TECHNICAL BULLETIN

FQE® Solvent-H

Award-winning asphaltene dispersant and anti-foulant

Product Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk density</td>
<td>7.93 lb/gallon</td>
</tr>
<tr>
<td></td>
<td>950 kg/m³</td>
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<tr>
<td>Solubility</td>
<td>Not Miscible in Water</td>
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<tr>
<td>Flash point</td>
<td>&gt; 220°F (104°C)</td>
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<tr>
<td>Approximate storage life</td>
<td>1 year</td>
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</tbody>
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Standard Package

55 US gallons (208 litre) closed head poly drum, tote bin, or bulk.

FQE® Solvent-H is highly effective in dissolving solid hydrocarbon deposits, typically confused for coke deposits, that are found in vacuum tower bottoms, coker fractionator bottoms, oil storage tanks, heat exchangers and other processing equipment and takes days to remove mechanically.

By rapidly liquefying hydrocarbon solids, FQE Solvent-H will reduce outage days, reduce waste volumes and improve hydrocarbon recovery substantially cutting the cost of maintenance outages. The dissolved hydrocarbon solids will remain liquid and can be reintroduced into refinery operations without incident. FQE Solvent-H is non-corrosive to mild and stainless steel and all soft metals and will not harm refinery catalyst activity.

Application

FQE Solvent-H can be applied by any convenient non-atomizing method; liquid circulation/cascade. It should be used in areas with good ventilation and kept away from open flames.

FQE Solvent-H is recommended for use on hydrocarbon stained concrete pads, refinery equipment, cleaning metal parts and other hard surfaces. It is especially effective on removing heavy tars and greases from effected surfaces and in decontamination of exchangers and other process equipment.

FQE Solvent-H may also be used in degassing application injection into steam due to its unique ability to dissipate static electrical charges that may be of concern.

Dilution

FQE Solvent-H can be applied in a concentrated form. It can also be diluted 5 to 10% by volume in a hydrocarbon carrier or mixed with a suitable detergent cleaning solution if a water-based cleaner is desired.

Rubberized Asphalt Results after being circulated with 5% FQE Solvent-H in light cycle oil
CASE HISTORY

Rail Car Chemical Decontamination & Change of Service

Results Achieved
- over 20 times, saving thousands of dollars in manpower and equipment charges
- Cleaning efficiency increased
- Dissolved the asphaltenes and left over after chemical cleaning
- Minimal sludge deposits were

Chemicals Utilized
- 2S
- A service company utilized FQE® Solvent-ME, FQE® Clean Road, and FQE® LEL-V for a rail car cleaning application at petroleum refinery located in Delaware.
- The refiner was looking to conduct a change of service on their rail cars from dark oil (crude oil) to clear fluid (ethanol) service. The cars needed to be fully de-oiled.
- Previously, the means at a rate of around 1 car every 4-5 days and was looking for a more efficient alternative to meet their tight timelines.
- FQE Solvent-ME was vapour-phased injected with steam into the rail cars at a controlled rate until the effluent coming out of the bottoms drain was oil-free.
- To ensure that all the cars were truly de-oiled; through mechanical means at a rate of around 1 car every 4-5 days and was looking for a more efficient alternative to meet their tight timelines.
- FQE Solvent-H was applied first to dissolve and flush away heavy deposits at the bottom of the vessel. Afterward, FQE LEL-V and FQE H2S were applied to remove LEL and H2S respectively. The whole operation was done in record time large primary separation settler in record time.
- The vessel had a top cylindrical section with an internal diameter of 15.2 meters, the product in the vessel was made up of mostly solvent (C5/C6), and bitumen.
- The client traditionally had issues with LEL and VOC leaching issues with prior a services and knew there was large primary separation settler in record time.
- Previously, the client had utilized terpene-based type chemistries on the towers to issues with prior a services and knew there was large primary separation settler in record time.
- This resulted in fouled at the bottom. It was confirmed that fouling was significantly higher than previous turnarounds.
- Relocating the injection point and indic client traditionally had issues with LEL and VOC leaching issues with prior a services and knew there was large primary separation settler in record time.
- Using FQE Solvent-H, FQE® LEL-V, and FQE® H2S to clean a primary separation settler.
- Significantly reduced mechanical dissolving heavy sludge in the fractionator bottoms with no delays and chemical cleaning with a minimum deposit residue at the bottom.
- The whole operation was done in record time large primary separation settler in record time.
- Process saved 12-24 hours of down time compared to previous turnarounds.