

Clartack® (formerly Norsolene) W-Series Water White Pure Aromatic Monomer Hydrocarbon Resins in Adhesives



Benefits

- Colorless
- Low odor
- Highly aromatic
- Good tackifying properties
- Good reinforcing properties
- Viscosity reduction

Description

Clartack® W-Series resins are “water white” resins manufactured from pure aromatic monomers. Colorless and low odor, these are tackifying and reinforcing resins used for mastics, EVA-based hot melt adhesives, and thermoplastic rubber-based adhesives. Their low color makes them particularly suitable for high-quality bookbinding, hygiene applications, and packaging for luxury goods. They also find their way into many types of coatings, plastics and rubber. Please check the Technical Updates for those applications and see how these resins can improve your performance.

Product Features

Product	Suggested Applications	Features and Benefits
W-85	EVA & SBC hot melt adhesives, low-VOC coatings	Low color, low odor, good tackifying and reinforcing properties, excellent hot tack
W-90		
W-100		
W-110		
W-120	Hot melt adhesives, coatings, pressure sensitive adhesives	Low color, low odor, good tackifying and end-block reinforcing properties, excellent hot tack
W-130		
W-140		

TECHNICAL UPDATE

Cleartack® W-Series Water White Pure Aromatic Monomer Hydrocarbon Resins in Adhesives

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Cleartack W Series – Typical Properties*

Product		W-85	W-90	W-100	W-110	W-120	W-130	W-140
Softening Point, °C		80	90	100	110	120	130	140
Hazen Color (50% toluene)		40 max						
Acid Number		<0.1						
Saponification Number		<1.0						
Specific Gravity @ 20 °C		1.06						
Molecular Weight	Mn	600	650	750	850	950	1100	1200
	Mw	1050	1150	1400	1600	2000	2400	2900
Glass transition temperature (Tg), °C		35	40	50	60	70	80	90

Performance Examples

Example Formulation #1: Packaging Adhesive		
Weight (%)	Component	Description
49.5	Cleartack W-Series Resin	Water white pure aromatic hydrocarbon resin
30	EVA	Ethylene vinyl acetate polymer 28% VA, 420 melt index
20	Sasolwax H1	High mp F-T wax (Sasol)
0.5	BNX 1010	Antioxidant (Mayzo)

Adhesive Physical Properties			
	Cleartack Grade		
	W-90	W-100	W-110
Softening Point, °C	112	113	113
Cloud Point, °C	140	205	220
Elongation @ Break, %	37	19	15
Stress @ Break, MPa	3.3	3.9	3.6
Young's Modulus, MPa	135	115	115
Tear Strength (Beech), MPa	2.8	2.3	2.6

As shown above, though the softening points of the resins are very different, the softening points of the adhesives are virtually the same. This is because the adhesive softening point is dominated by the melting point of the wax.

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Example Formulation #2: Pressure Sensitive Adhesive

Weight (%)	Parts	Component	Description
39	100	SIS	Kraton D1161 styrenic block copolymer (Kraton Polymers)
49	125	Wingtack Extra	C5/C9 tackifying resin (Total Cray Valley)
10	25	Process Oil	Nyflex 222B naphthenic oil (Nynas)
2	5	W-90 or W-140	Clear tack pure aromatic monomer resin (Total Cray Valley)
	0.5	BNX 1010	Antioxidant (Mayzo)

By choosing the correct Clear tack aromatic resin you can soften or harden the styrenic end blocks of the block copolymer and drive your performance in the direction you need.

PSA Performance Comparison

Test		Control (no Clear tack)	Clear tack W-90	Clear tack W-140
PSTC-101 180° Peel Adhesion, lbs/in	Stainless Steel (SS)	5.0	5.2	5.3
	Glass	4.4	5.3	5.9
PSTC-16 Loop Tack, lbs	SS	6.0	6.3	7.5
	Corrugated Cardboard	1.9	2.1	2.1
	Glass	7.1	7.9	8.7
	HDPE	4.9	5.1	3.0
PSTC-6 Rolling Ball Tack, cm		2.5	2.2	2.3
Shear Adhesion Failure Temperature, °C	SS	76	71	83
	Kraft Paper	44	44	53
PSTC-107 Shear, 1/2" x 1/2" x 0.5 kg, hrs. RT	SS	42	29	184
	Kraft Paper	13	6	26

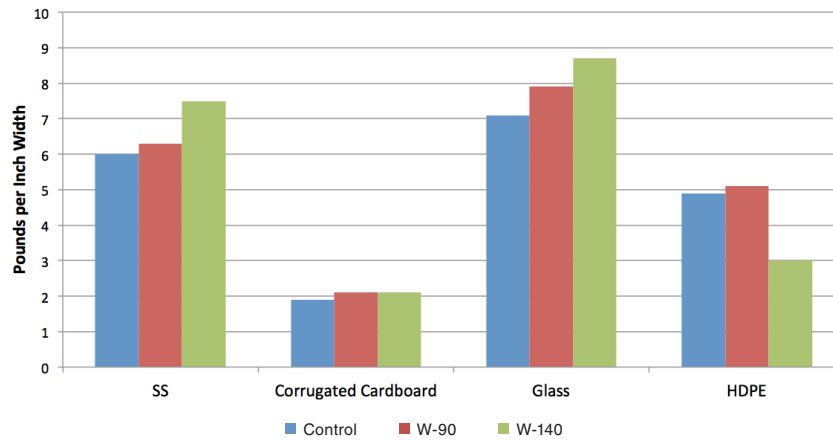
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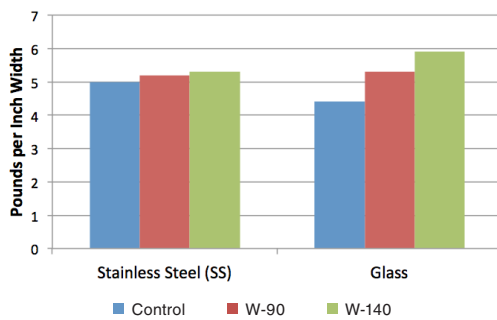
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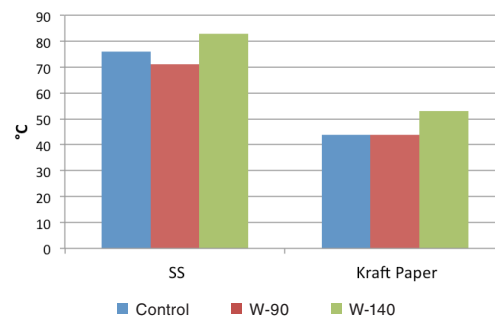
Loop Tack



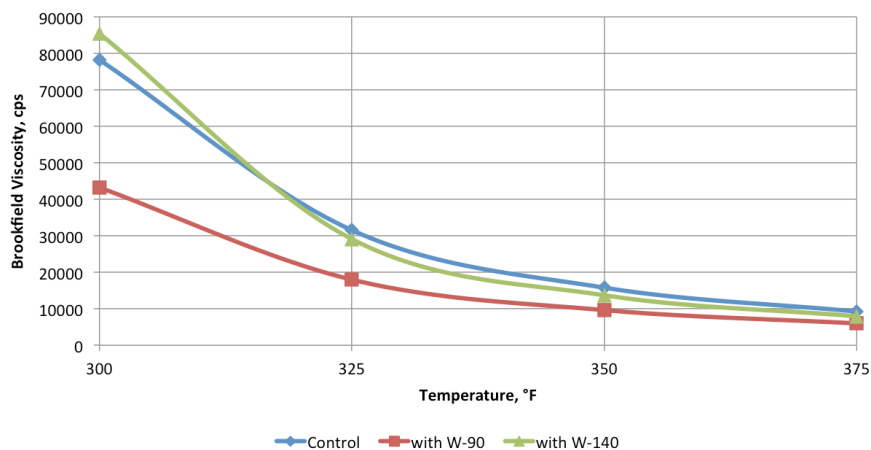
180° Peel Adhesion



SAFT



Molten Adhesive Viscosity



As little as 2 weight percent of Cleartrack W-90 can dramatically reduce the molten viscosity of an SBC-based hot melt adhesive, especially at low temperatures. This can dramatically improve the ability to coat or spray the adhesive, reducing defects and improving performance.

TECHNICAL UPDATE

Clear tack® W-Series Water White Pure Aromatic Monomer
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Summary

As little as 2% of the Clear tack W-140 can significantly increase the shear and heat resistance (as measured by SAFT) of a pressure sensitive adhesive. If a subtle improvement in peel adhesion or tack is needed, a little Clear tack W-90 can provide it but at the expense of some shear and heat resistance.

Test Methods

Softening Point: Ring & Ball Softening Point can be determined using any of the following methods: ISO #4625, ASTM E28, ASTM D6090.

Gardner Color: Gardner color is determined using a 50% toluene solution using ISO #4630, ASTM D1544, ASTM D6166.

Mechanical Testing: All mechanical testing conducted in a ASTM D3924 compliant constant temperature and humidity room using a Thwing-Albert tensile tester at the speeds governed by the test method referenced.

About Total Cray Valley

Total Cray Valley is the premier global supplier of specialty chemical additives, hydrocarbon specialty chemicals, and liquid and powder tackifying resins used as ingredients in adhesives, rubbers, polymers, coatings and other materials. Total Cray Valley has pioneered the development of these advanced technologies, introducing hundreds of products that enhance the performance of products in energy, printing, packaging, construction, tire manufacture, electronics and other demanding applications.

*The listed properties are illustrative only, and not product specifications. Cray Valley disclaims any liability in connection with the use of the information, and does not warrant against infringement by reason of the use of its products in combination with other materials or in any process.

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