

## Denstone<sup>®</sup> 99 Alumina Support Balls

### Depend on Denstone<sup>®</sup> for Your Extreme Environments

When you need reliability in demanding conditions, look no further than Saint-Gobain NorPro's Denstone<sup>®</sup> 99 high alumina support balls. Since its introduction, the industry has come to recognize Denstone<sup>®</sup> 99 media as the most reliable product for applications that demand a chemically inert body with excellent thermo-mechanical and shock resistance properties.

The purity and high strength of Denstone<sup>®</sup> 99 media make it ideal for high temperature and steam applications, such as secondary reformers in ammonia plants. The minimal silica content allows the spheres to be chemically inert to prevent fouling of your catalyst bed or coating of downstream equipment. The product's high density and thermal conductivity make it the media of choice for heat transfer.

Denstone<sup>®</sup> 99 high alumina support media is designed to benefit you in the most severe conditions.

- **High purity** - Denstone<sup>®</sup> 99 support balls are 99+% alpha alumina. With a maximum silica content of only 0.2%, Denstone<sup>®</sup> 99 spheres protect your catalyst bed and downstream equipment from fouling and coating caused by leached silica.
- **Excellent thermal properties** - Denstone<sup>®</sup> 99 spheres can withstand temperatures up to 1650°C and have a high density, making this product an excellent choice for heat retention and equilibration media.
- **Superior chemical resistance** - Denstone<sup>®</sup> 99 spheres can withstand the reactive environments of applications with olefin processes, such as ethylene dryers, where polymerization could be a problem with a less chemically resistant material.
- **High strength** - Denstone<sup>®</sup> 99 balls are manufactured to eliminate spalling and delamination within your reactor, protecting your bed from plugging associated with the collection of fine chips and splinters.

**Choose the brand that has been trusted for over 70 years, and use Denstone<sup>®</sup> 99 high alumina support media in your extreme environments today.**

*(continued)*

### Saint-Gobain NorPro DENSTONE<sup>®</sup> 99 Support Balls



# Denstone® 99 Support Balls Typical Properties

## Physical Properties

Nominal Size		Diameter		Crush Strength			Bulk Density			
		(mm)		(lb)	(kg)	(N)	(kg/m <sup>3</sup> )		(lb/ft <sup>3</sup> )	
mm	in	min	max	min	min	min	min	max	min	max
1.5	1/16	1.0	2.0	30	13	128	1682	2050	105	128
3	1/8	2.8	5.3	110	50	491	1850	2050	115	128
6	1/4	5.3	8.1	220	100	981	1850	2050	115	128
8	5/16	6.6	9.4	330	150	1471	1850	2050	115	128
10	3/8	7.9	11.2	440	200	1962	1850	2050	115	128
13	1/2	11.2	15.0	1322	600	5886	1850	2050	115	128
19	3/4	17.5	22.4	2202	1000	9810	1800	2050	112	128
25	1	22.4	29.2	3083	1400	13734	1762	2050	110	128
38	1-1/2	35.1	40.1	3965	1800	17658	1682	2002	105	125
50	2	48.3	55.9	4846	2200	21582	1682	2002	105	125
75	3	71.1	81.3	4846	2200	21582	1682	2002	105	125

## Chemical Properties

	min %	max %
SiO <sub>2</sub>	-	0.2
Al <sub>2</sub> O <sub>3</sub>	99.0	-
Fe <sub>2</sub> O <sub>3</sub>	-	0.2
TiO <sub>2</sub>	-	0.5
CaO + MgO	-	0.2
Na <sub>2</sub> O + K <sub>2</sub> O	-	0.4
Al <sub>2</sub> O <sub>3</sub> + SiO <sub>2</sub>	99.2	-

## Other Properties

Leachable Iron	0.01%
Sphericity	< 1.10
Max Operating Temperature	1650°C
Attrition (weight loss)	≤ 0.5%
Water Absorption	≤ 7.0%

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