

Refineries: Application Focus

Caustic Treating Ensure your caustic treating reliably supports your daily production quotas and downstream process protection needs

Process Description

Caustic treating is used to upgrade a wide range of liquid fractions from LPG to diesel fuels and heating oils. As the caustic solution (and often a catalyst) mixes with the hydrocarbon feed it either extracts or sweetens mercaptans, depending on the process used. However, the combination of the hydrocarbon and mercaptan rich caustic also forms a very stable emulsion that is difficult to separate, causing significant quantities of caustic carryover in the product. This results in off-specification products due to haze or elevated sodium concentration and loss of caustic. In many cases the entrained caustic is fed to processes where sodium is a poison to the catalys.

Because the emulsion is so stable, knock-out drums, sand filters and packed vessels are not able to efficiently separate the caustic emulsion from the hydrocarbon streams.

Refinery Needs

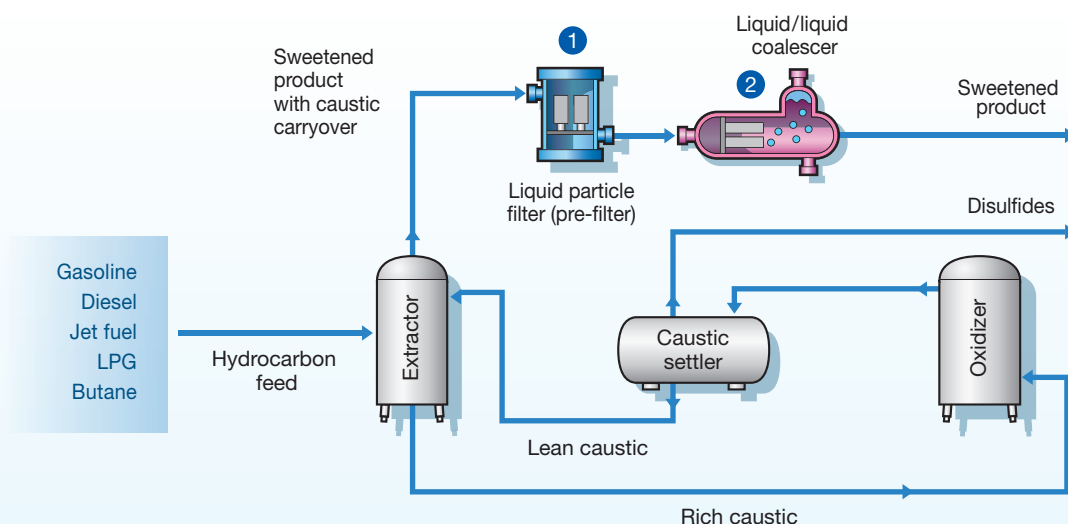
- Achieve oil production quotas via reliable treatment of mercaptans and hydrogen sulfide
- Meet product quality specifications for haze and sodium levels
- Protect and extend run life of downstream catalytic process units



Production Challenge/Pall Solution

Challenge	Solution
<p>Meet product specifications</p>	<p>Improve refinery productivity and product specifications by removal of spent caustic carryover via effective liquids and solids removal downstream of the extractor.</p> <ul style="list-style-type: none"> • KO pots, sand beds, water washes, and salt towers may not effectively remove the stable spent caustic emulsion • High efficiency PhaseSep[®] liquid/liquid coalescers reliably meet 'clear and bright' product specification and sodium levels downstream
<p>Protect downstream catalytic process units</p>	<p>Improve protection of downstream process units by removal of spent caustic carryover via effective liquids and solids removal downstream of the extractor.</p> <ul style="list-style-type: none"> • KO pots, mesh pads, cyclonic devices and conventional filter-separators may not effectively remove the stable spent caustic emulsion • High efficiency PhaseSep liquid/liquid coalescers reliably meet 'clear and bright' product specification and sodium levels downstream • Solid particle contaminants in the spent caustic may not be adequately removed by filters that exhibit unloading, media migration, channeling or poor sealing • A range of filter elements is available to reduce suspended solids to improve the efficiency and life of the liquid/liquid coalescer

Process Flow Diagram



Note: A representative caustic extraction process is shown. Many other caustic treating processes exist.

Key Applications / Product Recommendations

Application	Pall Product	Advantages	Customer Benefits
1 Prefiltration prior to liquid/liquid coalescer	Nylon or polyphenylene sulfide (PPS) Profile® filter	Efficient removal of solids	<ul style="list-style-type: none"> Low operating costs by improving the life of the liquid/liquid coalescer
2 Spent caustic removal	PhaseSep® liquid/liquid coalescer in horizontal configuration	Remove caustic carryover from hydrocarbon product	<ul style="list-style-type: none"> Assured production and quality by meeting specifications for haze and sodium levels Prevents downstream unit downtime from caustic contamination of catalytic processes

Experience Matters

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