Commercial Building Insulation
Applications for Extruded Polystyrene (XPS)

Herbert Slone
Registered Architect
Technical Manager, Commercial Insulation

Updated Mar. 2008
Copyright Materials

This presentation is protected by US and International Copyright laws. Reproduction, distribution, display and use of the presentation without written permission of Owens Corning is prohibited.

©Owens Corning 2007
Learning Objectives

For extruded polystyrene, XPS:

1. Understand basic comparison of rigid foam plastic insulation products.

2. Understand physical properties and their relationship to ASTM C578 type categories for specification.

3. Understand proper use in a variety of applications from foundation to roof.

4. Understand building code compliance data.
Extruded Polystyrene, XPS

Cell Wall

Cell
Molded, or, Expanded Polystyrene, EPS

Cell

Cell Wall

Air Void Between Beads

Edge of Bead
Polyisocyanurate, iso

Cell

Cell Wall
Physical Property Retention

Closed Cell = Water Resistant

Water absorption results in loss of $R$ value.
Commercial Applications

- Foundation / Insulation / Drainage
- Under Slab / Perimeter
- Masonry Cavity Wall
- Interior Furring Systems
- Exterior Insulation Finish Systems (EIFS)
- Steel Stud / Brick Veneer Systems
- Concrete Systems
- Roofing
- High Strength Applications / Civil eng.
Commercial Under Slab

- Type IV, 25 psi
- Type VI, 40 psi
- Type VI, 60 psi
- Type V, 100 psi

Depending on slab load and subgrade strength
Commercial Cavity Wall

Type X 15 psi or IV, 25 psi
Some manufacturers provide ties, structural performance data, fire and 3\textsuperscript{rd} party listing information, and XPS insulation.
Steel Stud/Brick Veneer

- Batt Insulation
- Steel Studs
- Tape, Sealant
- XPS "ci"
- Tape, Sealant
- Wall Tie
- Exterior Brick Veneer
- Vapor Retarder
- Gypsum Board
- Foundation Wall
XPS Commercial Roof Insulation

- Single-ply
  - ballasted
  - mechanically attached
  - fully adhered

- Protected Membrane Roofing Assemblies (PRMA)

- Metal Roofing

- Recover

- Hot BUR
XPS Direct to Deck

Underwriters Laboratories, UL 1256 tested and listed

NO THERMAL BARRIER NEEDED!
Building Code Requirements for XPS

- **Flame Spread** < 75, smoke developed < 450, (ASTM E84) and,
- **Listed and labeled** by independent testing agency (UL, SwRI, etc.) and,
- **Thermal Barrier**, must be separated from the building, commonly with 1/2” gypsum board, and,
- **Application based testing:**
  - “ci” over non-comb construction, steel stud
  - Roofing (ASTM E108, UL 1256, etc.)
  - EIFS, etc.