

NAPTA Services

Caustic Based Mercaptan Removal Technology

Mercaptans are very weak acidic compounds which can be found in natural gas, NGL, LPG, condensate, and liquid hydrocarbon streams at refineries (LPG, gasoline and kerosene). Mercaptans are toxic and have a very bad smell and need to be removed to meet sulphur specification, reduce the corrosivity of the product or to remove the bad smell of the product.

Caustic based processes are often used to treat liquid hydrocarbon stream for mercaptans:-

- Light mercaptans (C1-C3 mercaptans) can be removed from the product stream (NGL, LPG, light condensate/naphtha) and converted into disulphide oil, which is produced as a separate product. This is done in the extractive caustic process.
- Heavier mercaptans (C4+ mercaptans) cannot be removed, but only converted into disulphides. This is called the sweetening caustic process.



Caustic based processes are already used for decades for the removal of mercaptans. It is often the most cost efficient and simple process. These processes can be found in almost every refinery and every sour gas plant which has to deal with mercaptans.

Caustic units can remove/convert mercaptans to very low levels. They will also remove H_2S , COS and CO₂ from these hydrocarbons streams. If required, caustic can also be used for mercaptan removal from gas streams. A few examples are:-

- In a sour gas facility LPG is produced and treated with extractive caustic process to remove mercaptans.
- The Condensate of the same sour gas facility is first treated in an extractor to remove the light mercaptans. After that the condensate is treated in a sweetening caustic step to convert the remaining mercaptans in order to produce an odourless condensate ready for export.
- In traditional kerosene treating caustic plays an important role. It often has the following steps; caustic prewash, sand filter, caustic sweetening, settler, water wash, salt filter, clay filter, all required to produce kerosene on spec for aviation purposes.

NAPTA can provide assistance during design, installation, operation and troubleshooting of these installations. In the project phase, NAPTA can support in technology selection and line-up selection. Also NAPTA can advise on equipment design and selection and advice on the materials for construction. NAPTA experts can conduct a site visit for better understanding of site-specific issues; and training of local operational and technical staff.

The provided services can help you to:-

- Identify causes of the problems encountered in your caustic unit like off spec product, high caustic losses, corrosion, etc.
- Optimise the operation of the unit, keep losses and make-up low, debottleneck, etc.

For more information, please connect with NAPTA's Caustic Technology SME Mr Theo Brok via herein below contact details.

Contact

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