THULE AIR FORCE BASE | FOAMULAR® GEO

NORTHWEST, GREENLAND

Owens Corning understands the importance of maintaining critical operational infrastructure. An airfield design using extruded polystyrene will not only extend the life of pavement structure, but can result in a substantial decrease in capital and life cycle costs, especially when gravel is sourced far from the construction site.

For qualified stakeholders, Owens Corning is willing to provide a cost feasibility assessment comparing airfield design options.

Airfields in cold regions run the risk of damage where underlying terrain consists of frost susceptible soil or permafrost. Embankments constructed with combined soil and insulation serve as an ideal way to protect runways from challenges associated with frozen ground. FOAMULAR® GEO Extruded Polystyrene Insulation placed in airfield embankments will defend runways against both seasonal frost action and permafrost melt.

FOAMULAR®

Products Used:

60 PSI FOAMULAR® GEO
Extruded Polystyrene, 4' X 8' Sheets

Project Type:

Airfield Runway Rehabilitation

Technical Details:

Volume:
More than 1.2 million board feet

Thickness:
2 layers of 2" FOAMULAR® GEO 60 PSI

Foam Area Covered:
Road: 1/3 mile in length and 140 feet in width

Design & Construction:

Design and Terrain:
Embankment over Permafrost

Geotechnical Designer:
U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory and the Construction Engineering Research Laboratory

Owner:
U.S. Department of Defense, Air Force

Contractor:
MUNK

Completion:
2015

Features:

- High compressive strength helps resist damage from heavy loads. Available in 40, 60, and 100 psi compressive strengths
- Excellent long-term stable insulating performance with a lifetime limited R-value warranty[1]
- Exceptional moisture resistance, long-term durability
- Certified by SCS Global Services to contain an average of 20% pre-consumer recycled content[2]
- Will not corrode, rot, or support mold growth
- Durable rigid foam panels are easy to handle and install
- Easy to saw, cut or score
- Custom thicknesses from 1" to 4" per R-value required
- Does NOT contain CFCs, HCFCs, or HBCD Flame Retardant

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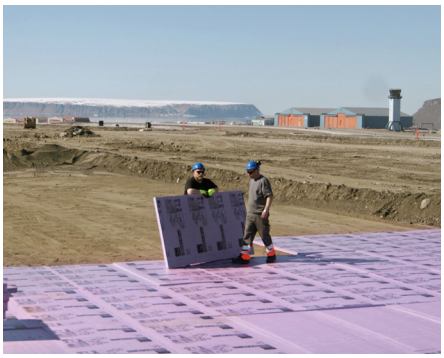


The runway at Thule Air Force Base had experienced damage from permafrost thaw. In 2015, Thule Air Force Base completed a runway rehabilitation project that incorporated Owens Corning® FOAMULAR® GEO 60 psi extruded polystyrene geofoam insulation to prevent damage at the most critical locations, or approximately 18 percent of the runway.

Prior to reconstructing the runway, a field test was installed near the project site. Thermal modeling demonstrated a minimum of 4 inches of FOAMULAR® GEO would be required to prevent thaw penetration depth from reaching the pavement structure subgrade, consisting of ice-rich, thaw unstable permafrost with substantial glacial till and decomposed bedrock.

During reconstruction, the top 4 feet of the structure was excavated, uncovering the subbase from the initially constructed runway. Geotextile was laid on top of the subbase, followed by a sand blanket leveling course. Two layers of FOAMULAR® GEO were placed on top of the leveling course with staggered joint orientation. More protective sand was then laid, before topping the insulation with 4 feet of base course material and finishing the runway with a paved surface.

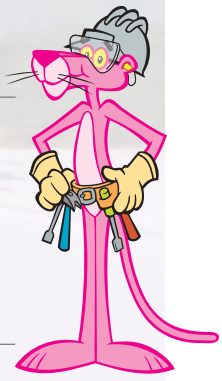
"The Air Base in Thule has the very important mission of tracking and detection. They are an early-warning surveillance security for the United States. It is of great benefit to the nation to make sure Thule is operational," said Kevin Bjella, research civil engineer at Cold Regions Research and Engineering Laboratory (CRREL).[3]

Description:

Owens Corning® FOAMULAR® GEO 40, 60, 100 are high strength durable Extruded Polystyrene (XPS) Insulation products designed for use in engineered applications requiring additional load-bearing capability such as:

- Road and Highway
- Railroad
- Airport Runway
- Drill/Ice Pad
- Frost/Permafrost Protection
- Buried Utilities
- Light Weight Fill

The unique closed-cell structure of FOAMULAR® GEO XPS Insulation helps to make it highly resistant to moisture, retaining its excellent R-value year after year – even following prolonged exposure to moisture and freeze/thaw cycling.



For more information
on the Owens Corning family of products, call **1-800-GET-PINK®** or visit www.owenscorning.com.

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[1] For more information on the limited warranty contact Owens Corning World Headquarters at 1-800-GET-PINK.
[2] SCS Global Services provides independent verification of recycled content in building materials and verifies recycled content claims made by manufacturers. For more information, visit www.SCSglobalservices.com.
[3] "Three ERDC Labs Come Together For Success in Thule, Greenland." U.S. Army Corps of Engineers. Accessed 01/23/2018. <http://www.erdc.usace.army.mil/Media/News-Stories/Article/1120812/three-erdc-labs-come-together-for-success-in-thule-greenland/>.