

HTG-1

Chlorine is a serious potential problem in ammonia and hydrogen plants. If chlorine is present in the feedstock it is imperative to remove it in the feed purification section to minimise adverse effects on downstream catalysts and equipment. These effects include deactivation of reformer catalysts, high temperature shift catalysts and in particular of the copper-based low temperature shift catalysts.

High Absorption Capacity

For the purpose of removing chlorine, Haldor Topsøe's chlorine absorbent HTG-1 is a superior choice due to its high absorption capacity at low as well as high temperatures. In addition other halogens such as fluorine, bromine and iodine will also be removed by HTG-1.

Properties

HTG-1 is based on potassium carbonate on an activated alumina carrier. The optimised pore system ensures a quantitative absorption of chlorine with a capacity of up to 18 kg of chlorine per 100 kg of fresh catalyst.

The absorption front is very steep at normal operating conditions. This ensures maximum utilisation of the catalyst volume installed.

Operation

HTG-1 is normally operating in conjunction with and at the same process conditions as the desulphurisation catalysts. No preconditioning is required before commissioning and it will absorb hydrogen chloride from ambient temperature. However, the operating temperature is normally dictated by the hydrogenation catalyst and is typically in the range 300-400°C (570-750°F).

Position of Chloride Guard

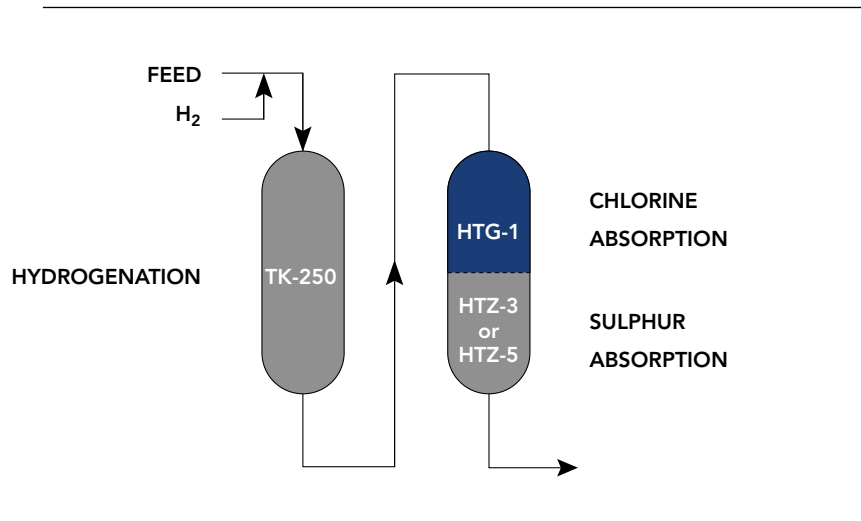
HTG-1 should preferably be placed downstream the hydrogenation catalyst, as the chlorine is absorbed in the form of hydrogen chloride. Organic halogen



compounds need to be hydrogenated to be removed. To avoid the formation of zinc chloride, HTG-1 should be installed upstream the zinc oxide sulphur absorption step.

Proven by performance

TYPICAL POSITION OF HTG-1 IN THE FEED PURIFICATION SECTION



TYPICAL PHYSICAL CHARACTERISTICS FOR HTG-1

SIZE, OD X ID	EXTRUDED RING 5 x 2.5 mm 3/16" x 3/32"
FILLING DENSITY	Approx. 0.68 kg/l 42.5 lbs/cuft
OPERATING TEMPERATURE RANGE	Ambient → 400°C/750°F

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