ROCKWOOL 1 HOUR & 1.5 HOUR FIRE RATED I-JOIST ASSEMBLY LISTINGS

ROCKWOOL COMFORTBOARD™ 80 has been tested and approved for use in I-joist floor-ceiling and roofing assemblies that are required to meet a 60-minute and 90-minute fire rating [Appendix A]. These assemblies have been expanded via an engineering judgement [Appendix B] to include 2” ROCKWOOL MONOBOARD, TOPROCK, TOPROCK DD and TOPROCK DD MULTIFIX products on the unexposed side of the assembly.

* Batts may be used for either fire blocking in concealed spaces or for thermal performance in the above assembly.

FIRE TESTING

Fire testing was conducted in accordance with the applicable requirements of, and following the standard methods:
- CAN/ULC-S101-14, Standard Method of Fire Endurance Tests of Building Construction and Materials

The ASTM E119 and CAN/ULC-S101 test subjects a loaded assembly to a full-scale furnace fire until failure occurs or until the test specimen has withstood the conditions of acceptance as per the standard for the given rating.

The fire resistance testing yielded a fire resistance rating of 93 minutes for an unrestrained I-joist floor assembly as well as a 60-minute fire resistance rating.

ACOUSTICS

Estimated STC ratings for the tested assembly are an STC of 54. This is an estimate based on knowledge of tested systems. Due to the change of components between various roofing assemblies, acoustic performance for actual systems need to be tested exactly as they are designed and to be constructed.

CODE REFERENCES

As per Section 3.2.2. of the 2015 National Building Code of Canada, the following major occupancy classifications are required to have a 1 hour fire resistance rating for either combustible or non-combustible construction:

1. **Group C** – Apartments, boarding houses, clubs [residential], colleges [residential], convents, dormitories, hotels, houses, lodging houses, monasteries, motels and schools [residential]
2. **Group D [up to 6 storeys non-combustible, sprinklered or 6 storeys combustible, unsprinklered]** – Banks, barber and hairdressing shops, beauty parlours, dental offices, dry cleaning establishments, laundries, medical offices, offices, police stations, radio stations and small tool and appliance rental and service establishments
3. **Group F, Div 3 [up to 6 storeys]** – Creameries, factories, laboratories, power plants, salesrooms, sample display rooms, storage garages, storage rooms, warehouses and workshops

**CONCLUSION**

ROCKWOOL’s fire and acoustic tested i-joist assemblies provide an innovative system where a second layer of gypsum is replaced with a continuous layer of mineral wool. This unique system has now been expanded to include roof assemblies that make use of ROCKWOOL’s mineral fibre roofing products.
1. **SHEATHING**: Min. 23/32 in. thick PS1 or PS2 wood structural panel installed perpendicular to the wood I-joists and nailed using min. 8d common nails at max. 12 in. on center (oc) in the field, and 8 in. oc at panel ends and around perimeter of assembly. Min. 19/32 in. thick PS1 or PS2 wood structural panel when I-joists are spaced max. 16 in. oc.

2. **STRUCTURAL MEMBERS**: Wood I-joists conforming to ASTM D5055, spaced max. 24 in. oc. I-joists manufactured with solid wood or LVL flanges.

   ALTERNATIVE – Solid sawn dimensional lumber 2 in. × 10 in., or wood truss oriented in the horizontal direction.

3. **CERTIFIED MANUFACTURER**: ROXUL Inc.

   **CERTIFIED PRODUCTS**: ROXUL mineral wool insulation board and semi-rigid batt products

   **CERTIFIED MODELS**: ROXUL SAFE®, SAFE® 45, COMFORTBOARD™ 80, COMFORTBOARD™ 110

   ROXUL mineral wool insulation board 2 ft. × 4 ft. with a min. density of 4.5pcf and min. thickness of 1-1/2 in. ROXUL products can be cut to the required thicknesses.

   Install between min. 1/2 in resilient channels (item 4) under bottom flange of wood I-joists. Insulation boards attach to the wood I-joist flanges using 1-1/2 in. #8 x 2 in. staples at the corners and every third of the insulation board.

4. **RESILIENT CHANNEL**: Install 22 mil galvanized steel RC-1 resilient channel that is 2-5/8 in. wide × 1/2 in. deep, with 1-1/4 in. screw flange and 1/2 in. return lip. Install resilient channel perpendicular to the wood I-joists, spaced 16 oc, using 2-1/2 in. Type W coarse thread screws. Overlap resilient channels by a min. 4 in. at the joints and install double resilient channels at gypsum board end joints.

5. **GYPSUM BOARD**: Attach USG or CGC Sheetrock® Type C, min. 5/8 in. gypsum board, to 1/2 in. resilient channel (item 4) using no. 6 × 1-5/8 in. bugle head self-drilling screws spaced 1 in. from ends/joints, and spaced 12 in. oc in the field and 8 in. oc around the perimeter of each panel. Cover all exposed joints and fasteners with joint compound.

6. **BATT INSULATION (Optional)**: Friction fit ROXUL batt insulation into the cavities for use in the assembly.
1. SHEATHING: Min. 23/32 in. thick, F81 or F82 wood structural panel installed perpendicular to the wood I-joists and nailed using min. 8d common nails at max. 12 in. on center (oc) in the field, and 6 in. oc at panel ends and around perimeter of assembly. Min. 19/32 in thick F81 or F82 wood structural panel when I-joists are spaced max. of 16 in. oc.

2. STRUCTURAL MEMBERS: Wood I-joists conforming to ASTM D6555, spaced max. 24 in. oc. I-Joists manufactured with solid wood or LVL flanges with the following min. dimensions: 1-1/8 in. High × 2-5/16 in. Wide flange dimensions, 3/8 in. thick web, and min. 9-1/2 in. joist depth.

   ALTERNATIVE — Solid sawn dimensional lumber 2 in. × 10 in. or wood studs’ oriented in the horizontal direction and above min. dimensions.

3. CERTIFIED MANUFACTURER: ROXUL Inc.

   CERTIFIED PRODUCTS: ROXUL mineral wool insulation board and semi-rigid batt products

   CERTIFIED MODELS: ROXUL SAFE®, SAFE® 45, COMFORTBOARD™ 80, or COMFORTBOARD 110

   ROXUL stone wool insulation board 2 ft. × 4 ft. with a min. density of 4.5pcf and min. thickness of 1-1/2 in. ROXUL products can be cut to the required thicknesses.

   Install between min. 1/2 in resilient channels (Item 4) under bottom flange of wood I-Joists. Insulation boards attach to the wood I-Joist flanges using 15-1/2 CA × 1/2 in. × 2 in. staples at the corners and every third of the insulation board.

4. RESILIENT CHANNEL: Install 22 mil galvanized steel RC-1 resilient channel that is 2-5/8 in. wide × 1/2 in. deep, with 1-1/4 in. screw flange and 1/2 in. return lip. Install resilient channel perpendicular to the wood I-Joists, spaced 16 oc using 2-1/2 in. Type W coarse thread screws. Overlap resilient channels by a min. 4 in. at the joints and install double resilient channels at gypsum board ends.

5. GYPSUM BOARD: Attach USG or CGC Sheetrock® Type C, 5/8 in. gypsum board, to 1/2 in. resilient channel (Item 4) using no. 6 × 1-5/8 in. bugle head self-drilling screws spaced 1 in. from ends/joints, and spaced 1-2 in. oc in the field and 6 in. oc around the perimeter of each board. Cover all exposed joints and fasteners with joint compound.

6. BATT INSULATION (Optional): Friction fit ROXUL batt insulation into the cavities for use in the assembly.
APPENDIX B

Issue Date: October 25, 2017
Letter Report No: 183869029-TOR-001

Pavan Mehta
Roxul Inc.
8924 Esquesing Line
Milton, ON
L9T 6V3

Phone: 905-875-5753
Email: pavan.mehta@roxul.com

Subject: Evaluation of roof assembly to include MonoBoard, TopRock and TopRock DD Multifix

Dear Pavan,

Intertek Testing Services NA Ltd. (Intertek) is conducting an engineering evaluation for Roxul Inc. (Roxul), on their roof-assembly, to evaluate fire performance of the assembly if 2 in. of Rockwool MonoBoard, Rockwool TopRock or Rockwool TopRock DD Multifix is added on the unexposed side of the assembly. The evaluation is being conducted to determine if the Roxul products will maintain compliance with Intertek Listing “Roxul Inc. Insulation for use in roofing assemblies. Rockwool Safe 45, COMFORTBOARD 80 & COMFORTBOARD 110” (Spec ID: 38971) with design listings R/M/BI 60-01 and R/M/BI 90-01 to ASTM E119-16a and CAN/ULC S101-14.

The Rockwool product is being added on the unexposed side of the assembly, above component #1. This addition to the assembly will be evaluated on the following engineering principals:

- The original result of the test and the assemblies safety factor in the passing result
- Potential for the mineral wool to trap heat inside the cavities

The unexposed side maximum requirement is 400°F. The Roxul assembly recorded a maximum temperature of 290°F on the unexposed side. The temperatures in the cavity must be noted, as the addition of Rockwool on the unexposed face could trap the heat within the cavity. Thermocouples 38, 37, 32, and 41 all located at mid-
depth on four of the I-joist webs have temperatures of 185°F, 220°F, 208°F, and 379°F respectively at 90 minutes. The thermocouples on the unexposed side show maximum temperatures of 125°F to 200°F. These results show that the temperature does not fluctuate greatly from the cavity to the unexposed face. Therefore, the exposed gypsum and insulation directly above the cavity maintains the temperature in the cavity; thus, not allowing heat to be released into the cavity and unexposed surface. The addition of the Roxul product will not affect the cavity, as the heat is not built up in the cavity. It is Intertek’s professional opinion that the use of 2 in. thick Roxul will not significantly increase the temperature in the cavities.

If you have any questions regarding this letter report, please do not hesitate to contact the undersigned.

Sincerely,

INTERTEK TESTING SERVICES NA, INC.

Reported by: 

Reviewed by:

Paul Maida  
Technical Analyst – Evaluation Services

Greg Dupuis  
Manager ES - Middleton