



Precision-Cut EPS Inserts for High-Performance Window & Door Systems

1. PRODUCT OVERVIEW

ThermaCore Lite™ is a precision-engineered insulation insert manufactured from **Expanded Polystyrene (EPS)** and CNC-cut to match OEM window and door frame cavities with exceptional accuracy. Produced from factory-molded EPS blocks, ThermaCore Lite offers **stable long-term thermal performance**, excellent moisture resistance, and consistent density across every batch.

EPS is an **inert, closed-cell insulation material** with zero capillarity, low water absorption, and outstanding freeze/thaw durability. It will not rot, degrade, or support mold or mildew. Because EPS contains only air—not blowing agents—its insulating properties remain stable for the life of the product.

ThermaCore Lite is ideal for OEMs seeking a **cost-effective, lightweight, and dimensionally stable insert** that improves frame thermal performance without requiring changes to existing manufacturing processes.

2. KEY BENEFITS

THERMAL PERFORMANCE

- R-value of ~4 per inch
- Reduces frame thermal bridging
- Improves NFRC-modeled U-factors
- Enhances condensation resistance
- Thermal conductivity of 0.037 W/(m·K)

PRECISION MANUFACTURING

- CNC-cut from EPS blocks
- Tight tolerances for complex multi-chamber profiles
- Maintains drainage, pressure-equalization, and reinforcement zones
- Consistent density and performance across all production runs

THERMAL & MOISTURE PERFORMANCE

- Stable R-value over time (no blowing agent loss)
- Low water absorption
- Zero capillarity
- Excellent freeze/thaw resistance

LIGHTWEIGHT & COST-EFFECTIVE

- Lower density than GPS or polyurethane foams
- Easy to handle, cut, and integrate into OEM workflows
- Economical for high-volume production

ENVIRONMENTALLY RESPONSIBLE

- Contains **no CFCs, HCFCs, or refrigerant gases**
- Non-toxic and hypoallergenic

DOES NOT IRRITATE SKIN ON CONTACT

3. TYPICAL PHYSICAL PROPERTIES — EPS

Property	Imperial	Metric	Test Standard
Thermal Resistance @ 0°C (32°F)	R-4.04 per inch	RSI 0.70	ASTM C177
Thermal Resistance @ 24°C (75°F)	R-3.80 per inch	RSI 0.67	ASTM C177
Compressive Strength (min)	16 psi	110 kPa	ASTM D1621
Capillary Action	none	none	—
Water Vapour Permeance (max)	3.5 perm-in	200 ng/Pa·s·m ²	ASTM E96
Water Absorption (max)	4%	4%	ASTM C272
Mold/Mildew Support	none	none	—

4. MATERIAL CHARACTERISTICS

DIMENSIONAL STABILITY

EPS maintains its shape under normal temperature and humidity cycling, making it ideal for precision-cut inserts.

BREATHABILITY

EPS is a **vapour-permeable insulation**, allowing assemblies to dry outward and reducing the risk of trapped moisture.

CHEMICAL RESISTANCE

EPS should not be exposed to:

- Hydrocarbons (gasoline, fuel oils)
- Some alcohols
- Anhydrous acids (sulfuric, glacial, formic)

5. MANUFACTURING PROCESS

STEP 1 — EPS BLOCK PRODUCTION

EPS blocks are molded under controlled conditions to achieve consistent density and cell structure.

STEP 2 — BLOCK CONDITIONING

Blocks are stabilized to ensure uniform moisture content and dimensional consistency.

STEP 3 — CNC PRECISION CUTTING

Stream Infinity machines each block into **custom-fit inserts** for OEM window and door profiles.

Capabilities include:

- ± 1.0 mm tolerances
- Multi-chamber geometries
- Reinforcement-compatible designs
- Drainage and pressure-equalization preservation

STEP 4 — OEM INTEGRATION

Finished inserts are delivered ready for:

- Vinyl window frames
- Aluminum window systems
- Curtainwall mullions
- Hybrid/composite assemblies

6. TYPICAL APPLICATIONS

- Vinyl window frame chambers
- Aluminum thermal cavities
- Curtainwall mullions
- Perimeter insulation zones
- Condensation-risk areas
- Thermal break enhancement

7. ENVIRONMENTAL & HEALTH PROFILE

- Contains **no CFCs, HCFCs, or refrigerant gases**
- Non-toxic and hypoallergenic
- Does not support mold or mildew
- Stable long-term thermal performance

8. TECHNICAL ASSISTANCE

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