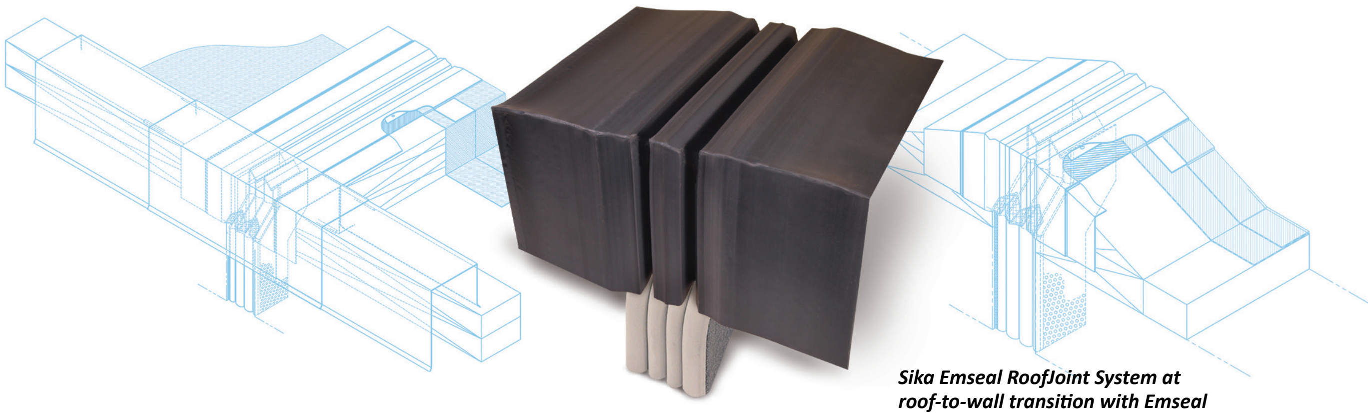
PRODUCT DATA SHEET

RoofJoint

Watertight, high-movement, weldable roof expansion joint

US Patents: 9,850,662 | 10,851,542



Sika Emseal RoofJoint System at roof-to-wall transition with Emseal Seismic Colorseal.

Product Description

RoofJoint by Sika Emseal is a dual-seal, double-flanged, extruded thermoplastic rubber system for sealing expansion joints in roofs. Watertightness is achieved through positive integration with the roofing membrane and a purpose-designed system for transitioning between the joint in the roof and joints in walls.

Features

- High movement
- Redundant sealing
- Double-level roof-membrane integration flanges
- Redundant fastening—adhesion or welding & termination bar
- Heat welded transitions at tees, crosses, roof-to-wall, etc.
- Watertight transition to SEISMIC COLORSEAL ® wall joints
- Uniquely addresses wall joint to roof joint interface
- UV-stable
- TPV or PVC for broadest liquid and sheet membrane compatibility

What's the Difference?

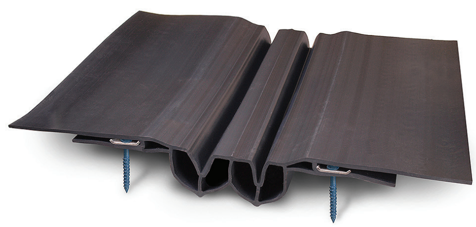
The waterproofing elements of roof expansion joints currently are looped membranes. The loops either hang down into the joint in the case of metal-cover systems, or are humped up by means of a foam backing. Either way, while they look good in cross-section, looped membranes don't work well at the transition from the roof joint to wall joints where they often lead to drainage problems.

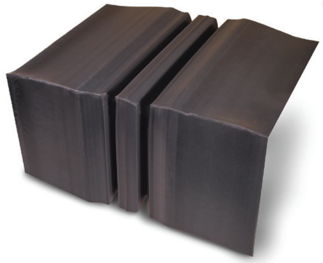
Sika Emseal's decades of experience lies in sealing parking and plaza deck joints with systems that sit in the joint.

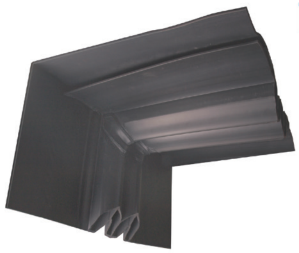
As with the products used for these other critical waterproofing applications, an extruded joint profile that incorporates redundant levels of sealing, low-strain compression and extension capability, and a broad cross-section that can be welded to ensure continuity of seal in changes in plane and direction, are the hallmarks of Sika Emseal's RoofJoint system.

Unique to Sika Emseal's RoofJoint is the double-level flange. This flange configuration facilitates multi-layered, watertight integration with the roofing membrane.

The lower flange is welded or sealed to the roof membrane brought up to the joint. A termination bar and anchors mechanically locks the flange to the roof decking or blocking.







RoofJoint transition shown from top view and underside (with reinforced weld).

The upper flange counter-flashes the termination bar and underlying membrane ensuring that penetrations made by the attachment of the termination bar are completely sealed. The upper flange is further flashed to the roofing membrane by means of the roofing manufacturers' standard flashing tape or by over-welding a strip of roofing.

RoofJoint includes necessary termination bar and fasteners required for installation.

Movement at the joint is accommodated by the folding design of the gland. The double-cell configuration ensures redundancy in sealing. The geometric shape is purpose-designed for the lowest strain during movement to ensure longevity.

RoofJoint Composition - NPVC or TPV

RoofJoint is available in two thermoplastic formulations, Nitrile PVC flexible alloy and TPV.

Nitrile PVC Thermoplastic Alloy

Manufactured for direct welding to PVC-based roof membranes, adhesion into hot or cold-applied asphaltic systems, most urethane based liquid-applied membranes, and PMMA/PUMA systems..

The NPVC version of RoofJoint is extruded from a thermoplastic PVC alloy. Unlike typical PVC's this flexible alloy is recyclable. While other PVC's can be down-cycled (made into something lesser than the original part) the RoofJoint, during die balancing for example, can be ground up and put directly back into the extrusion stream. This assures virtually no waste in its processing.

The compounds are based on ultra-high molecular weight PVC resins. This family extends the performance of flexible PVC by providing improved toughness, abrasion resistance, compression set resistance and low-temperature properties.

A Nitrile PVC thermoplastic blend was chosen for this product for its compatibility with most known roofing and waterproofing systems. It can be heat-welded to PVC roofs, and subject to the recommended procedures of the particular roofing membrane manufacture in respect to preparation, cleaning, priming, etc, adheres well to the accessories of all glued systems.

TPV (Thermoplastic Vulcanizate)

Manufactured for welding to TPO (Thermoplastic Olefin)-based roof membranes , and for integration into EPDM roofing systems. The TPV version of RoofJoint, is offered for its ability to be welded to TPO and EPDM membranes.

Performance

Joint Sizes:

RoofJoint can be installed into joints from 2 to 9 inches wide (50 - 225mm).
RJ-0200 fits gaps from 2 to 3 inches (50mm - 75mm)
RJ-0400 fits gaps from 3 to 5 inches (75mm - 125mm)
RJ-0600 fits gaps from 5 to 7 inches (125mm - 175mm)
RJ-0800 fits gaps from 7 to 9 inches (175mm - 225mm)

Movement capability:

RJ-0200: 2 1/2 inches (60mm)
RJ-0400: 5 inches (125mm)
RJ-0600: 7 inches (175mm)
RJ-0800: 9 inches (225mm)

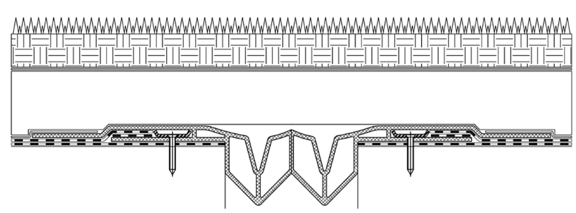
Continuity of Seal

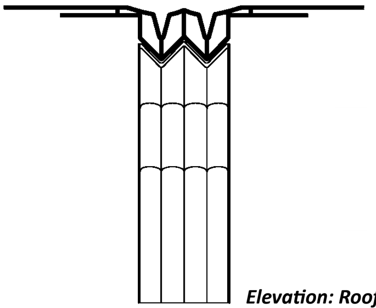
As with all Sika Emseal expansion joint systems, continuity of seal is extended to crosses, tees, upturns, downturns, roof-to-wall, and other compound conditions typically found in construction projects.

Factory-fabricated transition pieces can be welded to straight lengths in our plant wherever field measurements are provided or can be butt-welded to straight lengths in the field using simple equipment and training available from Sika Emseal. All welds are strengthened with reinforcing strips.

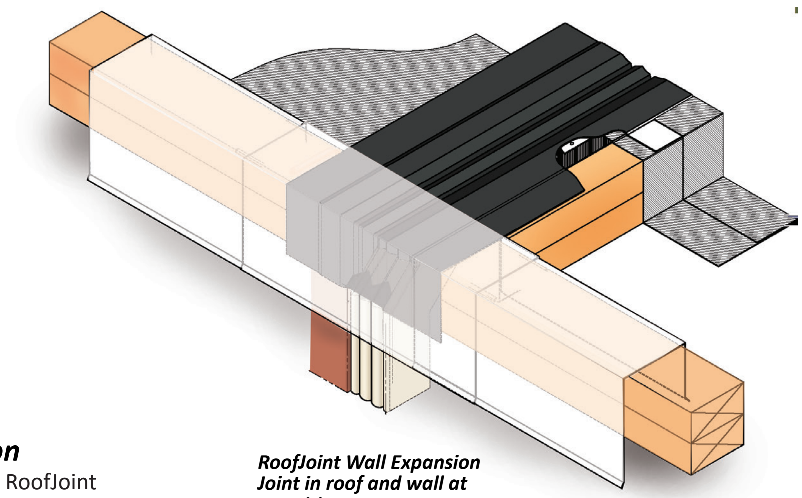
Green/Garden/Vegetative Roofs

RoofJoint is ideally suited for use in sealing the structural slabs beneath green, vegetative roof assemblies. Because the growing medium is loose, compressible and granular, movement that occurs at the structural slab can be absorbed without detrimental effect in the green roof overburden.





Elevation: RoofJoint integration with RoofJoint Closure



RoofJoint Wall Expansion Joint in roof and wall at transition

RoofJoint to Wall Expansion Joint Transition

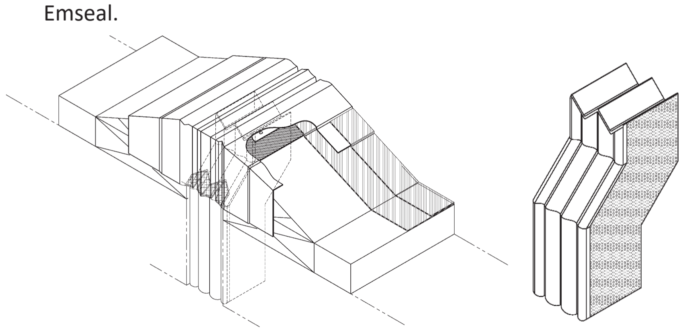
In particular, Sika Emseal has focused the development of RoofJoint on solving the problem of a watertight transition from the roof to the wall expansion joint. The solution lies in the Sika Emseal RoofJoint seated in the joint-gap, a factory welded downturn transition in the RoofJoint gland that is sealed at a ship-lapped 45-degree angle to mate with an interlocking factory-fabricated RoofJoint/Seismic Colorseal transition piece.

The result is an integrated wall and roof expansion joint system that is watertight.

Two Options: ***Solid-Wall*** RoofJoint Closure or ***Cavity-Wall*** RoofJoint Closure:

1. Solid-Wall RoofJoint Closure

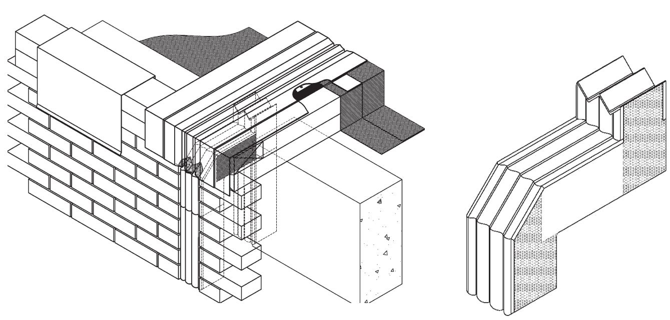
This factory-fabricated transition piece is manufactured from Seismic Colorseal wall-expansion joint material from Sika Emseal.



This single unit piece has factory-coated silicone bellows on the top and upper-back faces for integration with Seismic Colorseal in the wall and Horizontal Colorseal as a secondary seal and insulator across the roof. The silicone-coated top side of the closure is shaped to match the underside of the RoofJoint extrusion.
The Solid-Wall RoofJoint Closure is installed before installing the RoofJoint. It is installed ¾" down from the roof deck or wood blocking surface. A sealant band of silicone is applied across the upper mating surface of the closure. The RoofJoint is then installed. The underside of the RoofJoint will mate with the top of the already installed closure.

2. Cavity-Wall RoofJoint Closure

Like the solid-wall closure, the cavity-wall RoofJoint closure, is a factory-fabricated transition piece made from Seismic Colorseal. The difference is an extended, horizontal setback portion of coated foam to bridge the cavity from facade to structural backup wall. The sides of the "bridge" are additionally coated with silicone to seal them against moisture in the cavity and to constrain the lateral expansion of the foam into the cavity.



Colors

The TPV version is available in reflective white. The PVC version is available in both black and reflective white. Consult Sika Emseal for color variations to coordinate with traditional or reflective roofing membranes.

Non-Roof Applications

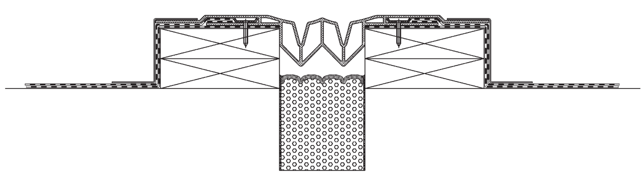
In addition to roof applications, RoofJoint can be effectively used for softscape plazas as well as split slab and hardscaped decks when drainage or other construction may be impeded by the expansion joint protruding above the structural deck elevation. In these cases an additional expansion joint seal would be needed at the wearing course. (See Emseal's SJS, DSM and DSM-DS.) As with roof applications where a fire-rated seal is also required, Emshield ® DFR can be installed directly below the RoofJoint.

Insulation

Insulation in the joint opening beneath a roof expansion joint is critical in maintaining energy efficiency in the structure. Insulation under Sika Emseal's RoofJoint can be achieved in two ways:

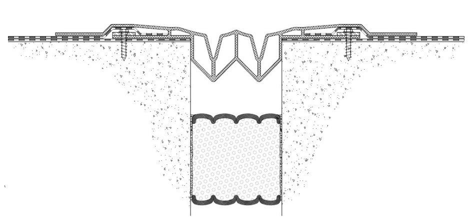
Insulation Method 1

(Specifying and Installing Horizontal Colorseal beneath the RoofJoint)
The advantage of this solution is that in addition to insulating, the Horizontal Colorseal will create an additional watertight barrier beneath RoofJoint that ties into the Seismic Colorseal RoofJoint closure and further ensures continuity of seal with the wall joint. The R-Value of Horizontal Colorseal is 2.15 per inch of depth. Therefore in 4-inch joint, Horizontal Colorseal has a depth of 4.5 inches and an R-Value of 9.675. To increase the R-Value using Horizontal Colorseal, specify an increased custom depth.



Insulation Method 2

(Specifying and Installing Emshield® DFR beneath the RoofJoint)
By installing DFR, it will provide all the same benefits as Horizontal Colorseal, but also provide a fire-rating.



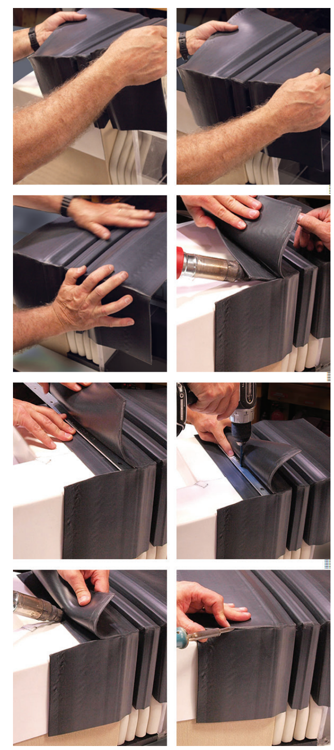
Installation

The unique dual-level flange provides numerous options for integration and flashing into roof membranes. The ultimate sequence of integration and decisions regarding integration method (welding, adhesive, adhesion strip, priming etc.) is at the discretion of the specifier and/or roofing membrane manufacturer.

In principle, the RoofJoint should be installed over the properly secured membrane either by welding or adhering the bottom side of the lower flap to the in-place roof membrane. The lower flap of the RoofJoint should then be mechanically fastened with the supplied termination-bar and anchors.

STEP 1: Install and secure the roof membrane

STEP 2: Install RoofJoint Closure into wall joints



STEP 3: Install RoofJoint starting at roof-to-wall factory–fabricated downturn

STEP 4: Adhere or weld lower RoofJoint flange to in-place roof membrane

STEP 5: Install termination bars and anchors

STEP 6*: Install another layer of roof membrane

STEP 7: Weld or adhere upper RoofJoint flap to upper roof membrane

STEP 8*: Counter-flash upper RoofJoint flap with more roof membrane

STEP 9: Install coping flashing sheet metal cap in overlapped configuration to accommodate movement at the structural joint

(*Note: STEPS 6 & 8 at the discretion and direction of the specifier and/or roofing membrane manufacturer.)

RoofJoint includes necessary termination bar and fasteners required for installation

Test Results

Table 1: Typical Physical Properties of RoofJoint NP Black

Properties	*Result (Average)*	*Test Method*
Tensile Strength, (psi) Die C specimens; Cond.: Min. 3h @ 73.4±4°F & 50±2% RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 20 in./min;	MD = 2,320 / Std. Dev. 40	ASTM D 412
Elongation, Ultimate (%) Die C specimens; Cond.: Min. 3h @ 73.4±4°F & 50±2% RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 20 in./min;	MD = 380 / Std. Dev. 20	ASTM D 412
Tensile Set, (%) Die C specimens; Cond.: Min. 3h @ 73.4±4°F & 50±2% RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 20 in./min; 50% Elongation;	MD = 0.0 / Std. Dev. 0.0	ASTM D 412
Dynamic Puncture Resistance, (J) 9.8” x 9.8” specimens; Cond.: 8h @ 73±2°F; Load @ 73±2°F over Type IX EPS;	27.5	ASTM D 5635
Static Puncture Resistance, (lbf) 7.9” x 7.9” specimens; Cond.: 8h @ 73±2°F; Load for 24±0.25h @ 73±2°F; Type IX EPS;	53	ASTM D 5602
Tear Resistance, (lbf/in.) Die C specimens; Cond.: Min. 3h @ 73.4±4°F & 50±2% RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 20 in./min;	MD = 306 (Median) Std. Dev. 12 CMD = 299 (Median) Std. Dev. 5	ASTM D 624
Low Temperature Bend, (Pass/Fail) 1” x 4” MD Specimens; Cond. 4h & Test @ -40±1°F; Bend 180° over 3mm Ø rod; Examine under 5x magnification;	-40	ASTM D 2136
Ozone Resistance [Pass/Fail] Static Strain 50% elongation; Test: P(O3)=100mPa @ 104°F; Exposure for 166h; Inspect @ 7x;	Pass	ASTM D 1149 Method B
Water Absorption (mass %) 1”x 2” specimens; Test Liquid = water; Exposure for 166h @ 158°F;	Ave. = 1.4 Std. Dev. = 0.0	ASTM D 471
Water Vapor Permeance, (Perms) Desiccant Method; Test @ 73.4±3.6°F & 50±5%RH;	Ave. = 0.04 Std. Dev. = 0.01	ASTM E 96 Proc. A
Hydrostatic Pressure Resistance, (ft of water) Mullen-Type Hydrostatic Tester; Test Condition 73.4±3.6°F & 50±5%RH;	Ave. = 982 Std. Dev. = 0	ASTM D 751 Proc. A, Proc. 1
Seam Strength, (psi) 1” x 12” across factory seam; Cond.: 24h @ 73±4°F & 50±2%RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 2 in./min;	Ave. = 691 Std. Dev. = 17	ASTM D 816 Method B
Solar Reflectance, [Reading] Test Condition 73.4±3.6°F & 50±5%RH;	Ave. = 0.05 Std. Dev. = 0.00	ASTM C 1549
Thermal Emittance, [Reading] Test Condition 73.4±3.6°F & 50±5%RH;	Ave. = 0.90 Std. Dev. = 0.00	ASTM C 1371
Solar Reflectance Index (SRI)	Low Wind = -1 Med Wind = 0 High Wind = 1	ASTM E 1980-11

Table 2: Typical Physical Properties of RoofJoint NP White

Properties	*Result (Average)*	*Test Method*
Tensile Strength, (psi) Die C specimens; Cond.: Min. 3h @ 73.4±4°F & 50±2% RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 20 in./min;	MD = 2,100 / Std. Dev. 70	ASTM D 412
Elongation, Ultimate (%) Die C specimens; Cond.: Min. 3h @ 73.4±4°F & 50±2% RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 20 in./min;	MD = 420 / Std. Dev. 20	ASTM D 412
Tensile Set, (%) Die C specimens; Cond.: Min. 3h @ 73.4±4°F & 50±2% RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 20 in./min; 50% Elongation;	MD = 1.4 / Std. Dev. 0.3	ASTM D 412
Dynamic Puncture Resistance, (J) 9.8” x 9.8” specimens; Cond.: 8h @ 73±2°F; Load @ 73±2°F over Type IX EPS;	27.5	ASTM D 5635
Static Puncture Resistance, (lbf) 7.9” x 7.9” specimens; Cond.: 8h @ 73±2°F; Load for 24±0.25h @ 73±2°F; Type IX EPS;	53	ASTM D 5602
Tear Resistance, (lbf/in.) Die C specimens; Cond.: Min. 3h @ 73.4±4°F & 50±2% RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 20 in./min;	MD = 302 (Median) Std. Dev. 8 CMD = 279 (Median) Std. Dev. 3	ASTM D 624
Low Temperature Bend, (Pass/Fail) 1” x 4” MD Specimens; Cond. 4h & Test @ -40±1°F; Bend 180° over 3mm Ø rod; Examine under 5x magnification;	-40	ASTM D 2136
Ozone Resistance [Pass/Fail] Static Strain 50% elongation; Test: P(O3)=100mPa @ 104°F; Exposure for 166h; Inspect @ 7x;	Pass	ASTM D 1149 Method B
Water Absorption (mass %) 1”x 2” specimens; Test Liquid = water; Exposure for 166h @ 158°F;	Ave. = 3.4 Std. Dev. = 0.0	ASTM D 471
Water Vapor Permeance, (Perms) Desiccant Method; Test @ 73.4±3.6°F & 50±5%RH;	Ave. = 0.03 Std. Dev. = 0.01	ASTM E 96 Proc. A
Hydrostatic Pressure Resistance, (ft of water) Mullen-Type Hydrostatic Tester; Test Condition 73.4±3.6°F & 50±5%RH;	Ave. = 827 Std. Dev. = 27	ASTM D 751 Proc. A, Proc. 1
Seam Strength, (psi) 1” x 12” across factory seam; Cond.: 24h @ 73±4°F & 50±2%RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 2 in./min;	Ave. = 648 Std. Dev. = 66	ASTM D 816 Method B
Solar Reflectance, [Reading] Test Condition 73.4±3.6°F & 50±5%RH;	Ave. = 0.77 Std. Dev. = 0.01	ASTM D 1549
Thermal Emittance, [Reading] Test Condition 73.4±3.6°F & 50±5%RH;	Ave. = 0.90 Std. Dev. = 0.01	ASTM C 1371
Solar Reflectance Index (SRI)	Low Wind = 95 Med Wind = 95 High Wind = 96	ASTM D 471

Test Results

Table 3: Typical Physical Properties of RoofJoint TP White

Properties	*Result (Average)*	*Test Method*
Tensile Strength, (psi) Die C specimens; Cond.: Min. 3h @ 73.4±4°F & 50±2% RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 20 in./min;	MD = 960 / Std. Dev. 40	ASTM D 412
Elongation, Ultimate (%) Die C specimens; Cond.: Min. 3h @ 73.4±4°F & 50±2% RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 20 in./min;	MD = 600 / Std. Dev. 40	ASTM D 412
Tensile Set, (%) Die C specimens; Cond.: Min. 3h @ 73.4±4°F & 50±2% RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 20 in./min; 50% Elongation;	MD = 2.4 / Std. Dev. 0.3	ASTM D 412
Dynamic Puncture Resistance, (J) 9.8” x 9.8” specimens; Cond.: 8h @ 73±2°F; Load @ 73±2°F over Type IX EPS;	27.5	ASTM D 5635
Static Puncture Resistance, (lbf) 7.9” x 7.9” specimens; Cond.: 8h @ 73±2°F; Load for 24±0.25h @ 73±2°F; Type IX EPS;	53	ASTM D 5602
Tear Resistance, (lbf/in.) Die C specimens; Cond.: Min. 3h @ 73.4±4°F & 50±2% RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 20 in./min;	MD = 167 (Median) Std. Dev. 5 CMD = 160 (Median) Std. Dev. 4	ASTM D 624
Low Temperature Bend, (Pass/Fail) 1” x 4” MD Specimens; Cond. 4h & Test @ -40±1°F; Bend 180° over 3mm Ø rod; Examine under 5x magnification;	-40	ASTM D 2136

(Cont.) **Table 3: Typical Physical Properties of RoofJoint TP White**

Properties	*Result (Average)*	*Test Method*
Ozone Resistance [Pass/Fail] Static Strain 50% elongation; Test: P(O3)=100mPa @ 104°F; Exposure for 166h; Inspect @ 7x;	Pass	ASTM D 1149 Method B
Water Absorption (mass %) 1”x 2” specimens; Test Liquid = water; Exposure for 166h @ 158°F;	Ave. = 1.2 Std. Dev. = 0.1	ASTM D 471
Water Vapor Permeance, (Perms) Desiccant Method; Test @ 73.4±3.6°F & 50±5%RH;	Ave. = 0.01 Std. Dev. = 0.01	ASTM E 96 Proc. A
Hydrostatic Pressure Resistance, (ft of water) Mullen-Type Hydrostatic Tester; Test Condition 73.4±3.6°F & 50±5%RH;	Ave. = 308 Std. Dev. = 30	ASTM D 751 Proc. A, Proc. 1
Seam Strength, (psi) 1” x 12” across factory seam; Cond.: 24h @ 73±4°F & 50±2%RH; Test: 73.4±3.6°F & 50±2% RH; Rate = 2 in./min;	Ave. = 234 Std. Dev. = 12	ASTM D 816 Method B
Solar Reflectance, [Reading] Test Condition 73.4±3.6°F & 50±5%RH;	Ave. = 0.79 Std. Dev. = 0.00	ASTM D 1549
Thermal Emittance, [Reading] Test Condition 73.4±3.6°F & 50±5%RH;	Ave. = 0.89 Std. Dev. = 0.0	ASTM C 1371
Solar Reflectance Index (SRI)	Low Wind = 98 Med Wind = 98 High Wind = 99	ASTM D 471

CAD & Guide Specs

Guide specifications and CAD details are available online at emseal.com or by contacting Sika Emseal.

Warranty

Standard or project-specific warranties are available from Sika Emseal on request.

Availability & Price

RoofJoint is available for shipment domestically and internationally. Prices are available from local representatives and/or directly from the manufacturer. Sika Emseal reserves the right to modify or withdraw any product without prior notice.

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Product Data Sheet
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