

YJJNANO MATERIALS CANADA INC.

Performance Comparison

Core Technologies · ASA/PVC Co-extrusion vs. PE Material

Core Technologies

Nanocell Foaming Technology

Closed-cell nano-foaming technology designed to reduce thermal conductivity. This structure enhances insulation performance and lowers heat transfer compared to solid plastics.

Nanocore Fusion

A core-layer bonding technology that improves structural rigidity and long-term stability, increasing resistance to harsh outdoor environmental conditions.

SolarDefend ASA

A weather-resistant ASA surface layer engineered to resist UV radiation and extreme temperature fluctuations. This protects the substrate, minimizes color fading, and significantly extends outdoor service life.

PVC / ASA Co-extrusion Technology Advantages

Weather Resistance

The ASA outer layer provides excellent UV and weather resistance.

- Color stability for 15+ years
- Reduced maintenance costs for outdoor applications

Temperature Resistance

Operational temperature range: -40°C to 55°C. The material resists deformation under both extreme cold and high heat.

Mechanical Strength

High surface hardness, good impact resistance, and outstanding dimensional stability. The structure is not prone to warping or bending.

Fire Resistance

PVC's chlorine content provides inherent flame-retardant properties. Meets common building code requirements for flame performance.

Surface Finish

The co-extruded ASA layer creates a realistic, deeper wood-grain texture.

- High wear resistance
- Not prone to peeling or surface film delamination
- More premium appearance

Performance Comparison: ASA/PVC (Foam Core) vs. PE Material

Material Property	ASA/PVC (Foam Core Layer)	PE Material	Advantages
Thermal Conductivity	0.03–0.05 W/m·K (closed-cell foam value)	0.33–0.52 W/m·K	10× better insulation compared to PE
Service Life	15+ years (ASA/PVC outdoor durability)	5–10 years	3× longer outdoor lifespan
Dimensional Stability	Shrinkage 0.2–0.8%	Shrinkage 1.5–4.0%	5× better seam precision
Fire Resistance	Oxygen Index ≥ 45, V-0 Grade	OI 17–18%, HB Grade (flammable)	Meets building flame-retardant requirements
Surface Durability	Wear Resistance Class 1 (Hard Surface)	Class 3	60%+ reduction in scratch risk
Aesthetic Effect	Grade 5 Authentic Wood Finish	Grade 3	Texture closer to natural wood

Notes:

1. Data is based on industry research for ASA, PVC, and PE (e.g., *Journal of Applied Polymer Science*) and not solely on product-specific testing.
2. Thermal conductivity and shrinkage values reference typical data from *Plastics Engineering Handbook*; actual product values may vary.
3. Wear-resistance classification follows ISO 4586-2; wood-grain texture grading is based on visual evaluation (Grade 1 = lowest, Grade 5 = highest).

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