

CRAY VALLEY

Product Bulletin



Wingtack[®] Resins



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Introduction to Wingtack[®] Resins

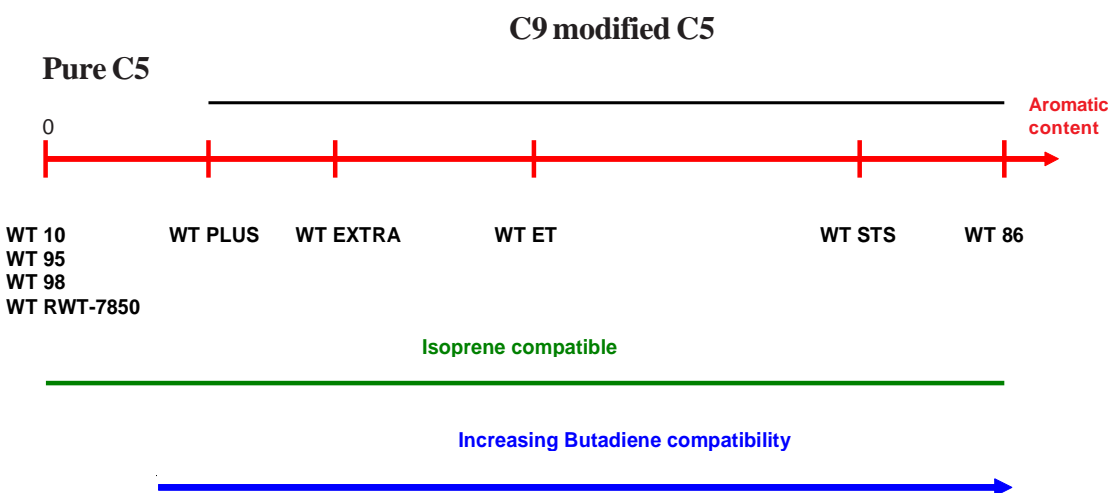
Wingtack[®] hydrocarbon resins are synthetic resins obtained by cationic polymerization of aliphatic monomers (C5). WINGTACK[®] is used in Pressure Sensitive Adhesives (PSA) as tackifying resin and in Hot Melt Adhesive (HMA).

Because of their unique chemistry WINGTACK[®] resins show outstanding properties:

- Uniformity and consistency
- Light color

- Low odour
- High tack properties
- Low specific gravity
- Oxidative stability
- Very low chloride levels

Wingtack[®] resins are also used as tackifying resins and/or “processing aids” (improvement of compounding, extrusion and molding properties) of EPDM, SBR, Polyisoprene, SIS, Butyl rubber based compounds, depending on their compatibility.



Wingtack[®] resins are available having a variety of different physical and chemical properties (like softening point, glass transition temperature and molecular weight distribution) each effecting the performance of the system as well as compatibility with various polymers and elastomers.

The two primary categories of Wingtack[®] resins are 1) aliphatic and 2) aromatically modified aliphatic resins.

1) Pure aliphatic resins:

Resin	Type
Wingtack [®] 10	Liquid resin used as plasticizer. Better bleed resistance than oils.
Wingtack [®] 98	Designed for standard applications like packaging and masking tapes.
Wingtack [®] 95	Ideal for high performance applications in less polar elastomers (NR, SIS) and waxes.
Wingtack [®] RWT-7850	High softening point resin. Excellent for broad range of uses.

2) Aromatic-modified aliphatic resins:

Resin	Type
Wingtack® PLUS	Narrow molecular weight distribution. Best resin for use in SIS based high performance formulations.
Wingtack® EXTRA	Good general purpose resin.
Wingtack® ET	Low molecular weight and higher aromaticity for improved EVA and Butadiene compatibility. Partial replacement for Hydrogenated resins.
Wingtack® STS	Medium softening point and broad range of compatibilities including SIS, SBS, SBR, SIBS and EVA.
Wingtack® 86	Low softening point resin. Broad range of compatibilities including SIS, SBS, SBR, SIBS and EVA.

Physical and Chemical Properties

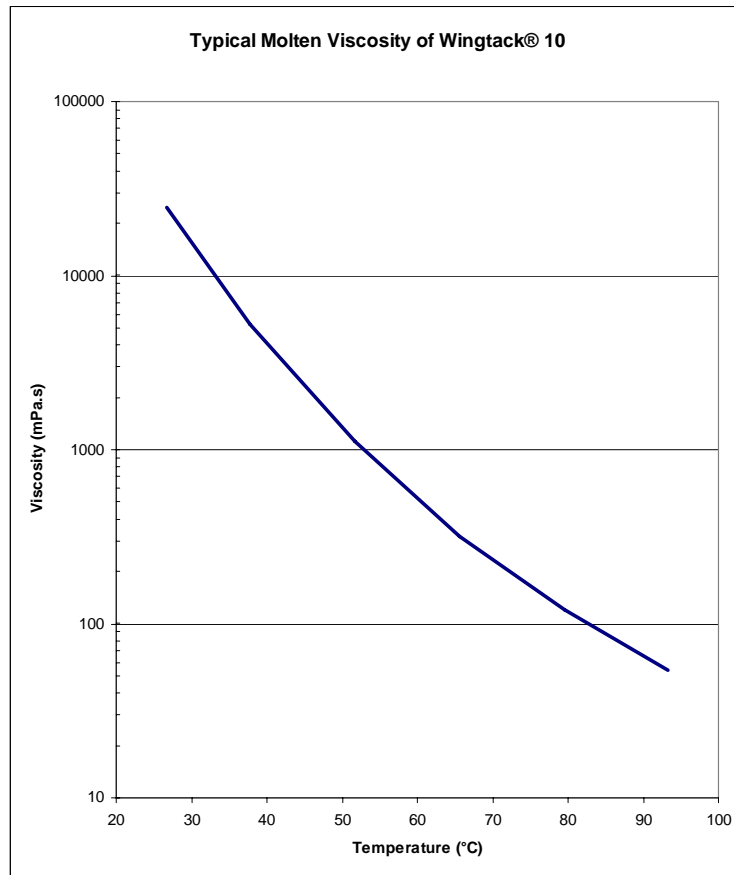
Specification of Wingtack® resins

	Test method	Wingtack 10	Wingtack 95	Wingtack 98	Wingtack RWT-7850	Wingtack PLUS	Wingtack EXTRA	Wingtack ET	Wingtack STS	Wingtack 86
Appearance Pass or fail	Visual	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Black spec Pass or fail	E-656		Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Softening point Ring and Ball, °C	ISO 4625		98 ± 3	98 ± 4	102.5 ± 3	96.5 ± 3	97 ± 3	95.5 ± 3	94 ± 4	87 ± 3
Brookfield viscosity @ 25 °C, mPa.s	E-958	30,000 ± 10,000								
Gardner color (50% toluene solution)	ISO 4630	≤ 3	≤ 3	≤ 3.5	≤ 3.5	≤ 3	≤ 3	≤ 3	≤ 3.5	≤ 3
Gardner colorimeter RD	E-803a	90 - 100	90 - 100	90 - 100	90 - 100	90 - 100	90 - 100	90 - 100	90 - 100	90 - 100

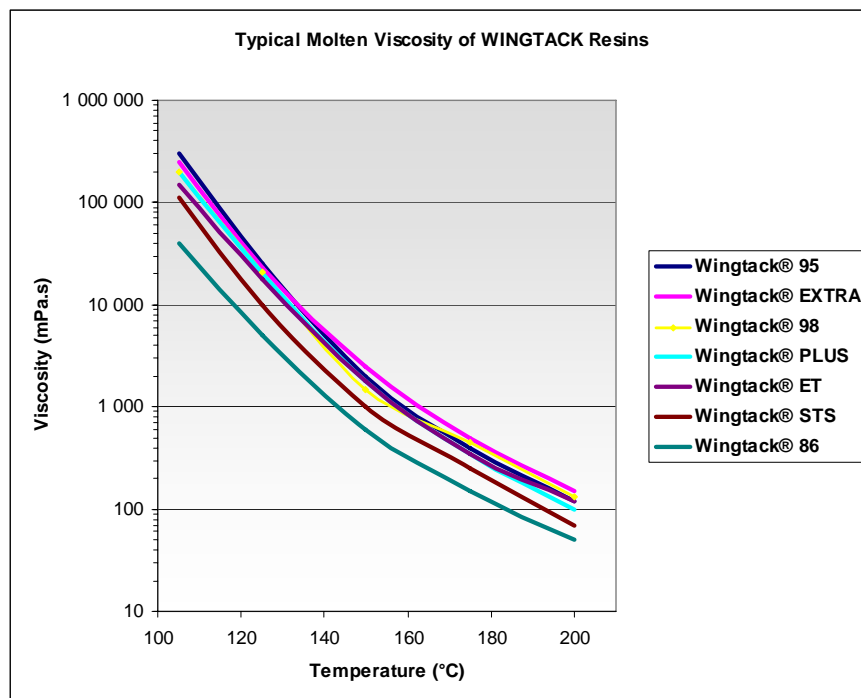
Typical properties of Wingtack® resins

	Wingtack 10	Wingtack 95	Wingtack 98	Wingtack RWT-7850	Wingtack PLUS	Wingtack EXTRA	Wingtack ET	Wingtack STS	Wingtack 86
Appearance	Light yellow liquid	Light yellow solid	Light yellow solid	Light yellow solid	Light yellow solid	Light yellow solid	Light yellow solid	Light yellow solid	Light yellow solid
Softening Point Ring and Ball	10 °C	98 °C	98 °C	102 °C	96 °C	97 °C	95 °C	94 °C	87 °C
Brookfield Viscosity @ 25 °C	30,000 mPa.s								
Gardner Color (50% toluene solution)	1.5	1.7	2.3	2.4	1.6	1.4	2.0	3.0	1.2
Specific Gravity @ 25 °C	0.9	0.94	0.95	0.95	0.95	0.96	0.96	0.97	0.98
Molar Weight (g/mol) :									
Mn	370	1100	1000	1000	1000	1200	1000	1000	650
Mw	500	1700	2000	2100	1600	2200	1600	1600	1300
Mz	700	3000	3100	4500	2700	3900	3200	3100	2100
Polydispersity	1.4	1.5	2.0	2.1	1.6	1.8	1.6	1.6	2.0
Glass Transition Temperature Tg (°C, midpoint)	- 31 °C	51 °C	48 °C	56 °C	50 °C	52 °C	47 °C	44 °C	41 °C

Typical viscosity of Wingtack® 10



Typical melt viscosity of Wingtack® 95, 98, Plus, Extra, ET, STS, 86



Solubility in Solvents and Compatibility with Polymers

Solubility of solvents

Wingtack® resins are generally soluble in solvents having low to medium polarity like:

- Aromatic hydrocarbons
- Aliphatic hydrocarbons

- Higher ketones
- Higher acetates
- Chlorinated solvents
- Higher alcohols

Compatibility with polymers :

	Wingtack 10	Wingtack 95	Wingtack 98	Wingtack RWT-7850	Wingtack PLUS	Wingtack EXTRA	Wingtack ET	Wingtack STS	Wingtack 86
Butyl rubber	C	C	C	C	C	C	C	C	C
Chlorobutyl rubber	C	PC	PC	PC	PC	PC	PC	PC	C
Natural rubber	C	C	C	C	C	C	C	C	C
Nitrile rubber	PC	PC	PC	PC	PC	PC	PC	PC	PC
Waxes	C	C	C	C	C	C	C	C	C
Ethylene-alphaolefin copolymers	C	C	C	C	C	C	C	C	C
EPDM	C	C	C	C	C	C	C	C	C
EVA									
VA <28%	C	C	C	C	C	C	C	C	C
28%<VA<40%	C	PC	PC	PC	PC	PC	PC	PC	C
VA ≥ 40%	C	I	I	I	I	I	I	PC	C
Polybutadiene	C	PC	PC	PC	PC	PC	PC	PC	C
Low MW polyethylene	C	C	C	C	C	C	C	C	C
Polyiso-butylene	C	PC	PC	PC	PC	PC	PC	PC	PC
Polyisoprene	C	C	C	C	C	C	C	C	C
Amorphous polypropylene	C	C	C	C	C	C	C	C	C
PVC	PC	PC	PC	PC	PC	PC	PC	PC	PC
SBR	C	PC	PC	PC	PC	PC	PC	PC	C
SBS	C	PC	PC	PC	PC	PC	PC	C	C
SIS	C	C	C	C	C	C	C	C	C

C : compatible

PC : partially compatible

I : incompatible

Packaging and Storage/Safety Data Sheets

Packaging and storage

Packaging: Wingtack® 10 liquid resin is packaged in 4x172kg drums on wood pallet (689 kg). Wingtack® solid resins are packaged in 25kg paper bags, 45 bags on wood pallet (1125kg).

Storage : all resins with a low softening point present a risk of solidifying, which increases in hot weather. Therefore, for softening points of less or equal to 100°C, we recommend : storage in a cool (25 °C max), ventilated area, out of the sunlight; do not stack pallets; avoid storage for prolonged period.

Wingtack 86 : due to low softening point, serious remassing of product may occur when exposed to elevated temperatures. Customer accepts the responsibility for using remassed material.

Safety Data Sheets

The Safety Data Sheets (SDS) are available on the CRAY VALLEY website: <http://www.crayvalley.com>

Compliance with US Food Contact Regulations (Food and Drug Administration)*

Wingtack Product	10	95	98	RWT 7850	PLUS	EXTRA	ET	STS	86
175.105 (c)(5) Adhesives									
175.125 (a) Pressure sensitive adhesives ^{1,2,3}									
175.125 (b) Pressure sensitive adhesives ⁴					2, 3	2, 3	2, 3	2, 3	2, 3
175.300 (b)(3)(xi) Resinous and polymeric coatings (incl. can end cements)									
175.300 (b)(3)(xxxi) Can end cements (only)					3, 7	3, 7	3, 7	3, 7	3, 7
175.320 (b)(3)(i) Resinous coatings on polyolefin films					8	8			
176.170 Components of paper & paperboard in contact w/aq. & fatty foods					9	9			
176.180 (b)(1) Components of paper & paperboard in contact with dry foods					10	10			
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									

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

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 (Wingtacks) 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

* 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.

Application of Wingtack® Resins

Suggested uses	Wingtack 10	Wingtack 95	Wingtack 98	Wingtack RWT-7850	Wingtack Plus	Wingtack Extra	Wingtack ET	Wingtack STS	Wingtack 86
-Tackifier and plasticizer for hot melt, solvent-borne and water-borne pressure sensitive adhesives.	√	√	√	√	√	√	√	√	√
-Modifying resins for hot melt adhesives, EVA and wax coatings, and sealants.	√	√	√	√	√	√	√	√	√
-Pressure Sensitive Adhesives (PSA) :									
<i>.low temperature tapes</i>	√	√	√		√		√	√	√
<i>.carton sealing tapes</i>	√	√	√	√	√	√	√	√	
<i>.general purpose labels</i>		√	√	√		√	√	√	
<i>.surgical tapes</i>	√	√	√		√	√	√	√	√
<i>.masking tapes</i>	√	√	√	√		√	√	√	
<i>.hot melt</i>	√	√	√	√	√	√	√	√	√
<i>.water-borne</i>	√	√	√		√	√	√	√	√
<i>.solvent borne</i>	√	√	√	√	√	√	√	√	√
-Hot melt adhesives :									
<i>.bookbinding</i>					√	√	√	√	√
<i>.EVA based HMA for non-woven assembly</i>					√		√	√	√
<i>.hot melt PET bottle</i>							√	√	√
<i>.general purpose</i>		√	√	√	√	√	√	√	√
-Contact adhesives						√	√	√	√
-Elastomeric adhesives for non-woven assembly					√	√	√	√	√
-Mastic construction adhesives						√	√	√	√
-Mastics general purpose		√	√	√	√	√	√	√	√
-Road marking			√	√	√	√			√
-Processing Aid in rubber compounding	√	√	√	√		√			√

These results obtained in our laboratory are given in good faith according to the method used and the samples checked. The values cannot be used to set specifications. They are indicated without Cray Valley's guarantee or liability. All given formulations are starting formulations and they are indicated without Cray Valley's guarantee or liability. They are based on our present technical knowledge and experience. They do not relieve processors of the responsibility of carrying out their own tests and experiments, because many factors that could influence the result may arise during processing and application; neither do they imply or give legally binding assurance of certain properties or of suitability for a specific purpose. Any proprietary formulation should be respected.

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Resins par excellence

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