TECHNICAL DATA SHEET

FULAFLEX FAÇADE

Description

Fulaflex Facade is a high performance, high joint-movement, methoxysilyl-terminated silane polymer specifically formulated for use in applications where a sealant that can maintain a high degree of joint movement is required. Fulaflex Facade cures to form a seal that is tough, elastic and weatherproof with good chemical resistance. Fulaflex Façade has excellent application and tooling properties to ensure a clean and neat application can be achieved.

Standards Compliance

- **ISO 11600** Type F, Class 50, sub-class LM
- **ASTM C-920** Type S, Grade NS, Class 50, Use: NT, A and G
- **ASTM C719** - Highly flexible - ± 50% of original joint width
- **ASTM C794** (Adhesion in peel) - PASS
- **ASTM C793** Weatherability - Excellent resistance to weathering and UV radiation, resists yellowing
- **ASTM C1442** Adhesion in peel under cycle UVA/ASTM G154 Cycle 1 - PASS
- **ASTM C510** Staining and colour change - PASS

Benefits

- Isocyanate and solvent free
- Mould Resistant – Will not support fungal growth
- Excellent long term chemical resistance to seawater, caustic solutions and cleaning agents
- Short term chemical resistance to petrol, grease and mineral oils
- Long open time
- No bubble formation when curing
- Paintable with high build, flexible emulsion coatings
- Strong adhesion
- Sag Resistant
- Meets the criteria of a sealant for use in AS3740-2010 (Waterproofing of Domestic Wet Areas) waterproofing applications

Uses

- Sealing expansion joints in external facades constructed of aluminium and other building materials
- Sealing expansion and control joints in tiling, walls, roofs, wall, door and window frame perimeters, cladding and brickwork
- Applications where a high amount of joint movement is anticipated

VOC Content

VOC content: (Californian South coast air quality management rule 1168) is 0g per liter. This product is VOC-free.

Compatible Substrates

Concrete	Ceramic
Cement sheeting	Plastics (pretest)
Masonry	ABS (pretest)
Plasterboard	Aluminium
Steel inc. Painted Steel	Glass
Powdercoated Extrusions*	

*Contact the HB Fuller Technical Department for a list of approved powdercoated extrusion colours.

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Performance Data

Property	Data
Polymer Base	Methoxysilyl-terminated polymer
Specific Gravity	ca. 1.40
Sag	Nil @ 25°C
Shrinkage	0%
Skin time	ca. 40 minutes @23°C / 50% RH
Cure Rate	ca. 2 mm / day @ 23°C / 50% RH
Full Cure	After 7 days
Storage Life	12 months unopened
Durometer Hardness	ca. Shore A 20
Service Temperature	-40°C to 100°C
Modulus – 50%	ca. 0.2MPa
Modulus – 100%	ca. 0.4MPa
Max. Tensile Strength	ca. 1.2MPa
Elongation (ISO 37)	>900%
Application temperature	5°C to 40°C

Coverage

Approximate linear meters coverage of Fulaflex Facade sealant as per table:

Joint Width mm	Joint Depth mm	Yield (600ml sausage (Linear metres)
6 (min)	6	16.7
10	10	6.0
12	12	4.2
18	12	2.7
24	12	2.1
30	15	1.5

Pack Sizes

Fulaflex Facade is available 600ml sausages.

Surface Preparation

All surfaces must be clean, dry, sound and free of dust, oil, old sealant or other contamination.
Lightly contaminated surfaces should be wiped with Isopropyl Alcohol (IPA) using the 2-rag wipe method. Apply IPA to a clean lint-free cloth and wipe onto the surface to be cleaned to solubilize and remove the majority of the contaminant. A clean dry cloth should then be applied to remove remaining contamination and dry the surface. Ensure wet cleaner is not allowed to dry on surface. For more heavily contaminated surfaces or where the IPA does not remove the contaminant, a generic wax and grease remover should be applied using the same 2-rag wipe method. Once this has been completed the surface should be given a final clean with IPA using the 2-rag wipe method to ensure the surface is adequately prepared. Adhesion to metals and some surface finishes can be further improved by light abrasion prior to cleaning with IPA using the 2 rag-wipe method. Manufacturers of plastics should be consulted about suitable cleaning solvents. Adhesion to plastics should be pre-tested. Mask either side of joint to produce a neat finish.
Use a suitable sized foam backing rod or polyethylene bond breaker tape to prevent three sided joint contact impeding the free and even deformation of the sealant in a cyclic joint. Open-cell polyurethane foam is recommended. Use a size 25% wider than the joint width that will compress when inserted into the joint.

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Joint Design

A good joint design is imperative if a sound, durable seal is to be achieved
In general, joints should be designed to be at least 4 times as wide as the anticipated movement.

Joint width and depth should not be less than 6 mm and depth should never exceed width.

Joint Width.	Recommended Joint Depth.
< 10 mm	Depth = Width
10 mm – 25 mm	Width/Depth ratio 2:1

Product Application

Cut tip off cartridge. Angle cut nozzle to desired size. Screw nozzle onto cartridge. Apply sealant in a steady, continuous flow by pushing the sealant ahead of the nozzle so that it completely fills the joint and is in contact with both sides. Immediately after application, tool the sealant using a spatula. A dilute soap/water detergent solution may be used to tool Fulaflex Facade, although the solution should be pre-tested to confirm it does not affect the sealant in any way, as this can compromise long-term durability. Avoid contact with alcohol or other solvent cleaners during cure. Remember to remove the masking tape before the sealant skins.

JOINT DESIGN CONSIDERATIONS AND CAULKING GUIDELINES FOR FACADE SYSTEMS

Fulaflex Facade achieves exceptional free bond to aluminium facade panels as well as other types of facade panels an auxiliaries. As the machining and finish of aluminium facade panels can vary, the HB Fuller Technical Department recommends pre-testing these substrates or submitting samples to HB Fuller for benchmarking qualification where warranties for projects are required.

Surface Preparation

Thoroughly clean all surfaces with Isopropyl Alcohol (IPA) or similar oil/grease free cleaning agent. Do not use cleaners that will leave a residue on the substrate as this will affect adhesion properties.

This includes top hats, panel/joint edges, and the panel rear surface where sealant may come into contact with the substrate/s.

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Caulking

Mask joint edges to create a neat joint edge. Gun sealant into the joint and tool the sealant to ensure complete contact with the joint edges and backing rod/material. Avoid 3-sided joint adhesion as this will result in joint failure.

Tool Fulaflex Facade within 30 minutes to leave a concaved joint finish to minimize the risk of the sealant standing proud of the panel face under sealant compression.

Avoid the use of tooling lubricants due to the risk of lubricant contacting joint edges prior to the sealant and consequent adhesion failure.

Remove masking tape immediately after tooling the sealant, pulling the tape in a direction away from the sealed joint.

Cassette Installation method (Figure 1)

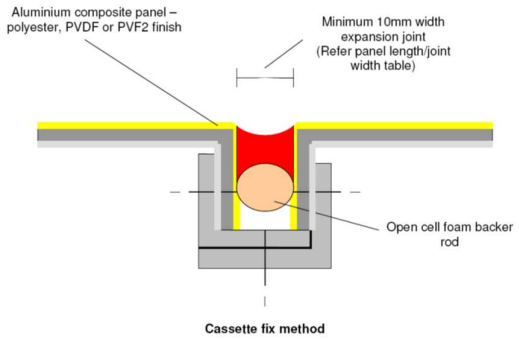
Refer to the panel manufacturers' installation specifications.

Install a foam backing rod to prevent 3 sided joint contact and to provide a suitable backing for tooling against.

Consider the use of open cell foam backing rod to assist the sealant curing from the rear of the joint.

The recommended joint width to depth ratio is 1:1 for joints 10mm wide, and 2:1 for joints 20mm and above. For joint widths ranging from 10mm to 20mm, use a sealant depth of 10mm. Ensure the joint depth never exceeds the joint width. The minimum joint width should always be 10mm.

Figure 1



Cassette fix method

Direct stick installation (Figure 2- 4)

Refer all surface preparation and caulking details above. Install panels are recommended by the manufacturer. Ensure all shimming and securing of the panel has been completed prior to commencing caulking.

Install PE bond-breaker tape or other suitable material that Fulaflex Facade will not adhere to on the top hat to avoid 3-sided adhesion.

Either fill the joint between the panel rear face and top hat first, or ensure the sealant is tooled sufficiently to completely and consistently fill the joint between the top hat section and rear face of the aluminium panel achieving a weatherproof seal.

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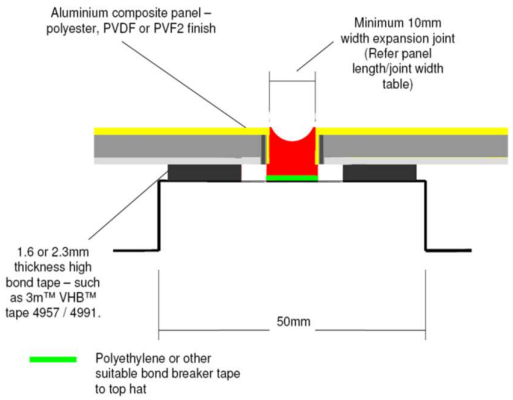
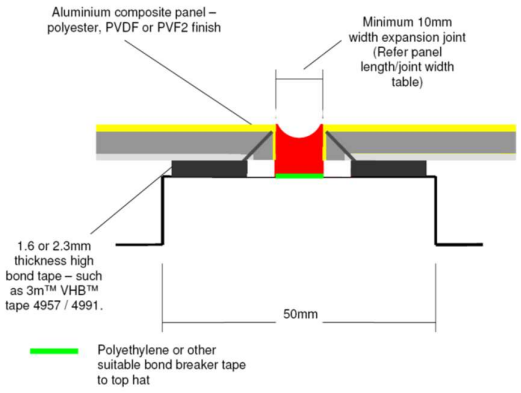
Figure 2



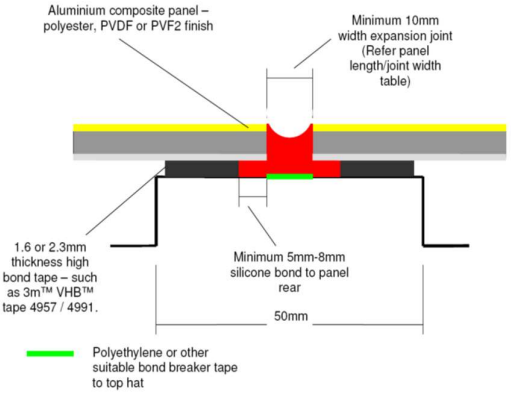
Direct stick fixing method 1 (Non-exposed core)

Figure 3



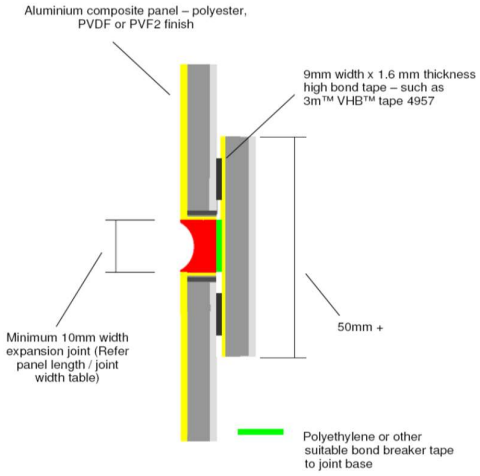
Direct stick fixing method 2 (Non-exposed core)

Figure 4



Direct stick fixing method 3 (Exposed core)

Figure 5



Horizontal Joint Detail – Non-exposed core (Joint Backing Strip)

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Additional Considerations

1) **Sealing joints in cut edges of panels**
   Depending on the method used to cut and finish the panels adhesion properties can vary. HB Fuller recommends pre-testing each type of cut surface to ensure adequate adhesion properties are achieved.

- When taping joint edges, ensure that masking tape does not cover the edge of the aluminium panel face.
- Refer **Figure 2,3** for panel edge treatments that facilitate a high performance bond to joint/panel edges.

2) **Climatic conditions at time of caulking**
   Aluminium facade panels can be subjected to significant expansion and contraction depending on climatic conditions. This must be taken into consideration when caulking aluminium facade systems as excessive joint movement in joints caulked with Fulaflex Facade prior to the sealant completely curing can compromise sealant performance. **Figure 6** explains the impact of temperature change on panel dimensions and the consequent impact on a flexible joint seal.

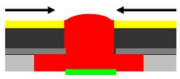
In all cases avoid caulking joints at or towards the minimum or maximum anticipated panel service temperatures

eg the heat of a summer day or the cold of a winter day.

A joint sealed at or close to the maximum anticipated service temperature will experience all or most of its calculated movement in extension as the element cools (adhesive and cohesive stress on sealant.)

Conversely, a joint sealed at or close to the minimum anticipated service temperature will experience all or most of its calculated movement in compression as the element warms (risk of sealant being squeezed from joint)

Figure 6

Panel Temp.	Panel Movement	Resulting joint	Sealant Behavior
Increase	Expanding	Joint narrows, sealant is placed into Compression	
Decrease	Contracting	Joint widens, sealant placed in extension/ Tension	

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JOINTS SEALED APPROXIMATELY MIDWAY BETWEEN THE MINIMUM AND MAXIMUM ANTICIPATED SERVICE TEMPERATURES WILL EXPERIENCE AN APPROXIMATELY EQUAL AMOUNT OF EXPANSION AND CONTRACTION THUS MINIMISING THE EXTENT OF EACH OF THE ABOVE MOVEMENT TYPES ON THE SEALANT JOINT.

3) Calculating anticipated joint movement

Required information:

1) Distance between joints in metres/Length of the building element (Measure)

2) Coefficient of expansion of the building element (consult the manufacturer of the panel)

3) Anticipated change in temperature of the element in ºC (Project the possible change in temperature considering the geographic area - the coldest winter temperature of the element, to the hottest summer temperature, as well as the possibility of the element reaching higher than ambient temperatures eg. a dark coloured panel in the sun)

The below formula can be used to calculate the total joint movement to anticipate.

Formula: $\Delta L = \alpha \times Lo \times \Delta T$

Where:

ΔL = Change in length of element in mtrs

α = Coefficient of thermal expansion of element

Lo = Length of element/distance between joints

ΔT = Change in temperature of the element in ºC (max. – min. anticipated service temperatures.)

Eg. An aluminium facade panel with a coefficient of thermal expansion:

$\alpha = 24 \times 10^{-6}$ mm/mm/ º C

Lo = 3.0 mtrs panel length/ distance between expansion joints

ΔT = 80 ºC

so:

$\Delta L = 0.000024 \times 3 \times 80$

= 0.00576 metres

= 5.76 mm

Under this example, over the temperature range of 80 degrees, a 3 mtr length of the above aluminium facade panel can be expected to change in length by 5.76mm.

Assuming a joint sealed midway between the minimum and maximum service temperatures ie equilibrium temperature, a 10mm joint could be expected to expand to 12.88mm wide (+28.8%) and contract to 7.12mm (-28.8%)

Note - The sealant movement capability must always exceed the total anticipated joint movement.

Eg. The above 10mm joint requires a sealant with a total movement capability of > 57.6%, say 60%. The sealant requires a minimum movement capability of +/- 30%.

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If the above 10mm installed joint were sealed at or close to the maximum element temperature, then it can be expected that the joint will expand by close to 5.76mm by the time the element reaches its' minimum temperature.

The sealant now requires a far greater joint movement capability (57.6%) a sealant with a minimum of +/-60% joint movement.

If the above 10mm installed joint were sealed at or close to the minimum element temperature, then it can be expected that the joint will contract by close to the before fore mentioned 5.76mm.

The sealant now requires a far greater joint compression capability 57.6%, and as such sealants are not commercially available the installed joint must be made wider.

Note – A lesser number of joints which are further apart (ie greater panel length), requires the joints to be wider or a more flexible sealant as the element will expand and contract predictably further distances.

Given it is not always practically possible to seal joints midway between the minimum and maximum anticipated element temperatures, it is important to ensure that joint widths and panel lengths (distance between free joints) are in consideration of a maximum possible percentage change in joint width which is well within the specified limit of +100/-50% of the original joint width.

Note – When installing panels it is equally important to consider the panel temperature at the time of fixing.

A panel installed at or close to the minimum or maximum anticipated service temperatures can significantly impact on the intended joint width.

Accounting for the likelihood of joints being sealed at temperatures above or below equilibrium temperature

The installed sealant joint width should always make consideration for joints being sealed at or close to the minimum or maximum possible element temperatures.

Figure 7 details minimum joint width requirements for various panel lengths using Fulaflex Facade

Figures based on:

$\alpha = 24 \times 10^{-6}$ mm/mm/ ° C

$\Delta T = 80$ °C

Consult H.B. Fuller if greater than 80 °C service temperature range is anticipated

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Figure 7

Sealant joint movement Capability (Fulaflex Facade)	Panel Length/ distance between free joints (m)	Anticipated total panel movement (mm)	Minimum joint width (mm)
+100/-50%	1.2 – 2.6	2.30 / 4.99	10mm
+100/-50%	2.6 – 3.0	4.99 / 5.76	10 /12
+100/-50%	3.0 – 3.8	5.76 / 7.29	12 /15
+100/-50%	3.8 – 4.6	7.29 / 8.83	15 /18
+100/-50%	4.6 – 5.0	8.83 / 9.6mm	18 /20

4) Periodic cleaning of panels and joints

Observe the panel manufacturer recommendations with regard to suitable cleaning agents.

Solvents should not be used to clean the sealed joints, which may cause the surface of the sealant to become sticky and attract dirt.

Site specific Warranties

HB Fuller are able to provide site-specific warranties for projects using Fulaflex Facade. Contact HB Fuller for further details.

Painting

Overpainting of Fulaflex Façade is not recommended due to the high joint movement capability of Fulaflex Façade, which will be greater than that of the applied paint. Flexible acrylic-based emulsion coatings can be used over Fulaflex Facade.

Oil based coatings and coatings containing a solvent are likely to remain tacky for an extended period of time and are not recommended to be used over Fulaflex Facade.

Chemical Resistance

Fulaflex Facade has been tested to the following standards relating to chemical resistance and staining:

ASTM C510 Stain and Colour change - PASS

Long-term chemical resistance to fresh water, salt water, limewater, caustic solutions and cleaning agents. Short-term chemical resistance to petrol, grease and mineral oil. Low resistant to organic acids, concentrated mineral acids or solvents.

The HB Fuller Technical Department is able to test specific chemicals/applications upon request to confirm suitability.

Clean Up

Best results are obtained by masking prior to sealing to avoid the necessity for clean up. However, if sealant is applied to areas where

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it is unwanted, clean up uncured sealant using toluene*, xylene*, methyl ethyl ketone*, acetone* or mineral turpentine* and a cloth. Take precautions to avoid staining substrates when using solvents. Cured sealant should be removed by abrasion or trimmed with a sharp knife. Do not undercut seal.

Limitations

- Avoid exposure to high levels of chlorine EG pools
- Do not use in joints deeper than 15 mm
- Avoid contact with alcohol and other solvent cleaners during cure phase
- Pre-testing is required on marble or other highly porous stone - finish may be affected
- Solvent-based coatings may remain tacky
- Do not use on bituminous surfaces
- Do not use on materials that bleed oil and plasticisers or solvents, as this will affect adhesion (e.g. most rubbers)
- Not a fire rated or glazing sealant. Not suitable for glazing use with glass, acrylic or polycarbonate sheets
- Not suitable for floor applications or foot traffic areas
- Not suitable for use in roofing lap joint applications where the sealant is feathered down to zero application weight – for such applications consider the use of silicone.
- Not suitable for swimming pools or hot tubs

Safety Information

This product is not considered hazardous under the classification of GHS WHS Version 8. Further safety information is available on the product SDS. Avoid contact with skin and eyes. Store in a dry place below 30°C. Keep out of reach of children. An MSDS is available from the H.B. Fuller representative in your state, HB Fuller Australia customer service, or downloadable from the HB Fuller web site, www.hbfuller.com.au.

Disclaimer

This technical data sheet summarises at the date of issue to the best technical knowledge of HB Fuller Australia. Since HB Fuller Australia cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, review this technical data sheet in the context of how the user intends to handle and use the product in the workplace. If clarification or further information is needed to ensure that an appropriate assessment can be made, the user should contact this company. Our responsibility for the products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request

Version 4
TDS Date: 05/09/2024

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