for Ground Flares

greener cleaner safer

specialty products that save energy, reduce pollution and improve fire safety
Overview

- Technology
- Foamfrax Process
- Benefits
- Product Forms
- Case Studies
Technology

- Proprietary Technology Encapsulates Fibers in Foam Binder Matrix
- Unifrax Holds the Technology License for the Refractory Market, Global Agreement
- Foamfrax Utilizes Proprietary Binders and Equipment.
- Installed by Unifrax Licensed Distributor/Contractors
Foamfrax Process

- Foamfrax Machine
- Fiber Hose
- Binder
- Air
- Mixing Chamber
- Shooting Nozzle
- greener
cleaner
safer

specialty products that save energy, reduce pollution and improve fire safety

UNIFRAX
Benefits

- Speed of installation.
- Unexposed anchoring system.
- Withstands elements.
- Upgrade over existing hard refractory and RCF linings.
- Lighter (25pcf) than dense refractories.
- Monolithic ceramic fiber lining system.
- Well suited for intricate geometries.
Product Forms

- Foamfrax Grade I (2300° F)
- Foamfrax Grade II (2600° F)
- Foamfrax Grade III (3000° F)
- Foamfrax RG (1800° F)
- Foamfrax RG+ (2300° F)
- Foamfrax HD (2300°, 2600° &3000°)
- Isofoam (2300° F) Low Bio-Persistent Fiber
- Isofoam RG (1800° F) Low Bio-Persistent Fiber
Ground Flares
Foamfrax RG Plus

• Application Story
  – Unit: Ground Flare, 2000F maximum
  – Current Lining System: Layered Blanket, 4”
  – Proposed System: RG Plus, 4”

• Issue
  – The blanket lining performed well for the thermal shock of the application, but weather exposure shortened the life of the lining. Castable materials failed due to the rapid cycling of the unit.
  – Weathering and Thermal Shock were the main concerns.
Ground Flare Application
SS Foil installed over "V" anchors
Foamfrax RG+ gunned to a thickness of 4”
Surface troweled to a smooth finish
Score lines added at 2 foot centers
Foamfrax RG Plus

• Results
  – Installed in April 2006. The plan was to evaluate for 6 months. However, given the excellent performance, another unit was installed in July at the same location.
  – The RG Plus provided resistance to thermal shock and was able to withstand moderate exposure to weather.
  – Buried anchors reduced the likelihood of corrosion.
  – Lower density reduced the structural requirements.
## Product Performance

<table>
<thead>
<tr>
<th>Performance Acceptance Criteria</th>
<th>Layered Blanket</th>
<th>Foamfrax RG</th>
<th>Hard Refractory</th>
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</thead>
<tbody>
<tr>
<td>Weather Exposure</td>
<td>NO</td>
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<tr>
<td>Thermal Cycling</td>
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<tr>
<td>Thermal Shock</td>
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<td>YES</td>
<td>NO</td>
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<tr>
<td>Buried Anchors</td>
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<tr>
<td>Monolithic</td>
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<tr>
<td>Density</td>
<td>4-8 PCF</td>
<td>20-25 PCF</td>
<td>40-160 PCF</td>
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QUESTIONS?
Thank You For Considering Foamfrax & Foamfrax RG as a Heat Management Solution