

## Key Performance Advantages

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



Synthetic Rubber

# CHAINGUARD<sup>®</sup> I-15 SYNTHETIC RUBBER

## CHAINGUARD<sup>®</sup> I-15 Polymerization Shortstop Shortstop For Free-Radical Polymerizations

CHAINGUARD<sup>®</sup> 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-Isopropylhydroxylamine (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.

### Contact Information

[angus.com](http://angus.com)

**North America**  
+1 (847) 808-3887

**Latin America**  
+55 (11) 94245-5307

**Western Europe**  
+33 670654658

**Central and Eastern Europe**  
+33 670654658

**Middle East and Africa**  
+33 670654658

**Indian Subcontinent**  
+33 670654658

**Greater China**  
+65 8686 5712

**Japan and Korea**  
+65 8686 5712

**Southeast Asia and New Zealand**  
+65 8686 5712



©™Trademark of ANGUS Chemical Company  
Notice: No freedom from infringement of any patent owned by ANGUS or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where ANGUS is represented. The claims made may not have been approved for use in all countries. ANGUS assumes no obligation or liability for the information in the document. References to "ANGUS" or the "Company" mean the ANGUS Chemical Company legal entity selling the products to Customer unless expressly noted. NO WARRANTIES ARE GIVEN: ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

Published May 2015 Form No.CHA-1616-1415-TCG