

TK-250

Hydrodesulphurisation Catalyst

In cases where the feedstock contains organic sulphur and in particular stable sulphur compounds like thiophenes or organic sulphides, it is necessary to include a hydrodesulphurisation (HDS) step in which these compounds are converted to hydrogen sulphide (H_2S). The typically low quantities of hydrogen sulphide can then be removed by the sulphur absorbent, which follows downstream of the HDS catalyst.

The Topsøe catalyst mostly used for this purpose is TK-250, which is installed in a large number of hydrogen, ammonia and methanol plants around the world. The catalyst consists of cobalt/molybdenum on a high surface area alumina carrier.

Main Features

High Activity

The alumina carrier for TK-250 has been designed to yield a high and stable surface area. The result is a higher catalyst activity on a volume basis when compared to conventional extruded solid particles or shapes.

High Mechanical Strength

The mechanical strength of extruded particles cannot be measured with accuracy. However, many years of industrial experience shows that TK-250 never suffers mechanical damage during loading, operation, or unloading of the catalyst.

Low Pressure Drop

Topsøe's leading position as supplier of ring shaped hydroprocessing catalyst to the refining industry allows us to also offer the associated advantages to the field of fine purification of steam reforming feedstocks. Above all, the ring shape of TK-250 ensures a large void volume of the packed bed, which in turn provides a low pressure drop and a considerably increased tolerance for build-up of contaminants.

Presulphiding

For final desulphurisation of hydrocarbon feed to hydrogen, ammonia and methanol plants it is normally not feasible to presulphide the TK-250 catalyst. The higher activity gained through the presulphiding



is not required and would be gradually lost again when operating on feedstock with low sulphur content. Only in case of a feedstock with high content of olefins and/or a very high hydrogen content is it recommended to presulphide the TK-250 catalyst.

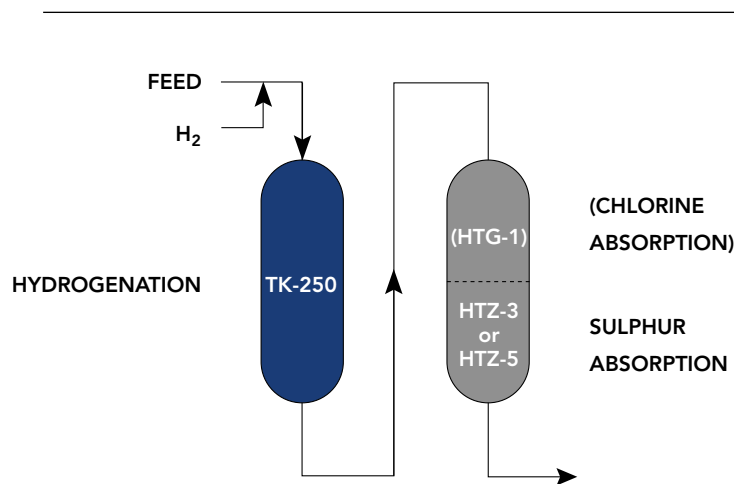


Typical Operating Conditions

The catalyst is typically operated in the temperature range from 300-400°C (570-750°F) and at pressures ranging from 15-50 kg/cm²g (210-710 psig).

Space velocity and hydrogen to feed ratio may vary considerably according to the feedstock and the requirements to the product.

TYPICAL POSITION OF TK-250 IN THE FEED PURIFICATION SECTION



TYPICAL CHEMICAL AND PHYSICAL CHARACTERISTICS FOR TK-250

	EXTRUDED RING
CoO (WT %)	3.4
MoO ₃ (WT %)	14
SIZE, OD x ID	5 x 2.5 mm 3/16" x 3/32"
FILLING DENSITY	0.50 kg/l 31 lbs/cuft

Proven by performance

