

CRAY VALLEY

HYDROCARBON SPECIALTY CHEMICALS

Tel : (33) (0) 3 44 55 68 05

Fax : (33) (0) 3 44 55 67 06

<http://www.crayvalley.com>

Technical Data Sheet

NORSOLENE M 1000



NORSOLENE M 1000 hydrocarbon resins are low colour aliphatic modified aromatic resins.

They are particularly suitable for uses as tackyfyng and rheological property-modifying resins in hot-melt adhesives, pressure sensitive adhesives and solvent adhesives.

NORSOLENE M 1000 resins are compatible with a broad range of resins and polymers, including :

- + Ethylene-Vinyl Acetate (EVA) copolymers
- + Natural rubber
- + Thermoplastic « block » rubbers : SIS, SBS, SEBS.

In the specific case of hot-melt adhesives, NORSOLENE M 1000 resins provide (or modify) a number of properties :

- Tackyfyng and rheological property modifying resins (hot viscosity, open time, setting time) for hot-melt, ethylene-Vinyl Acetate (EVA) copolymer based adhesives
- Reinforcement resins for hot-melt, « pressure sensitive », thermoplastic “block” elastomer-based (Styrene-Isoprene-Styrene (SIS), Styrene-Butadiene-Styrene (SBS) and Styrene-Ethylene-Butylene-Styrene (SEBS) type) adhesives (PSA).
- Tackyfyng and reinforcement resins in wax and paraffin rich mixes.

Their low unsaturation level and the absence of functional groups impart NORSOLENE M1000 resins with :

- Good heat stability
- High hydrophobic properties

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NORSOLENE M 1000 resins are available in a range of softening points enabling fine tuning of the formulation :

- M 1080 (softening point : 88 at 98°C)
- M 1090 (softening point : 98 at 108°C)
- M 1100 (softening point : 108 at 118°C).

An improved odour version of M1090 is also available :

- M 1091 (softening point : 95 at 105°C).

Information on the use of NORSOLENE M 1000 resins in hot-melt adhesives is available in the following technical sheets :

- NORSOLENE resins for hot-melt adhesives : application guide.

PHYSICAL AND CHEMICAL PROPERTIES

	NORSOLENE M 1080	NORSOLENE M1090	NORSOLENE M 1091 Improved odour	NORSOLENE 1100
SPECIFICATIONS				
• Softening point (°C) [ISO 4625]	88-98	98-108	95-105	108-118
• Gardner colouring (at 50% in Toluene) [ISO 4630]	4-7	3-6	3-6	3-6
TYPICAL VALUES *				
• Iodine value	35			
• Acid value	< 0.1			
• Saponification number	< 3			
• Density at 20°C	1.09 – 1.11			

SOLUBILITY * IN MAIN SOLVENTS

(Norsolène resin / solvent mix : 1/1 mass at 25°C)

Solvents	NORSOLENE M1080, M1090, M1091, M1100
• Aromatic (B, T, X types)	Soluble
• white spirit at less than 5% (boiling pt. 130-220°C)	Soluble
• Cyclohexane	Soluble
• N-hexane	Soluble
• N-Heptane	Soluble
• Trichlorethane 1.1,1	Soluble
• Methanol	Non soluble
• Ethanol	Non soluble

* No guarantee of, or commitment to these typical values achieved by our Lab,

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COMPATIBILITY * WITH POLYMERS

- Ethylene - Vinyl Acetate copolymer (EVA)

Compatibility is determined using the cloud point method applied to naturally cooled 1/1 mass mixes of Norsolène resin + EVA copolymer, after heating to a homogeneous and clear mix.

Cloud point :

< 25 °C
25 – 100 °C
100 – 150 °C
150 – 200 °C
> 200 °C

EVA / Resin : 50 / 50	Average softening point	EVA : VA (%) - M.I.						
		18 - 500	25 - 400	28 - 5	28 - 43	28 - 400	33 - 400	40 - 56
M 1080	95							
M 1091	100							
M 1090	105							
M 1100	115							

- Elastomers

Compatibility is determined by observing the appearance of a 1/1 film of Norsolene resin + elastomer, deposited in the form of a solution and at 25°C, after full solvent evaporation :

- Clear = compatible
- Cloudy = incompatible

Elastomer	NORSOLENE M 1080, M1090, M 1091, M 1100
Natural rubber (NR)	Compatible
Styrene Butadiene (SBR)	Compatible
Styrene Isoprene Styrene (SIS)	Compatible
Styrene Butadiene Styrene (SBS)	Compatible
Styrene Ethylene Butene Styrene (SEBS)	Compatible

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PACKAGING AND STORAGE

NORSOLENE M 1000 resins are supplied in pellets, packaged in 25 kg polyethylene bags, on a 55 bag covered pallet (1375 kg).

All low softening point resins present caking risks. This risk is bigger during hot periods. Therefore, for all resins with softening points of 100°C or less we recommend :

- Storing away from sunlight, in a cool and ventilated place ;
- Not stacking pallets ;
- Avoiding prolonged storage.

FOOD CONTACT FDA

NORSOLENE M 1000 resins comply with the following paragraphs of the American Federal Regulation Code n° 21, revision dated April 1, 1996 (FDA, 21 CFR, revised as of April 1st, 1996) :

FDA		NORSOLENE M
21. CFR.175-105	Adhésifs (Adhesives)	X
21.CFR.177-2600	Articles en caoutchouc prévus pour usage répété (Rubber articles intended for repeated use)	X
21.CFR.178-3800	Protections du bois (Preservatives for wood)	X

SKIN IRRITATION

A skin irritation test according to directive 84/449 (J.O. C.E. L 251 du 19/09/84, Partie B, Méthode B4) has been carried out on NORSOLENE M 1000 resins.

Result :

- No irritant effect was found.
- These resins are not Xi classified.

SAFETY DATA SHEETS

The Safety Data Sheets are available on CRAY VALLEY web site : <http://www.crayvalley.com>

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 and legally binding assurance of certain properties or of suitability for a specific purpose. Any proprietary should be respected.

Shelf life : Norsolene resins are inert and stable. Their shelf life mainly depends on the storage conditions and end use. Their average shelf life is about 2 years. This average shelf life is given without Cray Valley's guarantee because Cray Valley does not control end uses and the storage conditions at customers.

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.