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Chemical Profile

NONYLPHENOL July 9, 2001

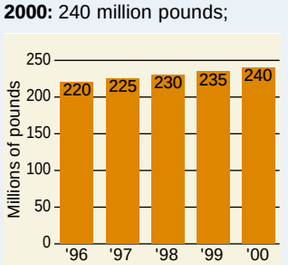
PRODUCER	CAPACITY*
Noveon Kalama, Kalama, Wash.	20
Dover Chemical, Dover, Ohio	50
GE Specialty Chemicals, Morgantown, W. Va.	60
Huntsman, Port Neches, Tex.	70
Schenectady International, Freeport, Tex.	110
Schenectady International, Rotterdam Jct., N.Y.	30
Total	340

**Millions of pounds per year of nonylphenol (NP). Commercial production is based on phenol and nonene raw materials. Some capacities may be overstated, since other alkylphenols, such as butyl-, amyl-, octyl-, and dodecylphenols, may be made using the same process equipment. Nonylphenol and dodecylphenol are the largest-volume alkylphenol products manufactured in the US.*

In February 2001, an investor group comprised of AEA Investors Inc., an affiliate of DLJ Merchant Banking Partners and DB Capital Partners Inc., acquired the performance materials business from BFGoodrich. In June the former BFGoodrich performance chemicals segments was named Noveon Inc. Profile last published 9/28/98; this revision 7/9/01.

DEMAND

1999: 235 million pounds; **2000:** 240 million pounds; **2004:** 260 million pounds. Demand equals production plus imports, which were 3 million pounds in 1999 and 6 million pounds in 2000, less exports, which were 24 million pounds in 1999 and 49 million pounds in 2000.

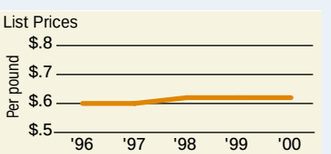


GROWTH

Historical (1995-2000): 2 percent per year; **future:** 2 percent per year through 2004.

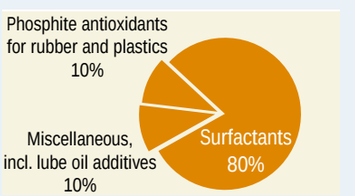
PRICE

Historical (1995-2000): High, 62c. per pound, tanks, f.o.b. east of the Rockies, min. frt. alld.; low, 60c., same basis. **Current:** 63c., same basis.



USES

Surfactants (primarily industrial and institutional), 80 percent; phosphite antioxidants for rubber and plastics, 10 percent; miscellaneous, including lube oil additives, 10 percent.



STRENGTH

Nonylphenol ethoxylates (NPE) are highly cost-effective surfactants, performing as well or better than other nonionics. The major applications are in industrial and institutional formulations, and private-label household liquid detergents. Antioxidant uses for nonylphenol, led by tris(nonylphenol)phosphite (TNPP), are growing at above average rates, though from a relatively low base. TNPP has been used for decades as a stabilizer in certain plastics such as polyethylene. TNPP contains some residual NP that can migrate out of the polymer matrix. A 1998 study measured potential migration of NP from plastic packaging. It concluded that the use of TNPP in food packaging "is not a health concern." Consequently, the Food & Drug Administration (FDA) has cleared the use of these compounds in plastic food packaging. Additionally, the European Union investigated TNPP in its risk assessment of NP, and concluded that TNPP does not pose a health risk.

WEAKNESS

For over a decade, companies that make and use NPEs have anxiously speculated over the future of the compounds. Questions regarding the degradability of NPEs have troubled producers and customers alike. And despite studies demonstrating their biodegradability in the environment, the regulatory future of NPEs still remains cloudy. In May 2000, the US Environmental Protection Agency (EPA) was expected to issue water quality guidelines identifying environmental limits for nonylphenol that are protective of the aquatic environment. This has not yet happened. Major detergent suppliers do not use nonylphenol ethoxylates in their household detergent products, favoring instead the more readily degradable alcohol ethoxylates. With 80 percent of demand concentrated in NPEs, only modest growth is anticipated for nonylphenol.

OUTLOOK

Environmental and health issues continue to cast uncertainty over the future of alkylphenols and alkylphenol ethoxylates (APE). Studies centered on the biodegradability issue have produced encouraging results. Test results on the endocrine interference potential of APEs are likewise positive, but research is continuing. Nonylphenol prices are relatively steady, based on an oversupplied phenol market. Growth is projected to be 2 percent per year.