# Roof & Deck Insulation 07 22 00

**1. Product Name**

- LightGUARD®
- HeavyGUARD®

**2. Manufacturer**

T. Clear Corporation

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**3. Product Description**

BASIC USE
LightGUARD and HeavyGUARD, as a part of a Protected Membrane Roof (PMR), are effective in protecting membranes as well as controlling condensation and moving dew point locations outside of the building envelope.

LightGUARD

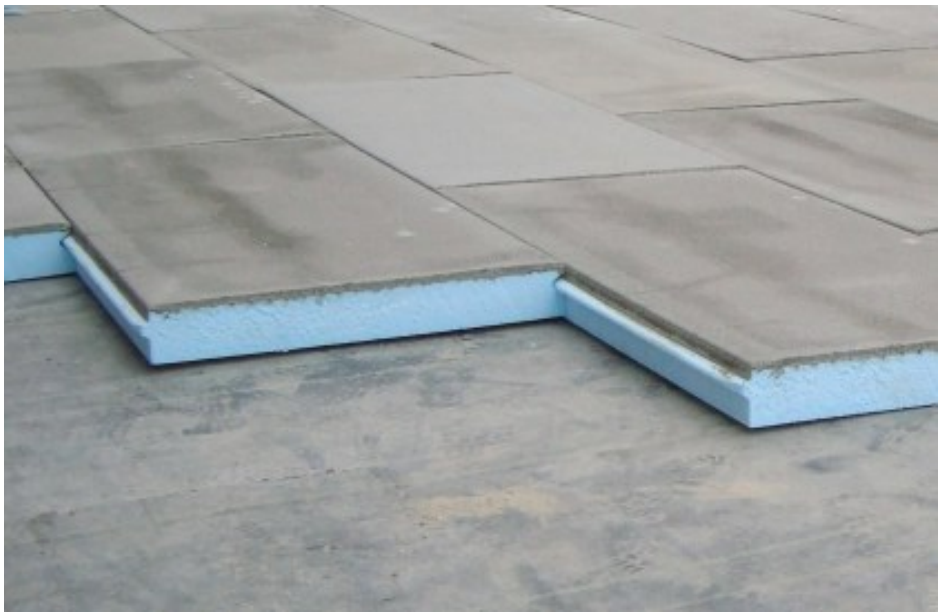
LightGUARD provides insulation as well as ballast. It is used as the ballast component of a PMR assembly and is suited for new or reroofing use on commercial and industrial buildings. LightGUARD consists of a latex-modified concrete panel laminated to insulation board. The panels can be installed on top of most types and brands of roof membranes, offering protection from thermal shock, weathering forces, and maintenance related foot traffic.

HeavyGUARD

HeavyGUARD is a heavier version of LightGUARD. It is used where high traffic and higher point loading require a thicker concrete panel component.

COMPOSITION & MATERIALS

3/8" (9.5 mm) latex modified concrete is laminated to Styrofoam® closed-cell extruded polystyrene insulation board, ASTM Type VI, 2" or 3" (51 or 76 mm) thick, HeavyGUARD is fabricated with a 15/16" thick latex-modified concrete face.



SIZES

- LightGUARD 2'x4' (610x1219 mm) x 2 3/8" or 3 3/8" (60 or 86 mm) thick
- HeavyGUARD 2'x4' (610x1219 mm) x 2 15/16" or 3 15/16" (75 or 100 mm) thick

WEIGHT

- LightGUARD 4.5psf (22 kg/$m^2$)
- HeavyGUARD 11psf (54 kg/$m^2$)

COLORS

- Natural Gray (standard)
- Green
- Tan
- Red

SHAPES

T. Clear PMR insulation panels are flat and rectangular. Tongue and groove edges allow interlocking construction.

LIMITATIONS

See Table 1 for manufacturer approved deck/membrane assemblies suitable for T. Clear PMR applications.

**4. Technical Data**

APPLICABLE STANDARDS

ASTM International

- ASTM C518 Standard Test Method for Steady-State Thermal Transmission Properties by means of the heat flow meter apparatus
- ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
- ASTM C666 Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
- ASTM D1621 Standard Test Method for Compressive Properties of Rigid Cellular Plastics
- ASTM D2842 Standard Test Method for Water Absorption of Rigid Cellular Plastics
- ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials

Factory Mutual - Factory Mutual Standard M 4470 - Accepted

Underwriters Laboratories, Inc. - Roofing Materials and Systems Directory

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APPROVALS

UL Loose-Laid Single-Ply Membrane Systems, BUR and Modified Bitumen Membrane Systems TGIK R14358(N). Status of approvals by code bodies and other agencies can be obtained from T. Clear Corporation.

ENVIRONMENTAL CONSIDERATIONS

By insulating the roof assembly and keeping dew point above roof membrane, LightGUARD protects valuable machinery in pulp and paper mills, textile mills, and other installations where moisture can cause damage to equipment. LightGUARD is reusable in reroofing and vertical expansion situations. It is free of chlorofluorocarbons (CFCs).

PHYSICAL/CHEMICAL PROPERTIES

Test reports are available to design professionals upon request.

- R-value - 5 $ft^2$ x h x °F/Btu per inch (0.88 $m^2$ x K/W per 25.4 mm) of foam.
- Thermal conductivity (K-value) -0.2 Btu/(ft2 x h x °F) (0.35 W/(m x K))
- Compressive Strength of insulation - 40 psi (1915 Pa)

FIRE RATING

A variety of fire resistance rated assemblies can be constructed using LightGUARD panels, ranging from 1-2 hour assembly ratings. Consult UL Directory or manufacturer for specific construction requirements.

**5. Installation**

METHODS

Installation requirements vary according to roof deck and roofing membrane type. Complete installation recommendations are available from the manufacturer. Refer to manufacturer's technical installation sheet for specific membrane/deck combinations under considerations.

PRECAUTIONS

Roofs must be designed and constructed to drain water within 48 hours after rainfall. A 1/4" per foot (20.8 mm/m) slope is recommended. Prevention of air infiltration into the area beneath a loose-laid single-ply membrane is critical to its wind stability. Where a fire resistant underlayment material such as gypsum board is used as a 15 minute fire barrier, it must be mechanically attached to the deck in accordance with the applicable Factory Mutual Criteria.

TABLE 1 T. CLEAR PMR APPROVED DECK/MEMBRANE ASSEMBLIES

| Membranes | Deck Type | | | | | | |
|---|---|---|---|---|---|---|---|
| | Metal | Con-crete Slab | Con-crete Panel | Wood | Wood Fiber | Insul. Con-crete | Exist-ing |
| Fully Adhered | | | | | | | |
| Fiberglass BUR | Y | Y | Y | N | Y | N | N |
| Modified Bitumen | Y | Y | Y | N | Y | N | N |
| Single-Ply | Y | Y | Y | N | Y | N | N |
| Mechanically Attached | | | | | | | |
| Fiberglass BUR | Y | N | N | Y | Y | Y | Y |
| Modified Bitumen | Y | N | N | Y | Y | Y | Y |
| Single-Ply | Y | N | N | Y | Y | Y | Y |
| Loose-Laid | | | | | | | |
| Single-Ply | Y | Y | Y | Y | Y | Y | Y |

Y= Approved N= Not Approved

BUILDING CODES

Installation must comply with the requirements of all applicable local, stat and national code jurisdictions.

**6. Availability and Cost**

AVAILABILITY

LightGUARD and HeavyGUARD panels are available throughout the U.S. For distribution information contact the manufacturer.

COST

Cost information can be obtained directly from the manufacturer.

**7. Warranty**

T. Clear Corporation offers single-source total performance warranties, limited warranties, and extended warranties. Standard 20 year warranty covers product integrity and insulation value. Also covered are concrete delamination and wind disturbance up to 90 mph (145 kph). The company offers 10, 15, and 20 year warranties ad wind speeds up to 120 mph (193 kph).

**8. Maintenance**

Proper roof maintenance includes periodic inspection of panels, flashing and parapets, sealants, building joints, drains, and other components which can have a direct impact on roof performance and longevity. Broken concrete panels should be repaired as soon possible to protect polystyrene foam from sunlight (UV) degradation. Vegetation growth should be controlled.

**9. Technical services**

For technical assistance please contact T. Clear Corporation.

**10. LEED Contributions**

MATERIAL RESOURCE

Credit 1 - Building Reuse

Credit 2 - Construction Waste Management

Credit 3 - Resource Reuse

Credit 4 - Recycled Content

Credit 5 - Local/Regional Materials (Ham. OH)

SUSTAINABLE SITES

Credit 2&3 - Urban/Brownfield Redevelopment

ENERGY & ATMOSPHERE

Credit 1 - Optimize Energy Performance

ENVIRONMENTAL QUALITY

Credit 7 - Thermal Comfort - Design