

# OWENS CORNING FOAMULAR® NGX® UV AND SOLAR HEAT EXPOSURE TECHNICAL BULLETIN

All polystyrene-based products may be damaged by UV light exposure and solar heat gain. It is recommended that FOAMULAR® NGX® products be protected in storage, transit, and installation to help prevent damage to the product and resulting loss of performance.

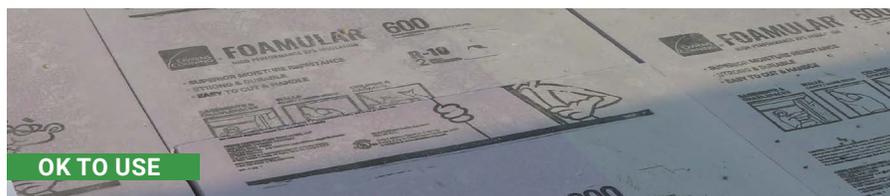


Figure 1

## PHASE 1

### Noticeable fading/color loss not affecting the performance of the insulation.

Polystyrene may begin to yellow, gray, or grow pale, usually within a few days. Gradual color loss alone, although noticeable, has no effect on the performance properties of the insulation board. (Fig. 1)

## Solar Heat Gain

Polystyrene is made of a thermoplastic resin with a maximum service temperature of 165°F and when placed under dark or clear materials or in horizontal applications will experience greater solar heat exposure, potentially leading to damage by heat buildup. If improperly covered and exposed to the right combination of sun, time, and temperature, deformation damage may occur rapidly. Once the material has permanently deformed, dimensional stability and other physical properties will be negatively affected.



Figure 2

## PHASE 2

### Dusting/chalking/powdering, resulting in a layer of damaged cells.

Dusting can be felt and seen by lightly dragging a finger across the board, leaving a shallow trail in the surface. Only the cells on the surface of the board are damaged while the thickness of unexposed cells beneath remain undamaged. The loss of R-value is proportional to the loss of thickness of damaged cells. Surface water retention may be increased due to the surface being "roughened" compared to the original smooth surface. (Fig. 2)

## UV Light Exposure

Polystyrenes begin to deteriorate if exposed to UV light, particularly when exposed for prolonged periods of time. This damage occurs in three phases.



Figure 3

## PHASE 3

### Continued dusting/chalking/powdering/warping

If the weathering process is allowed to continue to expose and damage layers, the XPS will lose its R-value as its thickness is slowly reduce by erosion. The loss of R-value is proportional to the loss of thickness of damaged cells. Surface water retention will increase due to the surface being "roughened" compared to the original smooth surface. Dimensional stability and other physical properties will be negatively affected. (Fig. 3)

The rate at which the UV affects polystyrene is a function of the intensity of the exposure. The rate at which a sheet of XPS experiences phase 1, 2, and 3 damage varies by climatic conditions and orientation.

## PROTECTION RECOMMENDATIONS

### STORAGE AND TRANSPORTATION



#### Recommended Practices

- Factory-wrapped white wrapping. A white opaque cover reflects energy from the sun, reducing excessive heat. (Fig. 4)
- Owens Corning provided shrouds. Some pallets may arrive with FOAMULAR® NGX® shrouds and may be stored using these reusable covers. (Fig. 5)
- Position pallets to shade. Place in block formation, checking most exposed outside units periodically to ensure wrapping is intact. (Fig. 6)



Figure 4



Figure 5



Figure 6



#### Avoid These Practices

- Dark (non-white) coverings. Tarps, drainboards, filter fabrics, and tapes absorb solar energy and raise the temperature against the foam.
- Clear (non-opaque) coverings. Filter fabrics, membranes, temporary tarps, or clear polyethylene, etc. produce a greenhouse effect, trapping hot air and raising temperature below the cover.
- Place near reflective materials. Mirrors and highly reflective surfaces such as metal or glass windows on adjacent buildings concentrate heat energy at the point of contact with the plastic surface.

### INSTALLATION AND SERVICE



#### Recommended Practices

- Install only so much material as can be covered and protected at a time. Provide daily temporary or final finish covering, particularly on horizontal installations, including concrete topping slab, pavers, coverboard, ballast, growing media, and vegetation. (Fig. 7)
- Place print side down when possible. Ribbed and channeled board may be placed with print up due to its configuration and then covered. (Fig. 8)



Figure 7



Figure 8



#### Avoid These Practices

- Stage or install in reflection of mirrored or highly reflective materials such as windows, HVAC units, parapets, or water features.
- Allow light-colored final membranes to become dirty and darken as they will absorb additional solar heat and transfer to the insulation beneath.
- Expose vertical applications more than 60 days.

**It is preferred that applications are covered immediately.**

For more details, please refer to current literature or contact the local FOAMULAR® NGX® representative.

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