SOPRAJOINT PLUS TECHNICAL GUIDE

FUNCTIONS, DESCRIPTION, INSTALLATION AND DETAILS OF THE SOPRAJOINT PLUS EXPANSION JOINT

SOPREMA®

- SUPERIOR RESISTANCE TO SHEAR MOVEMENTS
- DURABLE
- ONE PRODUCT FOR MULTIPLE APPLICATION METHODS
- VERSATILE

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SOPRAJOINT PLUS

INTRODUCTION

A building structure is subject to different forces, whether permanent or variable over time, and their effects can fluctuate greatly.

Building performance can be influenced by different factors or physical phenomena, such as soil differential settlements, forced and repeated expansion and contraction caused by thermal gradients, two (2) independent or juxtaposed structures, earthquakes (seismic zones), shrinkage and creep of the materials, vibrations, and chemical reactions.

When designing a new construction or adding a structure next to a building, it is better to have representatives from all the disciplines involved (such as architects, structural engineers, soil engineers, seismic consultants, etc.) to consider such factors early in the design process.

Therefore, in addition to preventing and minimizing the risk of degradation due to expansion, it is appropriate to use expansion joints in building construction to absorb the effects of repeated movements on structures, and thereby limit the risks of compromising the waterproofing system.

WHERE ARE EXPANSION JOINTS LOCATED?

In a connection between a new building and an existing one;

In a connection between different materials (e.g., a steel structure attached to a concrete deck);

In structural joints subject to movements between two (2) surfaces, such as parking decks and tunnels.

ROLE OF THE EXPANSION JOINT

An expansion joint is required to seamlessly waterproof a whole building or structure.

The flexibility of expansion joints separates the movement of the building's structure from the ground motion, so as to reduce distortion and protect the structure.

Expansion joints sometimes extend to traffic areas and pedestrian accesses. The essential strength function of the expansion joint is thus added to its sealing and flexibility functions.

THREE-DIMENSIONAL MOVEMENTS

Under the effect of compound actions, horizontal, vertical and shear movements generate tensile strain and compression stress. Expansion joints can absorb the stresses induced by these movements so that materials do not reach the breaking point.

Shear stress is the principal force that must be considered when designing a building or structure.

WHAT ABOUT WATERPROOFING?

The presence of expansion joints may cause some concern because they must adapt to building movement while preventing elements from entering. Moisture penetration – particularly water ingress – can cause extensive damage to building components. Water may enter the interior of a building through an expansion joint located above or below ground level. **It is important to choose an expansion joint that ensures continuous waterproofing for the entire structure during the lifespan of the building.**

SOPRAJOINT PLUS

SOPRAJOINT PLUS is a monolithic expansion joint made of EPDM-based synthetic rubber consisting of two (2) flanges coated on the surface and underface with a woven oxidized and stabilized polyacrylonitrile, with an expandable core.

SOPRAJOINT PLUS expansion joints are available in four versions:

SOPRAJOINT PLUS 20
SOPRAJOINT PLUS 40
SOPRAJOINT PLUS 75
SOPRAJOINT PLUS 125

DIMENSIONS

Dimensions of the SOPRAJOINT PLUS expansion joints

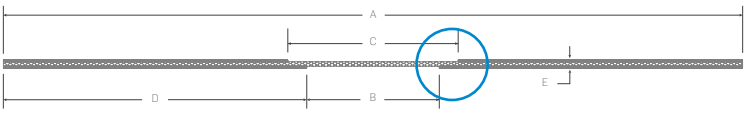
	A	B	C	D	E
SOPRAJOINT PLUS 20	355 mm (14 in)	35 mm (1.4 in)	55 mm (2.2 in)	160 mm (6.3 in)	2.5 mm (3/32 in)
SOPRAJOINT PLUS 40	390 mm (15.4 in)	70 mm (2.8 in)	90 mm (3.5 in)	160 mm (6.3 in)	2.5 mm (3/32 in)
SOPRAJOINT PLUS 75	435 mm (17.1 in)	115 mm (4.5 in)	135 mm (5.3 in)	160 mm (6.3 in)	2.5 mm (3/32 in)
SOPRAJOINT PLUS 125	560 mm (22.0 in)	240 mm (9.4 in)	260 mm (10.2 in)	160 mm (6.3 in)	2.5 mm (3/32 in)

(All values are nominal)

SPECIFICATIONS OF THE FLANGES

The width of the flanges is identical; only the core width varies.

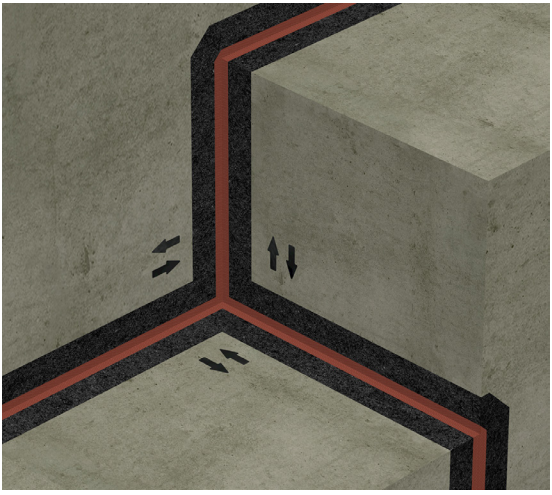
The woven polyacrylonitrile (flange) is wider on the underface in order to offset the tension stressing the core.



SOPRAJOINT PLUS

SOPRAJOINT PLUS expansion joints are designed to ensure complete waterproofing of buildings and civil engineering structures, either above or below grade, for both horizontal and vertical surfaces. They allow movement in the three (3) axis (horizontal, vertical and shear) at the same time.

SIMULTANEOUS MOVEMENTS IN 3 AXIS			
Product	HORIZONTAL	VERTICAL	SHEAR
SOPRAJOINT PLUS 20	**± 30 mm (1.2")**	**± 25 mm (1")**	**± 20 mm (0.8")**
SOPRAJOINT PLUS 40	**± 60 mm (2.4")**	**± 50 mm (2")**	**± 40 mm (1.6")**
SOPRAJOINT PLUS 75	**± 100 mm (4")**	**± 85 mm (3.4")**	**± 75 mm (3")**
SOPRAJOINT PLUS 125	**± 200 mm (9 ")**	**± 170 mm (6.7")**	**± 125 mm (5")**



SOPRAJOINT PLUS

They can be installed on various substrates, such as concrete, steel and wood.

SOPRAJOINT PLUS expansion joints are custom-made to order. There are no limits with respect to length.

Moreover, **SOPRAJOINT PLUS** can be adapted to various configurations and can fit in 90-degree, angled, cross, T-shaped and curved transitions, as well as continuously in other directions thanks to an assembly process by vulcanization.

In addition to their mechanical and physical properties (strong elasticity, tear strength and durability), **SOPRAJOINT PLUS** expansion joints are highly resistant to chemicals, such as alkalis, acids, salt solutions, alcohols, and acetone.

Moreover, **SOPRAJOINT PLUS** expansion joints are quite wear-resistant, even when exposed to sunlight and harsh weather.

CAUTIONS
However, extended contact with mineral oils, benzene, fuels and aromatic compounds, such as toluene should be avoided.

ADVANTAGES

SUPERIOR RESISTANCE TO SHEAR MOVEMENTS

- Adaptability to horizontal, vertical and shear movements simultaneously. Shear strength superior to that of products offered by other manufacturers

SEVERAL INSTALLATION METHODS FOR A SINGLE PRODUCT

- They can be heat-welded, self-adhered, cold-adhered with adhesive or hot bitumen, or applied using ALSAN RS liquid membranes.
- Easy installation.

DURABLE

- High mechanical strength (elongation and tear).
- UV-resistance.

MONOLITHIC

- Monolithic, including assembly joints (vulcanization).

ADAPTED TO VARIOUS CONFIGURATIONS

- Adaptability to changes in direction and different configurations.
- Custom-made product.

VERSATILE

- **SOPRAJOINT PLUS** expansion joints are formed, adapted and installed for the following application types: Roofs and green roofs, Roof terraces, Walls, Foundations, Parking lots, Tunnels and Bridges (foot bridges).


Roofs


Walls


Foundations

Parkings

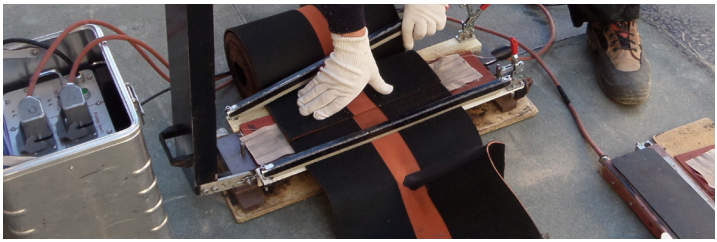

Tunnels


Bridges

CUSTOMIZED PRODUCT, CUSTOMIZED SERVICE

Each construction project is different in type and size. In addition to being a premium and unique product, **SOPRAJOINT PLUS** expansion joints can be adapted to all possible configurations on-site, from the simplest to the most complex configuration.

VULCANIZATION ASSEMBLY METHOD



Measurements can be taken from plans or custom measured on-site. Then the expansion joints are manufactured by our experienced technicians in our Soprema facilities. Products are prefabricated and custom-made to meet the client's needs.

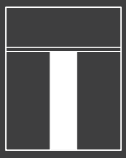
With an assembly process using vulcanization, **SOPRAJOINT PLUS** expansion joints – including assembly joints – are monolithic, providing a continuous seal regardless of the configuration.

This safe and reliable method allows uniform elongation through elimination of the use of adhesive or sealant for the assembly of joints and waterproofing integrity.

PREFORMED

In addition to the linear measurements of the expansion joints, there are seven (7) preformed junctions for the following basic transitions:

FLAT CORNER



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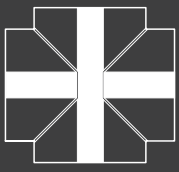
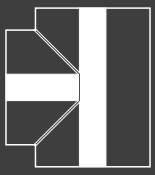
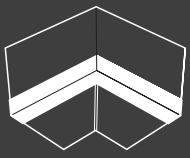


CROSS JUNCTION



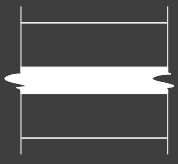
T-JUNCTION

OUTSIDE CORNER



INSIDE CORNER

3-DIRECTION CORNER

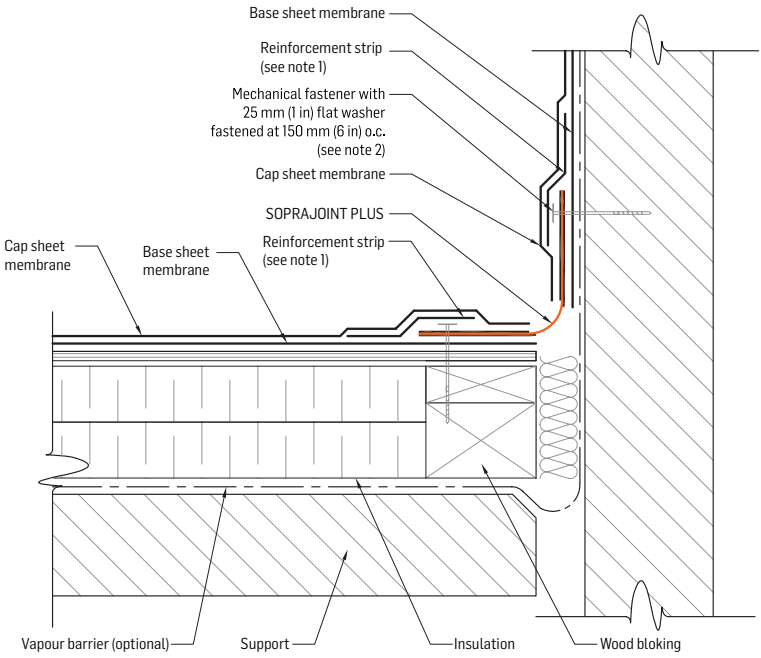


LINEAR MEASURE

Not only is it possible to install junctions preformed at a 90-degree angle, it is also possible to install these junctions at different angles and various levels of complexity.

DETAILS

EXPANSION JOINT
Roof/Wall



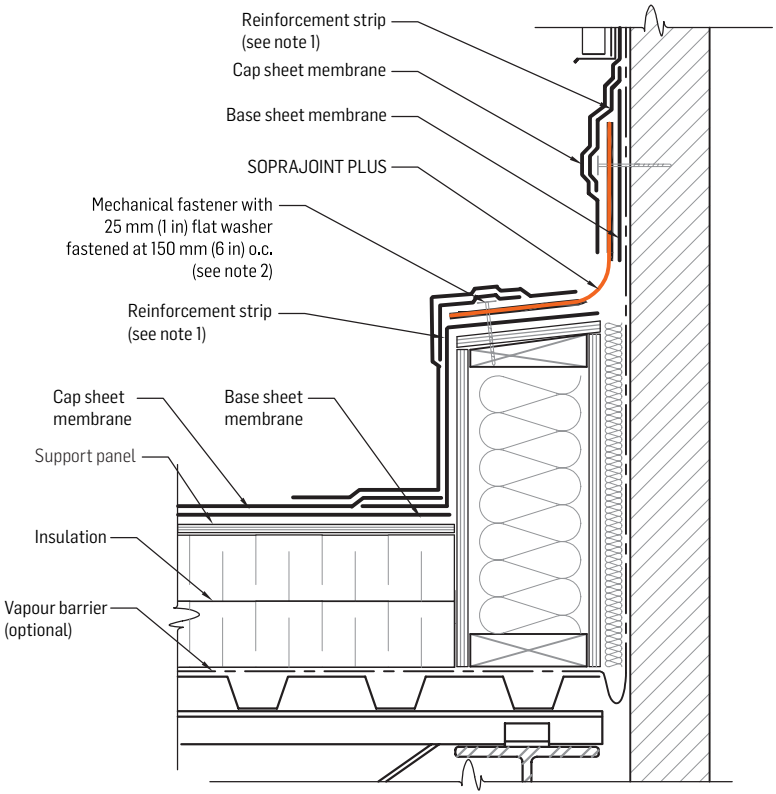
Note 1: Minimum 150 mm (6 in) reinforcement strip centered on the edge of the flange.

Note 2: Only required for **SOPRAJOINT PLUS** 75 and 125.

Note 3: The use of a flame stop membrane is required when the expansion joint **SOPRAJOINT PLUS** is heat-welded.

DETAILS

EXPANSION JOINT
Roof/Wall on parapet



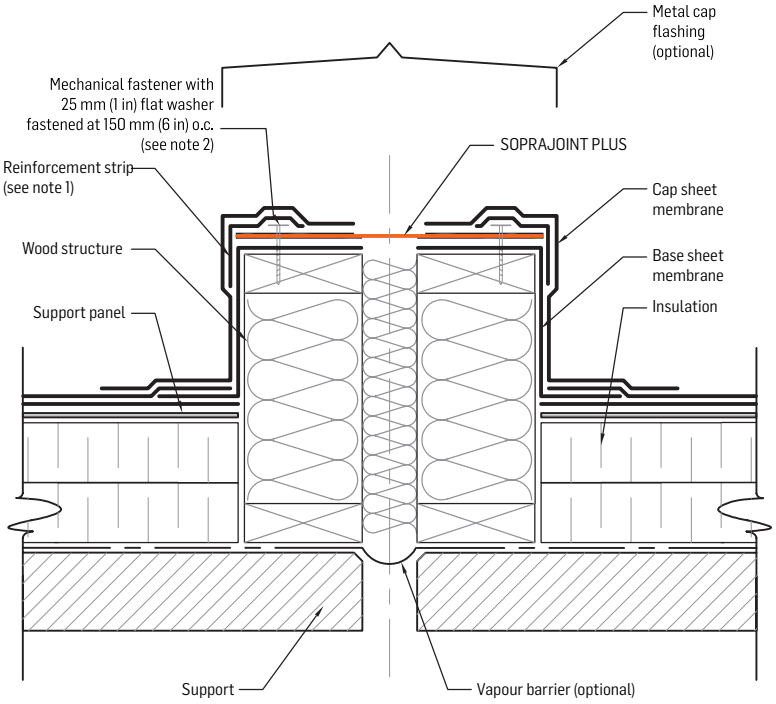
Note 1: Minimum 150 mm (6 in) reinforcement strip centered on the edge of the flange.

Note 2: Only required for **SOPRAJOINT PLUS** 75 and 125.

Note 3: The use of a flame stop membrane is required when the expansion joint **SOPRAJOINT PLUS** is heat-welded.

DETAILS

EXPANSION JOINT
Parapet



Note 1: Minimum 150 mm (6 in) reinforcement strip centered on the edge of the flange.

Note 2: Only required for **SOPRAJOINT PLUS** 75 and 125.

Note 3: The use of a flame stop membrane is required when the expansion joint **SOPRAJOINT PLUS** is heat-welded.

INSTALLATION

INSTALLATION (HEAT-WELDING)

SURFACE PREPARATION
The surfaces should be clean, sound, dry and free of any loose materials.

INSTALLATION
Identify the installation starting point of the **SOPRAJOINT PLUS** expansion joints. Unroll the entire roll before installation to ensure positioning and measurements are accurate.

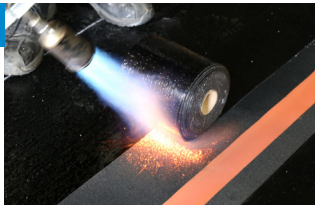
1

Using a propane torch, heat the base sheet on which the **SOPRAJOINT PLUS** will be installed. Place or unroll the **SOPRAJOINT PLUS on the liquefied bitumen of the base sheet membrane.**

2

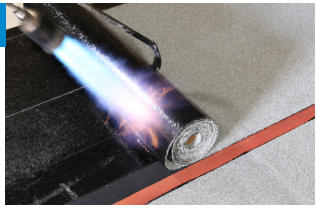
Apply pressure on the **SOPRAJOINT PLUS** to maximize adhesion.

3



Weld a minimum of 150 mm (6 in) reinforcing strip centered on the edge of the flange and apply pressure to the surface.

4



Cover the flanges with a cap sheet membrane all the way up to the edge of the core and apply pressure to the surface.

5

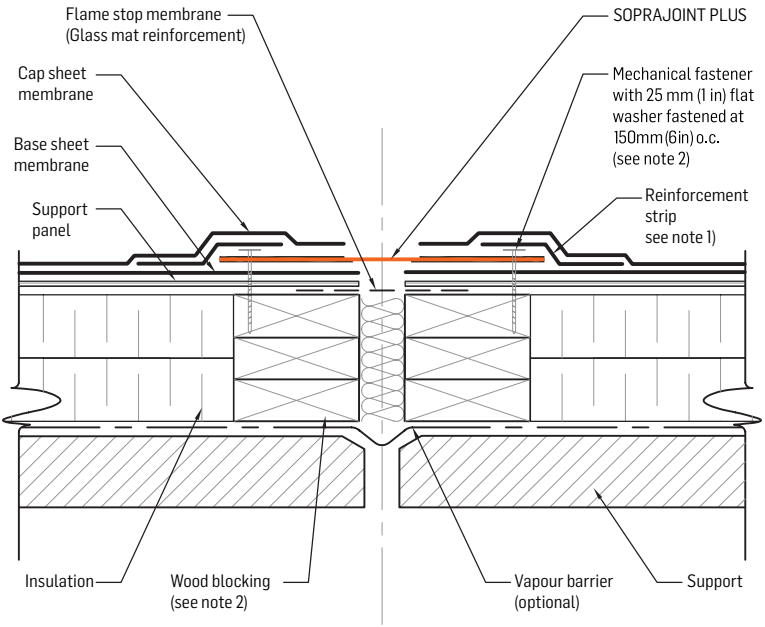
*According to surface constraints, and when it is necessary to protect the core of the **SOPRAJOINT PLUS** expansion joint, cover with a cap sheet membrane, centered over the joint and fixed on one side to allow expansion movements, or use a steel plate, concrete or other mechanical protection.

*** MINIMUM DIMENSIONS OF THE PROTECTIVE COVERING.**
SOPRAJOINT PLUS 20: 330 mm (13 in))
SOPRAJOINT PLUS 40: 330 mm (13 in))
SOPRAJOINT PLUS 75: 500 mm (20 in))
SOPRAJOINT PLUS 125: 500 mm (20 in))

For full details on the installation of SOPRAJOINT PLUS expansion joints, please contact your SOPREMA representative .

DETAILS

EXPANSION JOINT
Heat-Welding



Note 1: Minimum 150 mm (6 in) reinforcement strip centered on the edge of the flange.

Note 2: Only required for **SOPRAJOINT PLUS** 75 and 125.

INSTALLATION

INSTALLATION (Cold adhesive [COLPLY EF and SOPRATACK])

SURFACE PREPARATION
The surfaces should be clean, sound, dry and free of any loose materials.

INSTALLATION
Identify the installation starting point of the **SOPRAJOINT PLUS** expansion joints. Unroll the entire roll before installation to ensure positioning and measurements are accurate.

1

Apply COLPLY EF or SOPRATACK adhesive with a notched squeegee, and then place or unroll the **SOPRAJOINT PLUS** expansion joint in the adhesive.

2

Apply pressure on the **SOPRAJOINT PLUS** to maximize adhesion.

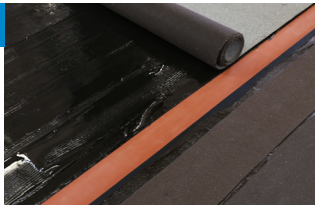
3

Coat the portion of the flange that will be covered by a reinforcing strip with adhesive.

4

Place a 150 mm (6 in) reinforcing strip centered on the edge of the flange and apply pressure on the **SOPRAJOINT PLUS** to maximize adhesion.

5



Coat the flange with adhesive all the way up to the edge of the core and apply pressure to the entire surface using a roller to ensure good adhesion. Seal using an electric hot-air welder.

6

* According to surface constraints, and when it is necessary to protect the core of the **SOPRAJOINT PLUS** expansion joint, cover with a cap sheet membrane, centered over the joint and fixed on one side to allow expansion movements, or use a steel plate, concrete or other mechanical protection.

*** MINIMUM DIMENSIONS OF THE PROTECTIVE COVERING.**
SOPRAJOINT PLUS 20: 330 mm (13 in))
SOPRAJOINT PLUS 40: 330 mm (13 in))
SOPRAJOINT PLUS 75: 500 mm (20 in))
SOPRAJOINT PLUS 125: 500 mm (20 in))

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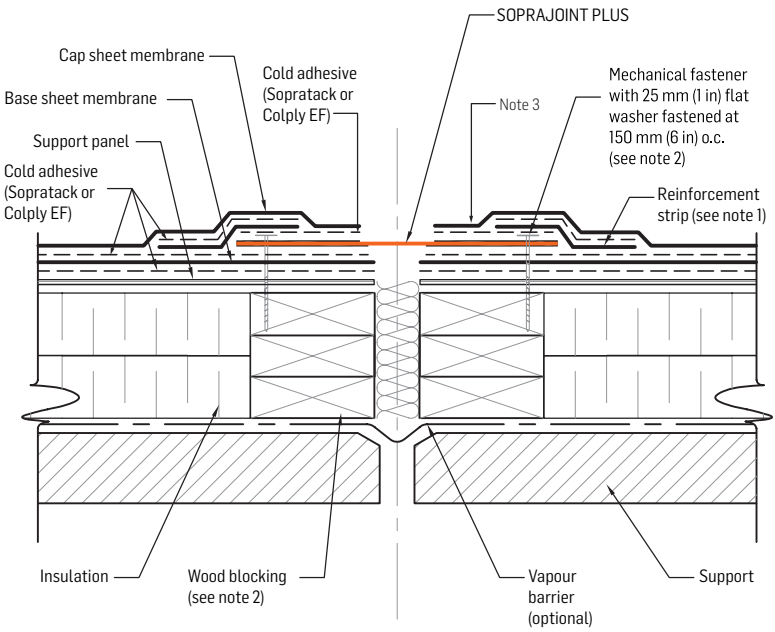
DETAILS

EXPANSION JOINT
Cold adhesive



Note 1: Minimum 150 mm (6 in) reinforcement strip centered on the edge of the flange.

Note 2: Only required for **SOPRAJOINT PLUS** 75 and 125.

Note 3: Seal using an electric hot-air welder.

INSTALLATION

INSTALLATION (Hot bitumen)

SURFACE PREPARATION
The surfaces should be clean, sound, dry and free of any loose materials.

INSTALLATION
Identify the installation starting point of the **SOPRAJOINT PLUS** expansion joints. Unroll the entire roll before installation to ensure positioning and measurements are accurate.

1. Place or unroll the **SOPRAJOINT PLUS** expansion joint in a hot bitumen layer spread using a mop.
2. Apply pressure on the **SOPRAJOINT PLUS** to maximize adhesion.
3. Coat the portion of the flange that will be covered by a reinforcing strip with hot bitumen.
4. Place a 150 mm (6 in) reinforcing strip centered on the edge of the core and apply pressure on the **SOPRAJOINT PLUS** to maximize adhesion.
5. Coat the flange with hot bitumen and cover the flange with a cap sheet membrane all the way up to the edge of the core and apply pressure to the entire surface using a membrane roller.
6. * According to surface constraints, and when it is necessary to protect the core of the **SOPRAJOINT PLUS** expansion joint, cover with a cap sheet membrane, centered over the joint and fixed on one side to allow expansion movements, or use a steel plate, concrete or other mechanical protection.

*** MINIMUM DIMENSIONS OF THE PROTECTIVE COVERING.**
SOPRAJOINT PLUS 20: 330 mm (13 in))
SOPRAJOINT PLUS 40: 330 mm (13 in))
SOPRAJOINT PLUS 75: 500 mm (20 in))
SOPRAJOINT PLUS 125: 500 mm (20 in))

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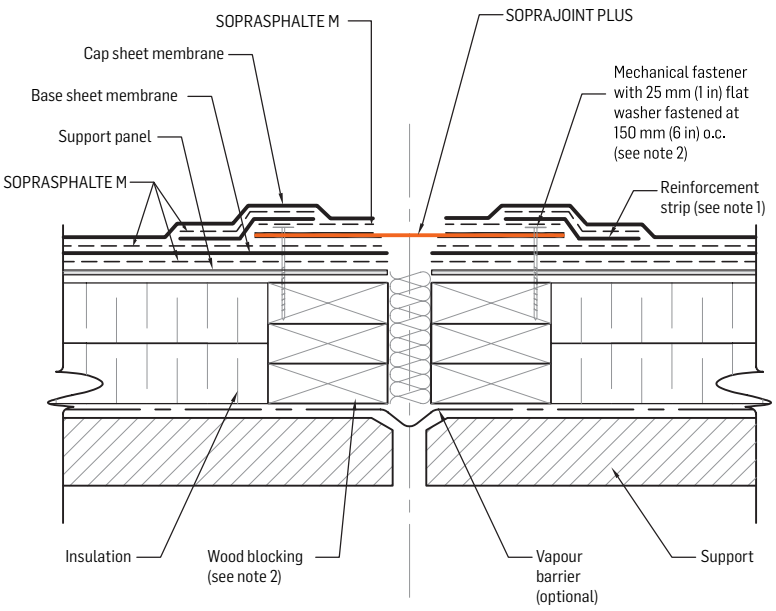
DETAILS

EXPANSION JOINT
Hot Bitumen



Note 1: Minimum 150 mm (6 in) reinforcement strip centered on the edge of the flange.

Note 2: Only required for **SOPRAJOINT PLUS** 75 and 125.

INSTALLATION

INSTALLATION (étanchéité liquide ALSAN RS)

SURFACE PREPARATION
The surfaces should be clean, sound, dry and free of any loose materials.

INSTALLATION
Identify the installation starting point of the **SOPRAJOINT PLUS** expansion joints. Unroll the entire roll before installation to ensure positioning and measurements are accurate.

1. After mixing it, apply the ALSAN RS 230 liquid membrane with a brush or a notched squeegee. The resin must be evenly distributed over the surface.
2. Place or unroll the **SOPRAJOINT PLUS** expansion joint on the ALSAN RS 230 liquid membrane while it is still wet. Apply pressure on the **SOPRAJOINT PLUS** to maximize adhesion.
3. Coat the portion of the flange that will be covered by a reinforcing strip with ASLAN RS 230 liquid membrane.
4. Place a 250 mm (10 in) ALSAN RS FLEECE reinforcement strip over the entire flange.
5. Coat the **SOPRAJOINT PLUS** expansion joint flange with ALSAN RS 230 liquid membrane all the way up to the edge of the core.
6. If necessary, cover the ALSAN RS 230 liquid membrane with the ALSAN RS 287 COLOR FINISH BASE liquid membrane and ALSAN RS COLOR ADDITIVE for colored waterproofing.
7. * According to surface constraints, and when it is necessary to protect the core of the **SOPRAJOINT PLUS** expansion joint use a steel plate, concrete or other mechanical protection, centered over the joint and fixed on one side to allow expansion movements.

*** MINIMUM DIMENSIONS OF THE PROTECTIVE COVERING.**
SOPRAJOINT PLUS 20: 330 mm (13 in))
SOPRAJOINT PLUS 40: 330 mm (13 in))
SOPRAJOINT PLUS 75: 500 mm (20 in))
SOPRAJOINT PLUS 125: 500 mm (20 in))

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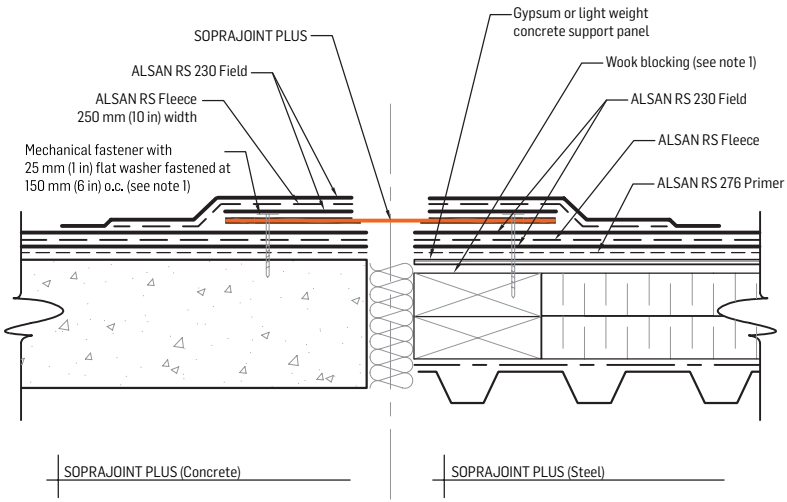
DETAILS

EXPANSION JOINT
Liquid membranes



Note 1: Only required for **SOPRAJOINT PLUS** 75 and 125.

INNOVATION SINCE 1908

SOPREMA has developed around the idea that the quality, durability and reliability of materials must match builders' ambitions and expectations. For more than 100 years, SOPREMA has been using its expertise to develop a variety of high-end products that meet or exceed all the requirements of the construction field.

ROOFS WALLS FOUNDATIONS PARKING DECKS BRIDGES ADDITIONAL EXPERTISE


WATERPROOFING


INSULATION


VEGETATIVE SOLUTIONS


SOUNDPROOFING


COMPLEMENTARY PRODUCTS

SOPREMA is an international manufacturer specializing in the production of waterproofing and insulation products, as well as vegetative and soundproofing solutions, for the building and civil engineering sectors.

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