

CRAY VALLEY

Hydrocarbon Resins



Resins par excellence



Cray Valley's Range of Hydrocarbon Resins

Cray Valley produces Norsolene[®] and Wingtack[®] hydrocarbon resins. Norsolene products are aromatic hydrocarbon resins produced by polymerization of "C9" or "C5" modified "C9" petroleum fractions or from pure monomers. Wingtack products are primarily aliphatic hydrocarbon resins derived from the polymerization of "C5" or "C9" modified "C5" petroleum fractions.



Three straight "C5" aliphatic resins are available in the **Wingtack** product line and they range from liquid Wingtack 10, which enhances cold temperature performance as a plasticizer/tackifier, to Wingtack 95 and RWT7850 which are excellent resins for SIS, natural rubber and other less polar elastomers.

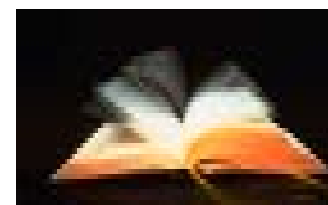
The **Wingtack** product line includes a series of "C5" resins that have been modified (co-polymerized) with pure monomer "C9" feed which enhances compatibility in various elastomers and can provide increased specific adhesion and tack for applications that require improved performance off of low-energy surfaces and recycled corrugated cardboard.



Norsolene A series resins are aromatic modified aliphatic resins used as tackifying resins for EVA copolymer based hotmelt adhesives (HMA) and coatings (HMC). Norsolene resins have become the standard products in applications such as hotmelt adhesives for packaging, bookbinding, woodworking, etc.

Norsolene S series resins are aromatic hydrocarbon resins for general use. They are used in the following applications.

- Polymer compounding, typically PVC and rubbers, as "processing aids". They also improve "greentack," the incorporation and dispersion of fillers.
- Hotmelt and solvent adhesives as tackifying and cohesive resins. In addition, the higher softening point resins, especially Norsolene S155, increase the thermal performance properties of pressure sensitive adhesives ("PSA" adhesives) based on block styrene copolymers (ISS, SIBS, etc.)
- All types of solvent based paints
- As hard resins in offset inks.



Norsolene W series resins are "water-white" resins, manufactured from pure styrene monomers. Colorless and odorless, these are tackifying and reinforcing resins used for mastics, EVA-based hotmelt adhesives. Their stability makes them particularly suitable for high-quality bookbinding, hygiene applications and packaging for luxury goods.

Typical Physical Properties of Cray Valley's Norsolene® and Wingtack® Hydrocarbon Resins

Hydrocarbon Resin	Appearance	Softening point, °C, ring and ball	Color, Gardner (50%) toluene solution	Specific gravity @ 20°C	Molecular weight (g/mol)				Tg, °C, midpoint	Iodine number	Flashpoint, °C
					Mn	Mw	Mz	Polydispersity			
Wingtack 10	Light yellow liquid	10	1.5	0.90	370	500	700	1.4	-31	120	> 94
Wingtack 95	Light yellow solid	98	1.7	0.94	1100	1700	3000	1.5	52	90	220-230
Wingtack 98	Light yellow solid	98	2.3	0.95	1000	2000	3100	2.0	48	90	>200
Wingtack RWT-7850	Light yellow solid	102	2.4	0.95	1000	2100	4500	2.1	56	90	220-230
Wingtack PLUS	Light yellow solid	96	1.6	0.95	1000	1600	2700	1.6	50	90	220-230
Wingtack EXTRA	Light yellow solid	97	1.4	0.96	1100	2000	3900	1.8	52	90	220-230
Wingtack ET	Light yellow solid	95	2.0	0.96	1000	1600	3200	1.6	47	90	220-230
Wingtack STS	Light yellow solid	94	3.0	0.97	1000	1600	3100	1.6	44	80	>200
Wingtack 86	Light yellow solid	87	1.2	0.98	650	1300	2100	2.0	42	80	260
Norsolene A-90	Yellow solid	97	5.6	1.10	750	1600	3200	2.1	46	35	>250
Norsolene A-100	Yellow solid	104	5.6	1.10	800	1700	3600	2.1	53	35	>250
Norsolene A-110	Yellow solid	108	5.6	1.10	850	1800	3900	2.1	64	35	>250
Norsolene S-85	Yellow solid	87	6.5	1.07	650	1300	2800	2.0	45	<25	>250
Norsolene S-95	Yellow solid	97	6.5	1.07	700	1400	3000	2.0	46	<25	>250
Norsolene S-105	Yellow solid	106	6.5	1.07	750	1600	3500	2.1	55	<25	>250
Norsolene S-115	Yellow solid	115	6.5	1.07	800	1700	3800	2.1	65	<25	>250
Norsolene S-125	Yellow solid	125	6.5	1.07	850	1800	4000	2.1	71	<25	>250
Norsolene S-135	Yellow solid	133	6.5	1.07	950	2200	4800	2.3	82	<25	>250
Norsolene S-145	Yellow solid	143	6.5	1.07	1050	2500	5500	2.4	92	<25	>250
Norsolene S-155	Yellow solid	152	6.5	1.07	1100	2600	6000	2.4	104	<25	>250
Norsolene W-85	Colorless solid	85	<1	1.06	600	1050	1850	1.8	35	<10	>250
Norsolene W-90	Colorless solid	90	<1	1.06	650	1150	2200	1.8	40	<10	>250
Norsolene W-100	Colorless solid	100	<1	1.06	750	1400	2300	1.9	50	<10	>250
Norsolene W-110	Colorless solid	110	<1	1.06	850	1600	2400	1.9	60	<10	>250

Sartomer's Hydrocarbon Resins - Clearance Under the United States Food and Drug Administration Food Additive Regulations

Sartomer's hydrocarbon resins and their use in FDA Food Additive Regulations.

	175.105 (c)(5) Adhesives	175.125 (a) Pressure sensitive adhesives ^{1,2,3}	175.125 (b) Pressure sensitive adhesives ⁴	175.300 (b)(3)(xi) Resinous and polymeric coatings (incl. can end cements)	175.300 (b)(3)(xxx) Can end cements (only)	175.320 (b)(3)(i) Resinous coatings on polyolefin films	175.380 Xylene-formaldehyde and epoxy based resins	175.390 Zinc-silicon dioxide matrix coatings	176.170 Components of paper & paperboard in contact with aqueous & fatty foods	176.180 (b)(1) Components of paper & paperboard in contact with dry foods	177.1210 (b) Closures with sealing gaskets for food containers	177.2600 (c)(4)(iv) Rubber articles intended for repeated use ⁵	178.3800 (b) Preservatives for wood ⁶
Wingtack 10													
Wingtack 95													
Wingtack 98													
Wingtack RWT-7850													
Wingtack PLUS			2,3		3,7	8			9	10			
Wingtack EXTRA			2,3		3,7	8			9	10			
Wingtack ET			2,3		3,7								
Wingtack STS													
Wingtack 86		2,3	2,3		3,7								
Norsolene A-90													
Norsolene A-100													
Norsolene A-110			2,3										
Norsolene S-85													
Norsolene S-95													
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Norsolene S-115													
Norsolene S-125													
Norsolene S-135													
Norsolene S-145													
Norsolene S-155													
Norsolene W-85													
Norsolene W-90													
Norsolene W-100													
Norsolene W-110													

- 1 In contact with poultry, dry food and dehydrated fruits and vegetables
- 2 Limited to 47.5% in final adhesive formulation
- 3 Food Contact Notification, listed on FDA website
- 4 In contact with raw fruits and raw vegetables
- 5 Total plasticizer (Wingtack) not to exceed 30% by weight of rubber product
- 6 Not to be used at less than 50% of total solids
- 7 Cements may contain up to 30% by weight of terpolymer; cans may be used in contact with all types of food under condition of high temperature heat sterilized through frozen or refrigerated storage
- 8 Blended with butyl rubber as a coating for polyolefin films used in bulk packaging of raw fruits and vegetables, 30% by weight of coating
- 9 Petroleum hydrocarbon resins (alicyclic) for use as modifiers in waxpolymer blend coatings for corrugated paperboard intended for use in bulk packaging of raw fruits, raw vegetables, iced meat, iced fish and iced poultry; and limited to use at a level not to exceed 30 weight-percent of the coating solids
- 10 Not to exceed 30% by weight of the waxpolymer blend coatings

- Acceptable for use
- Subject to testing and data review
- Subject to future Food Contact Notification

* These products have been determined to be compliant with the applicable FDA regulation for incorporation into the specified food-contact articles. It is the responsibility of the manufacturer of the finished food-contact article to ensure that the article complies with extraction limitations and other provisions applicable to its intended use.

Cray Valley, a division of Total's Specialty Chemicals, produces and sells hydrocarbon resins globally.

As a world leader in the area of synthetic resins, the objective of this team is to serve the adhesive, coating and rubber markets globally and efficiently.

Being in the C5 Tackifying Resins business requires being located close to economically available C5 streams. The Houston, Texas area of the U.S. Gulf Coast is one of the richest locations in the world for C5 stream availability. Cray Valley's Beaumont, Texas, C5 resins plant is strategically located next to the world's largest processor of these streams.



Norsolene - Channelview, TX

Wingtack C5 tackifying resins have the advantage of less odor and color as well as excellent feedstock availability

The Wingtack name carries the tradition of being known worldwide in the adhesives industry for over 40 years as the quality benchmark for C5 tackifiers.

Norsolene hydrocarbon resins are produced at two production sites on either side of the Atlantic: in France - Carling/Saint-Avold (Moselle) and in the United States - Channelview (Texas)

With our continuous process from raw materials to packaging of the finished product, the Norsolene process guarantees the production of homogeneous batches, while its high degree of flexibility enables rapid response to clients' needs.

Two synthesis and applications laboratory serves this business worldwide. Cray Valley's new technical facility at its headquarters in Exton, Pennsylvania, and the Cray Valley Research Center located at Verneuil-en-Halatte (60-km to the north of Paris) have all the required resources in terms of physical-chemical analysis and synthesis at their disposal. In addition to providing technical support to the plants, the technical team's mission is to ensure technical assistance to its clients and to work closely with them in developing resins and formulation solutions in response to new demands.

Wingtack Plant - Beaumont, TX



The product line of Norsolene and Wingtack together allow Cray Valley to meet your global tackifying needs covering the full spectrum of 'C5 aliphatic to C9 aromatic' requirements.

CRAY VALLEY

Resins par excellence

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