

Saudi Rockwool

Granulated Wool

Cryogenic Cold Box Application



Air Separation Units

Many of the industrial processes demands different gases like oxygen, nitrogen and argon, which are separated from the natural ambient air by liquefaction and distillation in cryogenic air separation units . the boiling points of pure gases are $-183\text{ }^{\circ}\text{C}$ for oxygen and $-196\text{ }^{\circ}\text{C}$ for nitrogen at atmospheric pressure. By compressing the air heat integration within the cold box is allowed and nitrogen is condensed against boiling oxygen in the low-pressure column reboiler. Because of lower boiling temperature of gases air separation units are known for very low cryogenic temperature in the range of $-200\text{ }^{\circ}\text{C}$.

Cold Box

In cryogenic air separation unit the cold box is the main components contains the main distillation columns (cryogenic heat exchangers, distillation columns and associated valves and piping) operating at a range of pressures and very low cryogenic temperature inside the cold box and then encased in insulation. Cryogenic rockwool insulation is granulated type loose fill insulation is used to fill the cold box



Cold Box SRWF Granulated Application

Cold Box Insulation

The purpose of the cold box insulation is not just the prevention of risk of water and ice formation but an explosion hazard is also associated where the presence of oil or grease (combustible components) may lead to a situation where high level of concentration of oxygen result in explosion. Also an insulation is required for cold box to isolate the equipment installed inside the cold box from the surrounding.

So for the above said purposes insulation plays a major role in cold box operations. Insulation shall be applied to all the cold parts such as vessel and pipes. AGI Q 118 standard "insulation work on air separation plants" is the mostly followed standard for cold box and air separation unit insulation.

SRWF offers granulated suitable to be used in cold box insulation which can achieve a compacted density in the range of 225 – 240 kg/m³.



SRWF Granulated Wool – Cryogenic Rockwool

Description

SRWF granulated wool comprised of natural in-organic granules of mineral stone wool fibers suitable to be used for cryogenic industrial applications. The product is designed with very low organic content to minimize the risk of explosion with in the vicinity of liquid oxygen installation. The wool can be installed by hand packing to achieve a density of 225 – 240 kg/m³ for optimal performance. Suitable for cold box applications where inspection probes, valves and pipes are regularly tunneled during operations and maintenance.

Granulated wool is manufactured in accordance to ASTM C 764.

Density

Product will be supplied in loose packed in Poly Bags weighing 20 Kg/Bag suitable for easy handling and lifting at site and direct pouring in the cold Boxes.

The density can be achieved after compaction manual or with mallet is 225 – 240 Kg/m³.

Chemical Composition

Silica (SiO ₂)	35 - 48 %
Alumina (Al ₂ O ₃)	≤ 20 %
Iron Oxides (FeO and Fe ₂ O ₃)	≤ 25 %
Calcium Oxide (CaO)	≤ 41 %
Magnesium Oxide (MgO)	≤ 15 %
Sulphur (S)	≤ 1.6 %

Technical Parameters

Description	Units	Value	Compliance
Thermal Conductivity @ 0 °C	W/m.K	0.039	ASTM C 177 / C 518
Flame spread index		"ZERO"	ASTM E 84 / UL 723
Smoke Developed Index		"ZERO"	ASTM E 84 / UL 723
Euroclass Fire Classification		"A1"	BS EN 13501-1
Combustibility		Non-Combustible	ASTM E 136 / BS EN 1182
Operating Temperature	°C	(-)200 up to (+)750	ATM C 411
Fiber Diameter	μ	5-7	BS 2972
Moisture Content	%	≤ 0.2	BS 2972
Organic Matter Content	%	≤ 0.4	BS 2972
Shot content by weight	%	≤ 10	BS 2972, Section – 14
Corrosiveness		Non-corrosive	ASTM C871/C795/C692
Water vapor sorption	%	≤ 1% by Weight	ASTM C 1104
Alkalinity (pH Scale)		7-9	BS 2972, Sec 22
Fungi Resistance		Does not encourage Growth	ASTM C 665 /ASTM C 1338
Leachable Chloride	PPM	≤10	ASTM C871/C795/C692

Note: The Information provided in the data sheet is based on the results of test conducted on SRWF products by external third party test laboratories and In house Test Lab hence for reference to use as and when required by the user of the products with no legal guarantee. SRWF keeps the right to change the information as a part of continual improvement based on the latest standards and the change in the testing methods to obtain the parameters and all the above values subjected to Standards tolerances.



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