

ALKYLPHENOLS

Building Blocks for High Performance Chemicals



In 1997, Dover Chemical built a state-of-the-art manufacturing facility to produce alkylphenol products. After several expansions and updates, today's facility is totally automated, assuring our customers of consistent quality para- and di-nonylphenol and para- and di-cumylphenol. This plant represents a major investment for Dover Chemical's strategy to become a global supplier to the polymer industry. Alkylphenols typically are not used by themselves as additives, but are intermediates to produce high performance products. Markets for these products include surfactants, lube oil additives, stabilizers for rubbers and plastics, dispersants, adhesives, and plasticizers for resins.



Alkylphenol Applications

SURFACTANTS: The largest industrial use for alkylphenol is in the manufacturing of nonionic surfactants. These ethoxylated alkylphenol surfactants have good chemical stability and excellent wetting, emulsifying and detergent properties.

TNPP: Nonylphenol is reacted with phosphorus trichloride to produce trisnonylphenol phosphite (TNPP), 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 as a reclaiming agent for synthetic rubber.

PVC: A variety of alkylphenol derivatives have uses in polyvinylchloride plasticizer intermediates. These intermediates include nonylphenol benzoates, nonylphenol alkanesulfonates and nonylcyclohexanol.

EPOXY RESINS: Nonylphenol can be used in an epoxy resin hardener.

MISCELLANEOUS: Other applications for alkylphenols include pharmaceuticals, corrosion inhibitors, dyestuffs, ore flotation agents, insecticides, bactericides, chemical stabilizers, and the leather industry. Overbased calcium salt nonylphenol also can be used as a dispersant in hydraulic fluid and motor oil.

Typical Properties of Alkylphenols

	Color, APHA	NP %	Ortho NP %	Para NP %	DNP %	Water, ppm
Para-nonylphenol	10	—	5	92	2	170
Para-nonylphenol TG	20	93.5	--	—	3.8	160

	Color, Gardner	Specific Gravity	DNP %
Di-nonylphenol 90%	4	0.900 – 0.940	90.3

	Color, APHA	PCP %	Molecular Weight	Melting Point
Para-cumylphenol	15	99.8	212	70° C

	Color, Gardner	2,4 DCP %	Molecular Weight	Melting Point
Di-cumylphenol	1	97.0	330	~66° C





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