ZEOCHEM ADSORBENTS – MERCAPTAN REMOVAL

Zeochem AG is a major producer of molecular sieve adsorbents and zeolite catalyst supports with head office and production facilities in Uetikon / Switzerland, and with further production facilities in Louisville, KY / USA.

Zeochem AG has been developing and manufacturing molecular sieves since 1970 and is currently one of the leading producers, being competent in manufacture, engineering and in technical expertise. Zeochem AG practises a customer orientated and cost effective operation.

Mercaptan removal

While moisture removal is traditionally done with the smaller pore-sized 3A and 4A molecular sieves, sulphur removal duties are done with the larger pored 5A and 13X types. They are generally used in applications where very low outlet concentrations of impurities are required.
Both 13X and 5A molecular sieves have traditionally been used for a variety of desulphurising duties in the liquid phase, where very low levels of residual sulphur compounds are required. However until recently there was no “World-Scale” gas phase plant operating with such technology.

Comparing 5A and 13X molecular sieves, there are initially some apparent advantages in using a 5A molecular sieve over a 13X:

- Higher bulk density than 13X, and therefore requires a smaller volume for a given weight of product.
- Higher capacity for hydrogen sulphide at very low concentrations
- It is also know to suppress the catalysis of the reaction of CO_2 and H_2S to form COS

However it suffers from the basic flaw in mercaptan removal duties, that it does not adsorb mercaptans larger than ethyl mercaptan. It may also suffer from slower kinetics

Hence in broad-spectrum mercaptan removal duties 13X molecular sieve must be specified.

Zeochem produces hundreds of tonnes a year of 13X molecular sieve for regenerative applications, and has extensive experience in all applications for this product.

Zeochem routinely supplies 13X molecular sieve to many sweetening duties around the world. These plants vary in size from larger scale plants operating on refineries, gas plants etc, to small scale plants operating bottling plants or can filling duties. Many of these operations are liquid phase operations where the adsorption process shows much slower kinetics in comparison to gas phase operations. They are therefore more difficult to run effectively than gas phase plants. In both cases, the regeneration phase is carried out in the same way; i.e. by heating the molecular sieve adsorbent by an inert hydrocarbon gas stream. Hence this part of the process is identical whether gas or liquid phase adsorption is used. The only difference in the process step is, that liquid phase operations require additional emptying and refilling steps. There is a range of examples of such plants.
Zeochem has patented this technology to greatly improve the life time and economics of these units.
This technology is already in operation and the first reference plant is running for nearly one year at 100+% performance. It is understood that this is the only plant running successfully to specification.
Zeochem welcomes all inquires on this duty as well on related applications.

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ZEOCHEM®

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