Huntsman
Enriching lives through innovation

Spray Polyurethane Foam (SPF)
High performance insulation for energy efficient buildings

www.huntsman.com/insulation
The Army and SPF at home
An energy saving, sustainable solution

BUILDINGS ACCOUNT FOR THE LARGEST US ENERGY DEMAND

US energy usage by sector
Source: DOE/EIA

Industrial 33%
Transportation 28%
Buildings 39%

- 39% of US energy demand goes into buildings
- The military is one of the largest energy users
- Heating and cooling account for 40% of a building’s energy load
- 40% of the heating and cooling load is wasted due to air infiltration
- Better Building Envelopes are key

NEW MANDATORY AIR TIGHTNESS STANDARD FOR MILITARY BUILDINGS

SPF is an effective way to meet this standard
- More practical vs. coatings or films
- Easily pass blower door test
- Highest R-value
- ROI typically less than 5 years
- Durable

Air Infiltration
Un-insulated stairwell

Thermal Bridging from metal studs + structural members

Wood frame walls
Exterior SPF onto CMUs
Metal roofing

Built-up roofing
Under roof decks
The Army and SPF in theater
Saving energy and money, providing soldier comfort

Problem
High casualty rate from convoys
80% of fuel used for soldier climate control

Solution: SPF Insulation
50% fuel savings
75 day payback period

Camp Victory in Baghdad, Iraq

<table>
<thead>
<tr>
<th></th>
<th>Before SPF</th>
<th>After SPF</th>
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</thead>
<tbody>
<tr>
<td>8 AC units</td>
<td>July 1</td>
<td>July 1</td>
</tr>
<tr>
<td>70°C (21°C)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>60°C (16°C)</td>
<td>90</td>
<td>90</td>
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<td>50°C (10°C)</td>
<td>80</td>
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<tr>
<td>40°C (4°C)</td>
<td>70</td>
<td>70</td>
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<tr>
<td>30°C (-1°C)</td>
<td>60</td>
<td>60</td>
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<td>20°C (6°C)</td>
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<tr>
<td>10°C (51°C)</td>
<td>40</td>
<td>40</td>
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<tr>
<td>0°C (32°F)</td>
<td>30</td>
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</tr>
</tbody>
</table>

Source: U.S. Army AMSAA Study
Spray Polyurethane Foam (SPF)

High performance insulation for energy efficient buildings

SPF insulation can help:

- Reduce heating and cooling costs by up to 50% \(^1\)
- Increase wind uplift resistance by more than 300% \(^2\)
- Create an air barrier for the building system

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\(^1\) vs. traditional fibrous insulation
\(^2\) vs. common roof deck attachment methods