

January 22, 2019

Carmen Bellavia
3 In 1 Roof Inc.
532 SW Natura Ave.
Deerfield Beach, FL 33441

Dear Mr. Bellavia

R&D Impact Results for Polyurethane Foam Roof Tile

This letter provides the results of the R&D Impact testing conducted January 2, 2019 on 3 In 1 Roof's Polyurethane foam roof tile. Testing was performed by dropping a 2" diameter chrome steel ball weighing 1.18 lbs through a PVC tube from 20 feet above the tile surface. By falling from a height of 20 feet, the impact ball was traveling approximately 25 MPH immediately prior to impact. The impact force on the tile corresponds to a kinetic energy of 23.7 ft-lbs (32.1 J). The impact ball was repeatedly dropped at the same location until it had completely penetrated through to the underside of the tile and began to show impact damage to the substrate.

The first impact location was near the leading edge of the tile and centered between the foam pockets on the underside of the tile. This location served to test the tile at its thickest dimension. This location was impacted 51 times prior to the impact ball completely penetrating through the tile. Reference Photos No. for additional details.

The second impact location was at the side overlap seam connecting two adjacent tiles near the top edge of the tile. This location served to test the tile at the seam and at its minimum thickness. This location was impacted 22 times prior to the impact ball completely penetrating through the tile. Reference Photos No. for additional details.

Please feel free to contact me if you need any additional information or would like to discuss the results outlined above.

Yours sincerely,

Alan Rule
Technical Writer / Special Projects





Photo No. 1
1st Location – Underside of Tile at 20 Impacts



Photo No. 2
1st Location – Underside of Tile at 31 Impacts



Photo No. 3
1st Location – Top of Tile at 51 Impacts



Photo No. 4
1st Location – Underside of Tile at 51 Impacts



Photo No. 5
2nd Location – Top of Tile at 22 Impacts



Photo No. 6
2nd Location – Underside of Tile at 22 Impacts