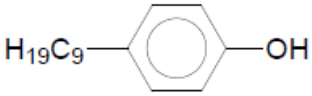
DOVER Chemical Corporation
A Subsidiary of ICC Industries Inc.

PARA-NONYLPHENOL



Specifications

Parameter	Range	Test Method
Color, APHA	50 max.	ASTM D-1209
Ortho NP, %	10 max.	DP-350
PNP, %	90 min.	DP-350
Moisture, ppm	1000 max.	PAR-170

Physical Properties

Appearance (clarity)	Clear
Hydroxyl Value	240 – 255 (typical)
Specific Gravity @ 25° C	0.949
Boiling Point	310° C

Para-nonylphenol Applications

Surfactants – The largest industrial use for nonylphenol is in the manufacture of nonionic surfactants. These ethoxylated nonylphenol surfactants have good chemical stability and excellent wetting, emulsifying and detergent properties.

TNPP – Nonylphenol is reacted with phosphorus trichloride to produce trisnonylphenol phosphite, which is a common antioxidant for a wide range of polymer systems.

Phenolic Resins – Nonylphenol reacts with aldehydes to yield phenolic resins. When used with other phenols, even in small quantities, it makes the phenolic resins more water resistant, more soluble in oil, and improves electrical properties.

Rubber Chemistry – Nonylphenol sulfide has been used in the past as a reclaiming agent for synthetic rubber.

PVC – A variety of nonylphenol derivatives have uses as polyvinyl chloride plasticizer intermediates. These intermediates include nonylphenol benzoate, nonylphenol alkanesulfonates and nonylcyclohexanol.

Epoxy Resins – Nonylphenol can be used in an epoxy resin hardener.

Miscellaneous – Other possible fields of application for nonylphenol are in pharmaceuticals, corrosion inhibitors, dyestuffs, ore floatation agents, insecticides, bactericides, chemical stabilizers, and the leather industry. Overbased calcium salt nonylphenol can also be used as a dispersant in hydraulic fluid and motor oil.

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Para-nonylphenol (PNP) tends to darken when in contact with iron or oxygen. Therefore, it should be stored under a nitrogen atmosphere in a coated/lined drum or under a nitrogen atmosphere in a stainless steel bulk tank. Temperature control is important; higher temperatures will darken the PNP. If PNP is stored in lined drums at temperatures below 90°F (32°C), it should remain in specification for one year. The main property that will go out of specifications is color.

One year is the expiration date if the PNP is stored as stated above. The PNP can still be used after one year, but the color of the desired product may be darker color.

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