Rapid absorption and encapsulation of vapor-state hydrocarbons

**Product Data**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk density</td>
<td>8.18 lb/gallon, 980 kg/m³</td>
</tr>
<tr>
<td>Solubility</td>
<td>Dispersible in Water</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 200°F (93°C)</td>
</tr>
<tr>
<td>Approximate storage life</td>
<td>1 year</td>
</tr>
</tbody>
</table>

**Standard Package**

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

**Cleaning Benefits**

- Improves oil recovery
- 20+ times more effective at benzene absorption than closest competitor
- Noticeably reduces degassing time
- Cuts overall outage time
- Exceptional hard surface cleaning
- Effective on paraffinic and asphaltic crudes
- Reduces the need for mechanical cleaning

**Application**

FQE LEL-Vapor can be applied by spray method, vat soaking and cascading, or by degassing application during steam injection (other methods include hot nitrogen). Concentrations of 3-5% aqueous solution are typical. A sufficient volume of treating liquid should be made to allow for a continuous circulation to be established. Depending upon the nature of the deposits, the product should be circulated for 6 to 24 hours at temperatures of 150 - 200°F (66 - 93°C). Following the circulation of the product for the prescribed time, the effluent should be sent to a holding tank where phase separation of the removed oils can occur.

For degassing applications, inject 0.25 to 0.50% of steam flow into 68 kg (150 lb) steam supply for 6 to 24-hours. A water rinse of the vessel following treatment is recommended.

**Dilution**

The dilution and rate of application will vary with the severity and nature of the hydrocarbon deposits present, but 1.5 to 5% in water is typical. Circulation rates should be as high as attainable with the available equipment (>100 gpm is recommended). For degassing applications, use 0.25 to 0.50% of steam flow.

**FQE® LEL-Vapor** is a proprietary blend of non-hazardous surfactants used to provide detergency, wetting and penetrating agents, and special viscosity modifiers.

It contains no SARA 313, DOT Hazmat Table 172.101, California Proposition 65, or CERCLA reportable materials. FQE LEL-V will preferentially absorb hydrocarbons (aliphatic, aromatic, naphthenic) via a proprietary encapsulation process that safely and effectively removes them from vapor spaces and equipment surfaces. FQE LEL-V does not form stable emulsions that will negatively impact wastewater disposal.
Performance comparisons

FQE LEL-Vapor is more effective in hydrocarbon absorption and hard surface cleaning than the leading competitive products.

Hydrocarbon absorption (EPA-602)

<table>
<thead>
<tr>
<th>Content Added (mg/l)</th>
<th>FQE LEL-Vapor (mg/l)</th>
<th>Product A (mg/l)</th>
<th>Product B (mg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000</td>
<td>990</td>
<td>565</td>
<td>650</td>
</tr>
<tr>
<td>10,000</td>
<td>9,944</td>
<td>1,590</td>
<td>1,717</td>
</tr>
<tr>
<td>50,000</td>
<td>49,816</td>
<td>1,615</td>
<td>1,761</td>
</tr>
<tr>
<td>100,000</td>
<td>74,709</td>
<td>1,542</td>
<td>1,636</td>
</tr>
</tbody>
</table>

Safety

› No hazardous materials
› HMIS rated one in health and zero in all other categories
› NFPA rated one in health and zero in all other categories
› Suppresses ignition of hydrocarbons
› Neutral pH (7.0 – 7.5)
› Does not contain nitrogenous compounds
› No flash point
› No caustics
› Water dispersible

Environmental

› Will not harm nitrifying bacteria
› Enhances waste water treatment plant bacterial growth
› Biodegradable
› Reduces water consumption
› Wash water suitable for waste water treatment
› Reduces hazardous waste
› Will not emulsify oils
› Reduces benzene, H₂S, and ammonia levels

Content

Added (mg/l)   FQE LEL-Vapor (mg/l)   Product A (mg/l)   Product B (mg/l)
1,000         990                  565             650             
10,000        9,944                1,590           1,717           
50,000        49,816               1,615           1,761           
100,000       74,709               1,542           1,636           

Hard surface cleaning

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