ANGUS® CHEMICAL COMPANY

Key Performance Advantages

- Efficiently stops polymerization reaction
- Prevents popcorn polymer
- Minimizes emission problems

Synthetic Rubber

CHAINGUARD® I-15 SYNTHETIC RUBBER

CHAINGUARD® I-15 Polymerization Shortstop
Shortstop For Free-Radical Polymerizations

CHAINGUARD® I-15 Polymerization Shortstop is a 15% aqueous solution of N-Isopropylhydroxylamine (IPHA). A very efficient free-radical scavenger, CHAINGUARD I-15 is used worldwide to shortstop emulsion styrene-butadiene and acrylonitrile-butadiene polymerization reactions in the production of styrene- butadiene rubber (SBR) and acrylonitrile-butadiene rubber (NBR) elastomers, respectively. These reactions are stopped short of complete conversion (monomers to polymer) to produce elastomers having the required physical properties.

CHAINGUARD I-15 is an excellent multi-purpose shortstop that can be used alone to provide both excellent Mooney viscosity control and effective popcorn polymer prevention. Traditional shortstop systems normally consist of two components: a non-volatile product to provide Mooney viscosity control and a volatile product to prevent popcorn polymer formation in monomer recovery areas. Because of its unique physical properties, IPHA partitions almost equally between the latex and vapor phases during monomer recovery, thus providing excellent control in both phases.

CHAINGUARD I-15 is also expected to effectively stop other commercially important free-radical processes, such as suspension polymerization of vinyl chloride and emulsion polymerizations of chloroprene and fluorinated olefins.

Typical Properties

The following are typical physical/chemical properties of CHAINGUARD I-15 Polymerization Shortstop. They are not to be considered product specifications.

Composition	CHAINGUARD I-15 Typical	Pure IPHA
N-Isopropthydroxylamine (IPHA)	15% by wt.	100%
Isopropylamine	< 1% by wt.	
Water	85% by wt.	

Property	CHAINGUARD I-15 Typical	Pure IPHA
Appearance	Clear liquid	White crystal
Flash point (Setaflash closed cup)	46°C/114°F	-
Fire point (Cleveland open cup)	>100°C/>212°F	-
pH	-	75.11
pKa	10.6	-
Specific gravity @ 25/4°C	-	6.16
Pounds per gallon @ 25°C/77°F	1.00	-
Color (APHA)	8.36	-
Freezing Point	20	-
Crystallization point	-5°C/23°F	-
Melting point	-	86°C/187°F
Refractive Index @ 25°C/77°F	1.3570	-
Vapor pressure @ 20°C	-	0.24 mm Hg
@ 66°C	-	6.6 mm Hg
@ 93°C	-	32 mm Hg
@ 121°C	-	125 mm Hg
@ 149°C	-	420 mm Hg
Water (Wt. %) @ 10°C	-	19%
@ 27°C	-	22%
@ 38°C	-	25%
@ 49°C	-	39%
@ 60°C	-	58%
Partitioning @ 25°C/77°F (in 50/50 water/ethyl benzene)	-	97.3%/2.7%

Product Stewardship

ANGUS encourages its customers to review their applications of ANGUS products from the standpoint of human health and environmental quality. To help ensure that ANGUS products are not used in ways for which they are not intended, ANGUS personnel will assist customers in dealing with environmental and product safety considerations. For assistance, product Safety Data Sheets, or other information, please contact your ANGUS representative at the numbers provided in this document. When considering the use of any ANGUS product in a particular application, review the latest Safety Data Sheet to ensure that the intended use is within the scope of approved uses and can be accomplished safely. Before handling any of the products, obtain available product safety information including the Safety Data Sheet(s) and take the necessary steps to ensure safety of use.

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