

Refractories and Support Media for Ammonia and Methanol Processing

Saint-Gobain, one of the 100 largest industrial companies in the world, designs and manufactures innovative products used throughout the hydrocarbon industry. Saint-Gobain's Specialty Refractories group has been supplying a high performance range of refractory materials for over 50 years for gasification and reforming applications. Saint-Gobain NorPro is a world leader in support media for fixed bed processes. Saint-Gobain is heavily vested in and known for its unparalleled ceramic solutions and capabilities.



Products

Insulating and High Density Fire Bricks

Saint-Gobain specialty insulating and high density alumina fire bricks are designed for the most demanding service conditions. AL 100 and AH 199 are based on high purity fused corundum (crystalline aluminum oxide). They can be delivered as standard bricks or specially engineered shapes such as custom manufactured circular bricks and hexagonal target tiles.

	Al ₂ O ₃	SiO ₂	Bulk density g/cc	Open porosity
Alundum® AH199B / 199H	99.55%	0.07%	3.20 / 3.45	20 / 12%
AL 100	99.55%	0.1%	3.32	15%

Dome Fire Bricks

Custom manufactured from the same high purity AL 100 and AH 199 alumina formulations, these structures are fabricated and supplied with wooden forms and assembly diagrams.

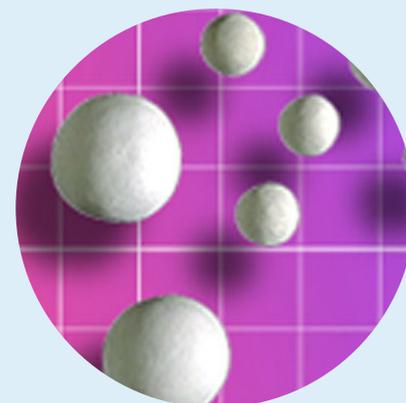
Monolithics

Our range of Specialty Monolithics includes materials offered as a complement to our bricks and shapes, as basic lining materials or for repairs.

Insulating and high density refractory fire bricks are pre-sintered cast or pressed forms. In the secondary reformer, high density alumina fire bricks are applied to the hot face from the burner down to the diffuser cone and to the catalyst dome support. Alumina hexagonal target tiles are commonly used in the secondary reformer as bed topping media.

Monolithics are mixtures of refractory grains and binders, which can be preformed or formed in place to line a vessel. Monolithics include castable cements, gunning cements, plastic ram mixes, shotcretes and mortars, for example. Monolithics can be formulated to be used as dense hot face linings or as insulating refractory material and must be cured and dried before use.

Denstone® ceramic bed support media are layered in the reactors above and below the main catalyst beds to mechanically support and retain catalysts, improve flow distribution, and reduce catalyst movement.



Denstone® 99 Alumina Support Media

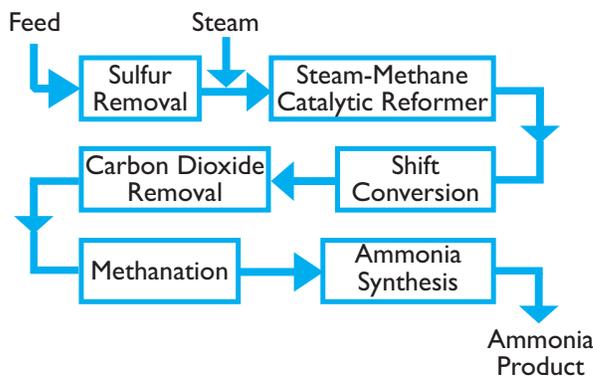
The high alumina content, low silica and high strength of Denstone® 99 support media make this product ideal for high temperature and steam applications, where high alumina media is necessary to prevent leached silica from coating downstream equipment or fouling the catalyst.

Denstone® 57 and Denstone® 2000 Ceramic Support Media

For less demanding applications, such as the methanator and dryers, Denstone® 57 and Denstone® 2000 support media provide long life and reliable service.

Alumina Lumps

This crystallized aluminum oxide material has high stability at elevated temperatures, low impurity content and is inert under reducing atmospheres. Alumina lumps are sometimes used as bed topping or support media in secondary reformers.



Feed Desulfurizer

Denstone® Support Media

Primary Reformer

Insulating Fire Bricks
Monolithics

Secondary Reformer

Alumina Fire Bricks
• Dome Fire Bricks
• Hexagonal Target Tiles
Insulating Fire Bricks
Monolithics
Denstone® Support Media
Alumina Lumps

Methanol Reformer

Monolithics
Hexagonal Target Tiles
Denstone® Support Media
Alumina Lumps

Waste Heat Boiler

Monolithics

High and Low Temperature Shift Converters

Denstone® Support Media

Methanator

Denstone® Support Media

Dryers

Denstone® Support Media

Saint-Gobain has the expertise to design, engineer and manufacture refractory systems for most of your demanding high temperature applications. Please contact us for more information regarding material properties and discussion of your specific application and service conditions.

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Applications

Catalytic steam reforming is used in the industrial synthesis of ammonia and methanol from natural gas or other feedstocks. A variety of refractory materials are required in the primary reformer, secondary reformer and waste heat boiler of ammonia plants and in the methanol reformer of methanol plants. Ceramic bed support media are required in the feed desulfurizer, secondary reformer, high and low temperature shift reactors, methanator and dryers.

In ammonia production, the hydrogen rich atmosphere of the secondary reformer requires high purity alumina refractory products. Saint-Gobain refractories are widely used in the linings of secondary reformers and are approved by the major design and engineering companies.

