

## PROCESS DESCRIPTION:

# **CRITERION\* Tail Gas Treating**

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Claus sulphur recoveries are insufficient to meet increasingly stringent environmental regulations. For this reason a variety of Claus tail gas treating processes have been developed. CRITERION provides catalysts for processes using reductive tail gas treating methods. These processes can boost overall sulphur recovery to > 99.9%

Claus tail gas treating by reductive methods involves four main steps. The first step reacts the Claus tail gas with reducing gas, typically H<sub>2</sub> and CO, over a tail gas treating catalyst in a reduction reactor to convert the residual sulphur compounds into hydrogen sulfide (H<sub>2</sub>S). The second step provides a water quench to reduce the treated gas temperature prior to its entry into an H<sub>2</sub>S absorber -- step three. In the fourth and final step, the overhead gas from the absorber is incinerated, if necessary, to oxidise the remaining trace sulphur compounds to SO<sub>2</sub> which is released to the atmosphere.

CRITERION supplies 234 and 534 tail gas treating catalysts for the reduction reactor (step 1) used in the reductive gas treating method. Both CRITERION 234 and 534 catalysts are installed in the major tail gas treating processes. CRITERION also supplies 099 catalyst for a catalytically promoted incineration process.

CRITERION 534 is a spherical CoMo catalyst which was originally developed for the SCOT (Shell Claus Off-gas Treating) process. 534 incorporates excellent physical strength, high surface area and good thermal stability with low pressure drop and a metals loading optimised for tail gas treating. The result is a catalyst ideally suited for the low pressure reduction reactor; a catalyst that has demonstrated over 10-year cycle lengths in SCOT units. 534's physical strength and thermal stability safeguard it from the typical upsets encountered in tail gas treating.

The reduction reactor is a small but essential part of the tail gas treating process. However, the other process steps can often upset reactor operations. In addition, alternative tail gas treating processes are sometimes not as robust as the SCOT process. For this reason, CRITERION also markets 234 catalyst. 234 is a CoMo TRILOBE\* catalyst and is a lower cost/fill alternative to 534. It is suitable for operations that historically have problems with carbon or soot formation or which have reduced catalyst cycles. 234 has the 534 properties of high surface area, low pressure drop and excellent catalytic activity.

\* Trademark

CRITERION 099 is a spherical catalyst developed for the catalytic incineration option in the SCOT process. Catalytic incineration is an energy saving alternative to the Claus thermal incinerator. Typical catalytic incineration temperatures are 300 - 400 deg C -vs- 600 - 800 deg C for thermal incineration. 099 is thermally stable and selectively oxidizes sulphur compounds to SO<sub>2</sub> while leaving CO and H<sub>2</sub> unreacted. 099 is also suitable for other catalytic incineration applications.

## **ADDITIONAL INFORMATION**

All catalyst information supplied by CRITERION is considered accurate but is furnished with the express understanding that the customer receiving such information shall make its own assessments to determine suitability of such information for customer's particular purpose. All purchases of catalyst from CRITERION are subject to CRITERION's standard terms and conditions of sale (including CRITERION's product warranties) set forth in a sales proposal, sales contract, order acknowledgement, and/or bill of lading.

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