

THERMA - SHIELD® | 2004

PRODUCT DESCRIPTION

THERMA-SHIELD® 2004 is a two-component, closed-cell spray polyurethane foam insulation system formulated with an EPA-approved, zero-ozone-depleting HFO blowing agent featuring an ultra-low Global Warming Potential (GWP < 1). Engineered for use in residential and light commercial applications, THERMA-SHIELD® 2004 delivers superior thermal performance, strength, and moisture resistance. This system is compatible with most common construction materials and must be processed exclusively with IPS A-Side (ISO).

The benefits of **THERMA-SHIELD® 2004** include: exceptional thermal insulation, minimizes moisture and air infiltration, and enhances structural integrity. This non-fibrous material installs quickly and is classified as a FEMA Class 5 flood damage-resistant material.

PRODUCT PERFORMANCE DATA

PROPERTY	TEST METHOD	VALUE
Core Density (center, at 2" - 3" per pass)	ASTM D1622	1.8 - 2.0 pcf (nominal)
Water Permeance @ 2"	ASTM E96	1.09 perms; <1.0 perms @ 1.25" (calculated, Class II vapor retarder)
Air Permeance @ 1"	ASTM E2178	Meets <0.02 L/s·m ² @ 75 Pa (<0.00393 cfm/ft ²), air impermeable insulation
Tensile Strength	ASTM D1623	>32 psi
Dimensional Stability	ASTM D2126	-1.9% total change @ 158°F / 97% RH / 168 hrs
Flame Spread Index	ASTM E84	≤ 25
Smoke Development Index	ASTM E84	≤ 450
Closed-Cell Content	ASTM D6226	>95%
Water Absorption (% Volume)	ASTM D2842	<1%
Compressive Strength	ASTM D1621	28.8 psi
Fungi Resistance	ASTM C1338	Pass (no growth)
Surface Burning Characteristics	ASTM E84	Class A
Bio-Based Content	UL 9798 / ASTM D6866	2%
Attic & Crawl Space Installations	ICC-ES AC307 Appendix X	Approved with and without prescriptive ignition barriers; assemblies and thicknesses per CCRR-0674 [VERIFY: thicknesses not in source]
Code Compliance Standard	ICC 1100 (ANSI); ASTM C1029 Type II	Meets

PROCESSING PARAMETERS

PARAMETER	RECOMMENDED RANGE
Dynamic Fluid Pressure	900 - 1200 psi spray pressure (proportioner set pressure 1150 - 1450 psi)
Mixing Ratio	1:1 by volume
Hose Heat	Cold conditions 115 - 130°F; warmer conditions 110 - 125°F
Preheat Temperature	"A" & "B" Components: cold conditions 115 - 130°F; warmer conditions 110 - 125°F
Recommended Mixing Chamber	02
Storage Temperature	50 - 80°F
Ambient Range	Regular reactivity 40 - 120°F; Winter reactivity 20 - 55°F
Ambient Temp During Spray	40°F-120°F
Moisture Content (Substrate)	<19%
Max Lift per Pass	4" maximum (1/2" minimum); dual lifts back-to-back up to 3.5" per lift (7" total); above 3.5", allow 10 minutes of cooling per inch between passes

GENERAL PRODUCT INFO

ITEM	DESCRIPTION
Product Color	White
Packaging	55-gallon drum
Re-entry Time (worker)	2 hours @ 20 ACH; 8 hours with minimal ventilation (ASTM D8445)
Re-occupancy	24 hours (residential: 24 hours after application ends with a minimum 0.3 ACH mechanical ventilation for the duration)
Third-Party Testing	Intertek Testing Services NA, Inc.
Code Report	CCRR-0674

THERMAL RESISTANCE

THICKNESS (INCH)	R-VALUE
Less than 3.5	7.4 per inch
3.5 and greater	7.1 per inch

Aged R-value per ASTM C518.

PROCESSING GUIDELINES

PRECONDITIONING:

Warm material to a minimum of 70°F at least 24 hours prior to installation and maintain 70 - 75°F during the install. Cold material may thicken and cause cavitation.

PRESSURE SETTINGS:

Use a plural-component proportioner rated for at least 900 psi dynamic pressure. Set proportioner pressure to 1150 - 1450 psi and maintain spray pressure between 900 - 1200 psi.

TEMPERATURE SETTINGS:

Hose & preheater: 115 - 130°F in cold conditions; 110 - 125°F in warmer conditions (both A & B). Adjust in ± 3°F increments based on substrate, ambient temperature, and humidity. Warmer temps for winter, cooler for summer.

RECOMMENDED APPLICATIONS

RESIDENTIAL INTERIOR APPLICATIONS:

Ideal for use in wall cavities, ceilings, attics, crawl spaces, interior foundations, cathedral ceilings, ductwork, and rim joists, on wood, wood-based products, plastics, metal, and concrete. Attic and crawl space installations per CCRR-0674.

COMMERCIAL INTERIOR APPLICATIONS:

Designed for walls, foundation walls, and the underside of roof decks in common commercial insulation applications. Not for exterior roofing. Not for cold-storage structures such as coolers and freezers unless the structure was designed by a design professional for that use.

APPLICATION STEPS

Applied at 1/2" minimum to 4" maximum per pass, with optimized coverage in high-lift applications at 3" to 4". Multiple thinner passes can increase density and reduce yield. Ambient temperature range: Regular 40 - 120°F | Winter 20 - 55°F. Once installed material has cooled, additional passes may be applied to increase total thickness. Applications outside these recommendations can develop high exothermic temperatures; allow thick passes to cool and avoid excess thickness. Ventilate the application space during and after application; consult EPA and industry ventilation guidance for spray polyurethane foam.

1. Clean surfaces per "Substrate Preparation."
2. If required, apply primer and allow it to cure fully.
3. Flush the proportioner before switching materials.
4. Spray a mock-up or sample area before starting the full-scale project; test the pattern before spraying.
5. Allow each lift to cool before applying the next.
6. Regularly inspect foam appearance and adhesion.

LIQUID PROPERTIES @77°F

PROPERTY	A-SIDE (ISO)	B-SIDE (RESIN)
Specific Gravity	Refer to IPS A-Side (ISO) documentation	1.2 (at 70°F, ASTM D1638)
Viscosity	Refer to IPS A-Side (ISO) documentation	600 - 800 cps (Brookfield)

SUBSTRATE PREPARATION

WOOD

Ensure the substrate is dry and clean.
Moisture content must be below 19% before spraying.
Remove dust, oil, or debris.
Fill gaps with suitable backer rods or fillers.
Foam may be applied to wood substrates down to 20°F using cold-weather techniques such as flash passes or picture framing to wet the studs, each with a 5-minute cooling time.

STEEL & OTHER METALS

Verify adhesion and suitability through field testing.
Blasting or priming may be required depending on substrate condition.
Heat-sink substrates may be sprayed down to 30°F using a flash pass; supplemental heat and wetting the studs may be required to avoid thermal shock.

CONCRETE

Must be clean, cured (28 days or more), and free of dust or oil.
Fill voids or cracks before application.
Heat-sink substrates may be sprayed down to 30°F using a flash pass; supplemental heat may be required to avoid thermal shock.

PREVIOUSLY APPLIED FOAM

Remove any old or incompatible foam or coatings.
Always test adhesion before full application.

WIRING & PLUMBING

Fully compatible with CPVC piping (Paschal Engineering Study for SPFA).
Safe with standard electrical wiring (NEMA Bulletin 95).

STORAGE & SHELF LIFE

Store between 50 and 80°F.
Approximately 6-month shelf life (original, unopened containers, from date of manufacture).
Do not break the product seal during storage.
Store in a covered, secure location and never in direct sunlight. Storage above the recommended range shortens shelf life and may raise headspace pressure within packages.

HEALTH & SAFETY HANDLING

When spraying or handling THERMA-SHIELD® 2004 Resin and IPS A-Side (ISO), the following protective measures and equipment are recommended:

Protective Equipment

- Wear protective clothing chosen for the level of activity and exposure
- Use chemical-resistant gloves
- Wear a face shield or tightly fitting chemical safety goggles where a splashing hazard exists
- Wear a NIOSH-certified (or equivalent) organic vapor/particulate respirator as needed
- Always use appropriate respiratory, skin, and eye personal protective equipment (see SDS)

Exposure Precautions

- Avoid all contact with skin and eyes
- Do not ingest
- Do not inhale mists or vapors
- In the event of exposure, refer to the Safety Data Sheet (SDS) for first-aid procedures

Spill Response

In the event of a spill, contain and solidify the material and place it in suitable containers for disposal. Spilled material creates a high risk of slipping. Capture all cleaning solvents and other materials for proper disposal; do not leave them at the job site.

Disclaimer

The technical information provided herein is intended as general guidance only. Always consult the product label and Safety Data Sheet (SDS) before using this product.

HANDLING & SAFETY

- Provide local exhaust ventilation to control vapors and mists; ventilate the application space during and after application.
- Always wear appropriate respiratory, skin, and eye protection when handling and processing polyurethane chemical systems.
- Avoid contact with eyes and skin; avoid inhaling mist or vapor.
- Dispose of materials per local regulations.
- For full details, consult the Safety Data Sheet (SDS).
- In emergencies, call CHEMTREC: 1-800-424-9300

THERMAL BARRIERS

Foam plastic installed in walls or ceilings may present a fire hazard unless protected by an approved, fire-resistant thermal barrier with a finish rating of not less than 15 minutes, as required by building codes. Rim joist and header areas may not require additional protection under the IRC and IBC. In attics and crawl spaces, foam plastic must be protected against ignition by code-prescribed or properly tested materials. For details on approved heat and fire protection barriers, refer to Code Compliance Research Report CCRR-0674.

ADHESION

Substrates must be clean, dry, and free of grease, oil, dirt, and surface moisture. The moisture content of porous materials must be below 19% prior to foam application. Contact IPS Technical Services for guidance on material compatibility, surface preparation techniques, and adhesion to common construction substrates. Spray a mock-up or sample area before starting the full-scale project to see how all materials install and to evaluate their properties.

It is the responsibility of the builder or designer to determine the suitability of this material for each specific project. The installer must verify product compatibility at the time of application, as variations in weather, materials, and site conditions can affect product performance.

PRECAUTIONS

Like many building materials, spray polyurethane foam is combustible. High-intensity heat sources such as welding or cutting torches must not be used in contact with or near the foam. Do not use in areas with a maximum service temperature above 180°F (82°C). After installation, the foam must be covered with an approved thermal barrier in accordance with local building code requirements.

Improper application, including excessive pass thickness, off-ratio material, and spraying into or under rising foam, can produce dangerously high reaction temperatures that may result in fire and in odors that may not dissipate. Improperly installed foam, including A-only, B-only, off-ratio, or excessively thick material, must be removed and replaced with properly processed foam. Remove large masses to a safe outdoor area, cut them into smaller pieces, and allow them to cool before disposal.

MAINTENANCE

Regular equipment cleaning ensures consistent performance. Follow the equipment manufacturer's guidelines for long-term maintenance and storage. Report any product or equipment issues to IPS Technical Support.

TECHNICAL SUPPORT

For application questions, troubleshooting, or training:
IPS Technical Support: 812.776.6727
Website: SPRAYIPS.COM

