

HEATLOK SOYA HFO/POLARFOAM SOYA HFO

Note: This specification should be adapted for each project. All notes are for guidelines only.
An updated .word version could be downloaded at www.demilec.ca.

PART 1 - GENERAL

1.1. GENERAL

1. Conform to sections of Division 01 xx xx as applicable.

1.2. WORK INCLUDED

1. Spray application of polyurethane foam to provide insulation, air barrier and vapour barrier, including surface preparation.

1.3. INCLUDED SECTIONS *Note: Optional Amend to suit project*

Supply and installation of transition strip membrane, through wall flashing and primer material as required in accordance with sections 07 25 00 and 07 27 00.

1.4. RELATED SECTIONS *Note: Amend to suit project*

- | | | |
|-----|--|------------------|
| 1. | Concrete Curing | Section 03 39 00 |
| 2. | Structural Pre-cast Concrete | Section 03 40 00 |
| 3. | Unit Masonry | Section 04 05 00 |
| 4. | Metal Decking | Section 05 10 00 |
| 5. | Rough Carpentry | Section 06 10 00 |
| 6. | Waterproofing | Section 07 10 00 |
| 7. | Vapour Barrier | Section 07 26 00 |
| 8. | Air Barrier Section | Section 07 27 00 |
| 9. | Flexible Flashing | Section 07 65 00 |
| 10. | Pre-formed Roofing and Cladding/Siding | Section 07 70 00 |
| 11. | Fireproofing | Section 07 80 00 |
| 12. | Thermal Barrier | Section 07 81 29 |
| 13. | Fire Block | Section 07 84 00 |
| 14. | Gypsum Board | Section 09 20 00 |

1.5. REFERENCES

1. CAN/ULC-S705.1-15 Standard for Thermal Insulation Spray Applied Rigid Polyurethane Foam, Medium Density, **Material Specification**.
2. CAN/ULC-S705.2 Standard for Thermal Insulation Spray Applied Rigid Polyurethane Foam, Medium Density, - **Application**.
3. Canadian Urethane Foam Contractors Association, (CUFCA)"Manual for Installers of Spray Polyurethane Foam Thermal Insulation".
4. CUFCA Quality Assurance Program.
5. CCMC 14078-L Spray Polyurethane Foam Insulation HEATLOK SOYA HFO/POLARFOAM SOYA HFO
6. CAN/ULC-S770 Standard Test Method For Determination Of Long-Term Thermal Resistance of Closed-Cell Thermal Insulating Foams.

1.6. SUBMITTALS AND SAMPLES

1. Before starting the work, submit in accordance with sections **01 33 00 and 01 35 00**, result of independent laboratory test reports, data sheets, physical proprieties, meeting or exceeding requirements of the standard in reference to this specification.

2. Submit a laboratory report of the adhesion compatibility with: flashing membranes, coatings and substrates.
3. License under CUFCA and certification of applicators under CUFCA to be submitted to the consultant upon request and prior to the beginning of the work.
4. Submit by the manufacturer a conformity certification to NBC of the polyurethane foam system.
5. Submit independent laboratory results on vapour permeance proprieties for each composition wall assembly. The report should be done by an independent SSC certified larorytory in accordance with ASTM E96.
6. Submit test results by an independent and SCC certified laboratory on air barrier material performance, conducted in order to certify that the air barrier material rating meets National Building Code requirements and this specifications art: 2.3.11.
7. Submit test results by independent laboratory on LTRR values according to CAN/ULC-S770 for all SPF system used on the project. Other test methods will not be accepted.
8. When the building has more than 3 stories and the exterior finish is not masonry or concrete, submit the assembly test result in accordance with art: 3.2.3.8 of NBC.

1.7. QUALITY ASSURANCES

1. Contractor performing work under this section must be certified by CUFCA for a minimum of 5 years.
2. Upon request of consultant, submit a copy of the contractor quality control report as requested in CAN/ULC-S705.2.
3. Conduct site tests of sprayed work as required by the CUFCA Quality Assurance Program.
4. Upon request, submit manufacturer/supplier field applied product quality control report.

1.8. MOCK-UP

1. Provide mock-up of insulation and air barrier in accordance with section 01 75 00.
2. Construct typical exterior sample wall in conjunction with section 01 75 00, incorporating window frame head jamb and sill and building corner condition with foundation wall junction.
3. Acceptance of mock-up sample may be part of the completed work.
4. Do not commence work until sample installation has been accepted.
5. Acceptance of sample preparation will be a reference for minimum acceptance of the work. Any need for deviation of the mock-up acceptance shall be reported in writing.
6. Upon consultant request, provide in writing manufacturer acceptance of the mock-up quality.

1.9. DELIVERY, STORAGE AND HANDLING

1. Materials shall be delivered in manufacturers original sealed containers clearly labelled with manufacturer's name, product identification, safety information, net weight of contents, and expiring date.
2. Material is to be stored in a safe manner and where the temperatures are in the limits specified by the material manufacturer.
3. Empty containers have to be removed from site on a daily basis in accordance with CAN/ULC-S705.2.

1.10. APPLICATION CONDITIONS

1. At the beginning and during the work, allow access to the job site by DEMILEC representatives.
2. Execute the work of this section when the temperature of the air and substrate are within the limits of the data sheet supplied by the manufacturer.
3. Apply the spray foam only when the relative humidity is below 80%.
4. Prepare all surfaces in accordance with the manufacturer's recommendations and CAN/ULC-S705.2 Standard.

1.11. PROTECTION

1. Ventilate area receiving insulation to maintain safe working conditions.
2. Ensure the safety of the workers in conformity with local regulations, standards and manufacturers recommendations.
3. For spraying inside of occupied buildings:
 1. Delimit the working space (with a polyethylene if required).
 2. All the ventilation ducts must be sealed before the spraying.
 3. Install a fan extracting air outside the building.
 4. The workspace, in retrofit construction (occupied buildings), must be under negative pressure at a minimum exfiltration rate of 0.3 air changes per hour.
 5. The workspace, in retrofit construction, must be under negative pressure for a minimum of 24 hrs.
 6. Confirm everyone in the workspace has respiratory protective equipment and personal protective equipment in conformity with provincial regulations and the CAN/ULC-S705.2 standard.
 7. Protect adjacent surfaces, windows, equipment, and site areas from damage of over spray.

1.12. WARRANTY

1. Warrant work of this section against defects and deficiencies for a period of two years from date work completion.
2. Provide manufacturer's warranty for the field-applied product.

PART 2 - PRODUCTS**2.1 ENVIRONNEMENTAL REQUIREMENTS**

1. The product shall not contain any CFC, HCFC or any ozone depletion substance.
2. The Spray Polyurethane Foam Insulation shall have a minimum of 18% recycled content from post-consumer and post-industrial sources. The % shall be calculated by weight basis ratio of the recycled source in the final SPF system to be applied on the building.
3. The SPF shall contain a minimum of 4% renewable vegetable oil content.
4. The product shall have a HFO blowing agent with a global warming potential of 1 only. (GWP)

2.2 MATERIALS

1. Spray Applied Polyurethane Foam Insulation system in accordance with CAN/ULC S705.1-15 Standard for Thermal Insulation Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification and those specific objectives performances.
2. Product: HEATLOK SOYA HFO / POLARFOAM SOYA HFO
3. The product shall be evaluated by the CCMC.

2.3 PHYSICAL PROPERTIES

	TEST	OBJECTIVE	RESULT	UNITS
.1 Density	ASTM D1622	Min.	33.7	Kg/m ³
.2 Thermal Resistance	ASTMC518, 90 days/60°C	Min.	1,23 /25 mm	RSI
		-	7 /1 "	R
.3 Long Term Thermal Resistance (LTTR) Design value	CAN/ULC S770	Min.	1.05/ 25 mm 6/1"	RSI R
.4 Dimensional stability	ASTM D-2126 (% of change in volume at 28 days)	-	-	-
	-20°C	Min.	-1.4	%

	70°C H.R. > 97 +/- 3%	Max.	+1.3	%
	80°C	Max.	+9.4	%
.5 Flame Spread Index	CAN/ULC S102	Max.	245	FSI
.6 Smoke Develop Index	CAN/ULC S102	Max.	396	SDI
.7 Compressive strength	ASTM D1621	Min.	171	KPa
.8 Tensile strength	ASTM D1623	Min.	401	KPa
.9 Open cells	ASTM D2856	Min.	<1	%
.10 Water absorption	ASTM D2842	Max.	0.64	%
ASTM E 2178-13	ASTM E 2178-13 (30.1mm, top skin removed)	Max.	0.0017	L/s· m ² @75 Pa
.12 Fungi Resistance	ASTM C1338	Min.	No Fungal Growth	-
.13 VOC	CAN/ULC S774	Max.	1	jour
.15 Water vapour permeance	ASTM E96 (50 mm core)	Max.	51	ng/Pa s.m ²
.20 Application temperature	-	Min.	-20	°C

2.4 PRIMERS

1. Install primers in accordance with the manufacturer recommendations and the CAN / ULC-S705.2 standard.
2. For oily metal surface like Z-Bar, steel deck roof or curtain wall pan, aluminum tube, and PVC, before spraying polyurethane foam apply ADBOND 8388-1 adhesive primer, color: red.

2.5 EQUIPMENT

Equipment shall be as recommended in CAN/ULC-S705.2 and approved by the foam manufacturer for type of application.

PART 3 - EXECUTION

Note: Check the adhesion and compatibility with: flashing, membranes, coatings, and follow DEMILEC typical details drawing.

3.1 EXAMINATION

1. Verify that surfaces and conditions are suitable to accept work as outlined in this section.
2. According to the prescriptions of the standard CAN/ULC-S705.2, verify the conditions of surfaces.
 1. Surfaces to be covered with spray foam shall be free of an excess of moisture, frost, oil, rust, and any other foreign material able to have a negative effect on the adhesion of the product. In doubt, apply a primer.
 2. Allow time for the complete cure of the substrates: concrete, mortar, fillers, membranes, primers, coatings or other surfaces, before applying the spray foam.
 3. Verify the adhesion of membranes and coatings to different substrates are good, taking in account the climatic conditions for the application of membranes, coatings and spray foam.
 4. If the thickness of application is greater than 50 mm, the membrane detail around opening must be installed in accordance with DEMILEC typical details. **Drawings are available at www.demilec.ca or contact your representative.** Option, use mechanical fastener to secure self-adhesive membranes around openings only.
 - a) Option 1, use mechanical fastener to secure self-adhesive membranes around openings only. (galvanized steel angle: 13 mm x 25 mm x 0.42 mm in thickness (gypsum corner bead). Fixed at 400 mm C/C). **Note: Refer to mechanical fastener section (07 27 00) for coordination.**
 - b) Option 2, no mechanical fastening, premembraned plywood (see Demilec typical details)

5. All oily metal surface like Z-Bar, steel deck roof or curtain wall pan, aluminium tube, and PVC, shall be primed as referenced in CAN / ULC S705.2 art: A 1.7. **If required, all spray applied membrane shall be installed before "Z" bars.**
 6. Identify the moisture content of all different building materials.
 7. Report in writing any defects in surface or conditions that may adversely affect the performance of products installed and follow manufacturer's recommendations.
 8. For occupied building application, confirm that all requirements in Article 1.11 are in place.
 9. Commencement of work outlined in this section shall be deemed as acceptance of existing work and conditions.
3. Ensure that all the work that needs to be performed prior to the application of the spray foam insulation is completed. Including these elements, but without limitation:
- .1 Masonry anchor;
 - .2 Furring, wood blocking, sub-frames, flashing, mechanical fastening;
 - .3 Coatings, membranes, flashings, mechanical fastening
 - .4 Mechanical and electrical works;
 - .5 Fire-stop
 - .6 Primer.

3.2 APPLICATION

1. Spray application of polyurethane foam shall be performed in accordance with CAN/ULC-S705.2.
2. Apply spray foam on dry, solid and clean surfaces when the climatic conditions are in accordance with the CAN/ULC S705.2 standard and with Demilec recommendations.
3. Apply only when surfaces and environmental conditions are above -10°C (-4°F). Refer to technical data sheets.
4. Apply in consecutive passes (min. 15 mm (5/8"), max. 50 mm (2"))
5. Apply to obtain the thickness as indicated on drawings, or (mm) for wall, (mm) for roof to achieve the required thermal insulation value. Use only the Long Term Thermal Resistance (LTTR) CAN/ULC S 770 test method to calculate design R value.
6. Do not spray closer than 3" (75 mm) to chimneys, recess spotlight or other source of heat.

3.3 TOLERANCE

1. Apply the product to achieve an average thickness of ± 6 mm (1/4"), from (9 readings on 1 m²), of the thickness requirements in the drawings at a minimum of 1 m² readings for each 150 m² surface sprayed.
2. Apply the insulation uniform in accordance to NBC article 9.25.2.3. 1).

3.3 QUALITY CONTROL ON SITE

If requested, a quality control report will be issued after a site inspection by Demilec.

3.4 FIRE PROTECTION

1. Any open flame or welding is not permitted to be in contact with the Spray Polyurethane Foam in place. Use protection as required in CAN / ULC S705.2.
2. All plastic insulation must be protected from interior occupancy space by an approved thermal barrier to meet the requirements of local Building Codes.

Note: Work related to thermal barrier installation should be specified under appropriate sections.

-----END OF THE SECTION-----