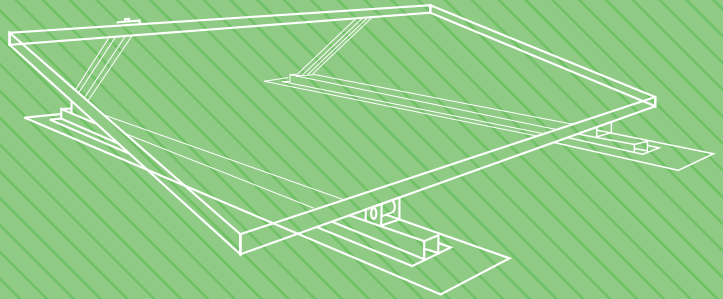
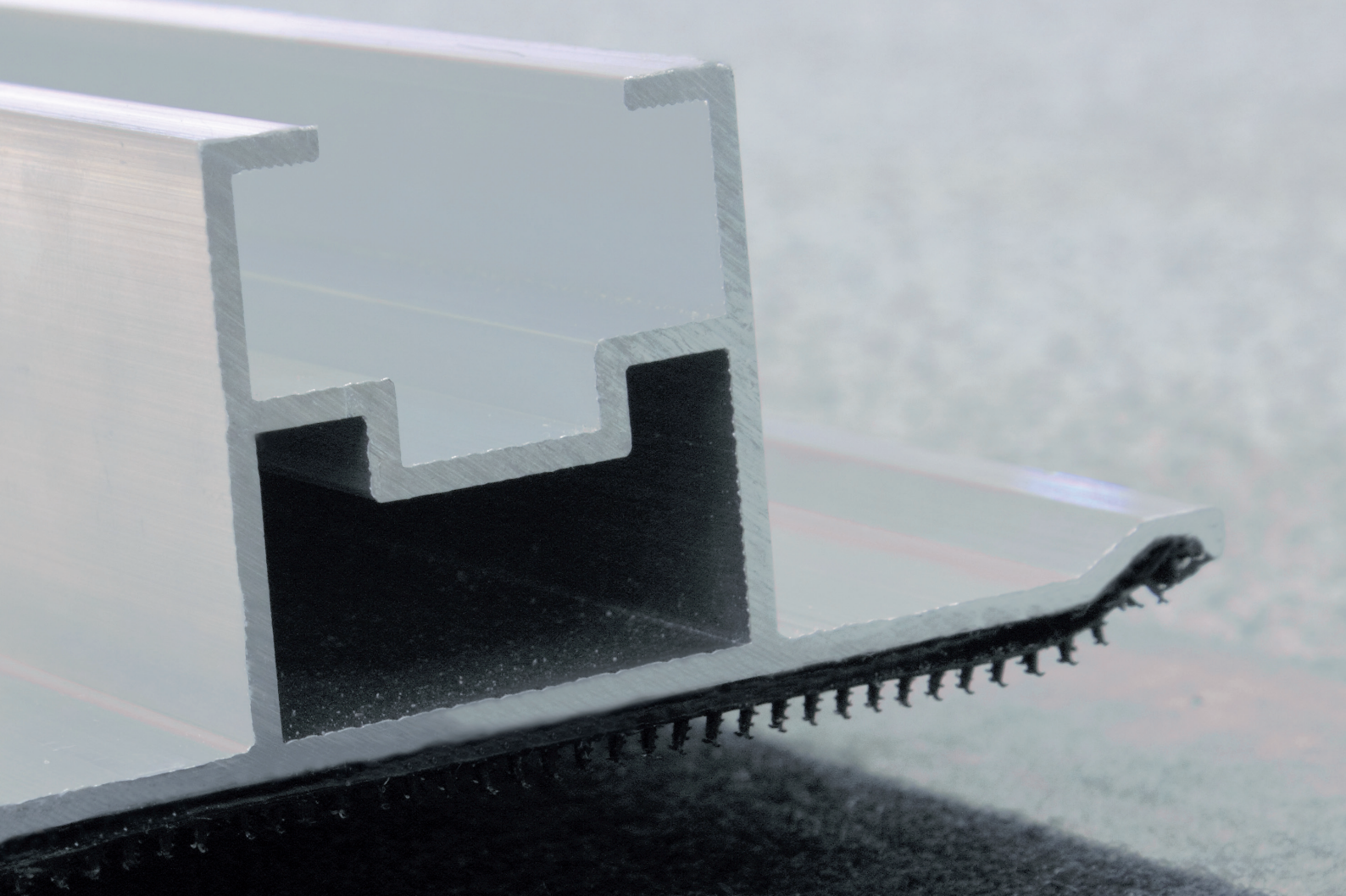


GENERAL FIX®
LIGHTWEIGHT, NON-PENETRATING FASTENING SYSTEM

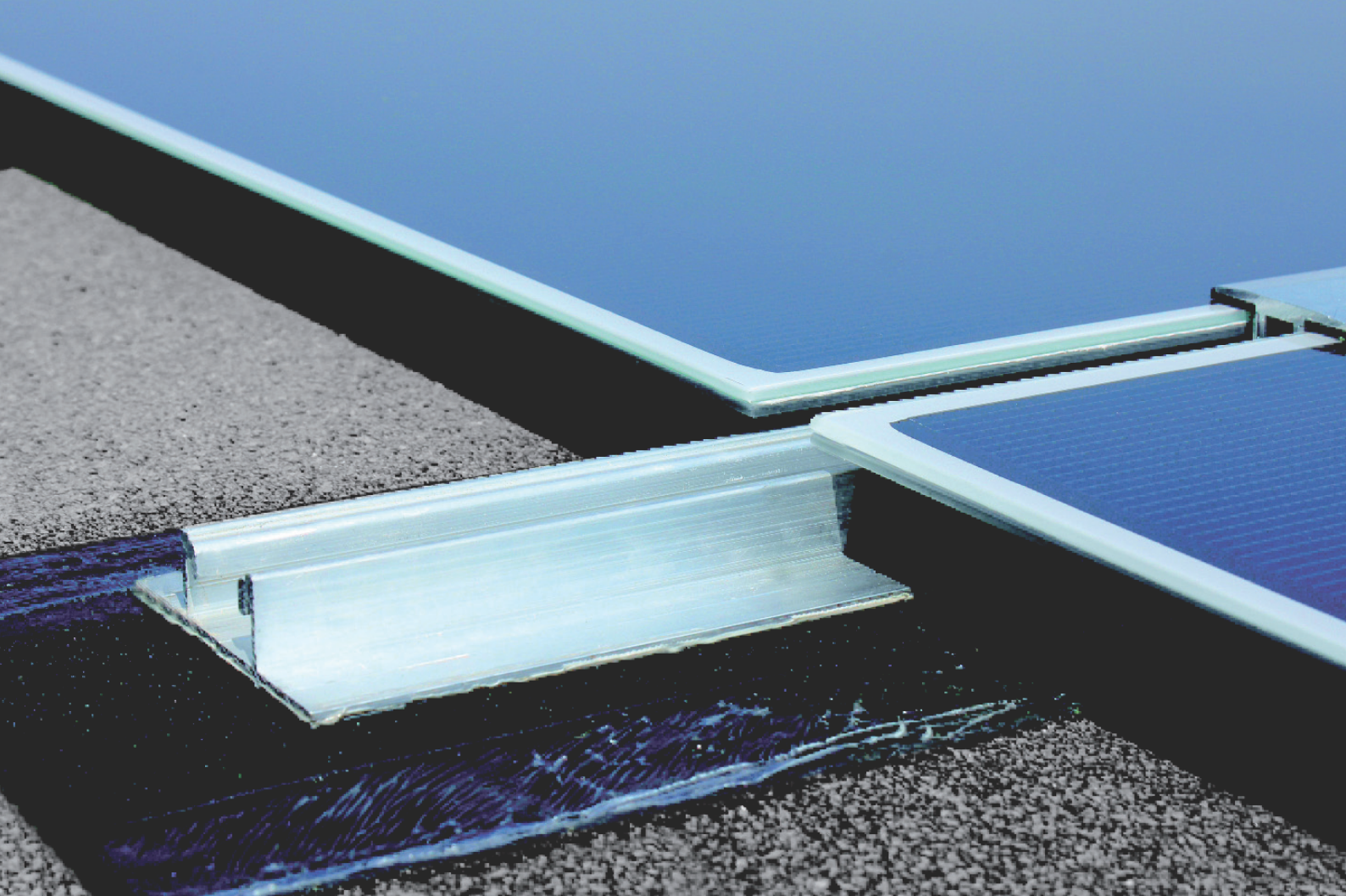




GENERAL FIX® Introduction

GENERAL FIX® is a unique, patented, lightweight fastening system for securing roof mounted equipment without penetration of the waterproofing system. Specifically developed as an anchorage device for crystalline photovoltaic panels and amorphous 'thin film' modules, GENERAL FIX® is compatible with all roof types. GENERAL FIX® provides a lightweight, secure solution eliminating the need for expensive heavy array support systems that can compromise waterproofing and structural integrity.

GENERAL FIX® applies the hook and loop fastening principle developed by VELCRO®, combined with a range of durable bituminous and synthetic membranes manufactured by Axter design partners General Membrane®. This creates a composite material that can be securely bonded to new and existing roof waterproofing systems to which various types of roof equipment can be attached. A wide range of stainless steel and aluminium GENERAL FIX® accessories is available to guarantee safe, secure attachment of equipment to the roof without impairment to the new or existing waterproofing warranty.



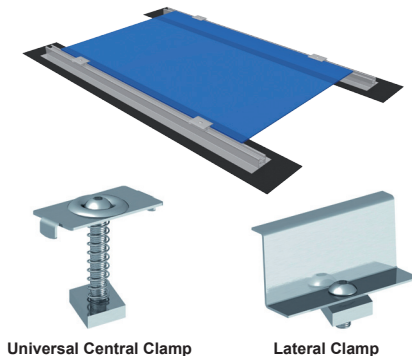
GENERAL FIX® Philosophy and Benefits

The design philosophy of the GENERAL FIX® lightweight, non-penetrative fastening system is to preserve the integrity of the waterproofing, regardless of type, through the elimination of fixings through the roof. GENERAL FIX® facilitates the simple removal of roof mounted equipment such as photovoltaic panels and modules, to permit unrestricted maintenance of the roof waterproofing system in accordance with British Standard recommendations and manufacturer warranty conditions.

- Approved for application on all roof types: bituminous, synthetic, liquid & metal
- Requires no penetration of the waterproofing system
- Lightweight system at 2kg/m²
- Fast simple installation

GENERAL FIX® Flat panel installation

Photovoltaic panels are installed on both flat and sloping roofs between strips of GENERAL FIX® and are clamped to the AluFix® aluminium profile with either a universal central or lateral clamp. Raised off the roof the panels are fully ventilated. Panels can be installed either longitudinally or at right-angles to the GENERAL FIX® system and AluFix® aluminium profile.



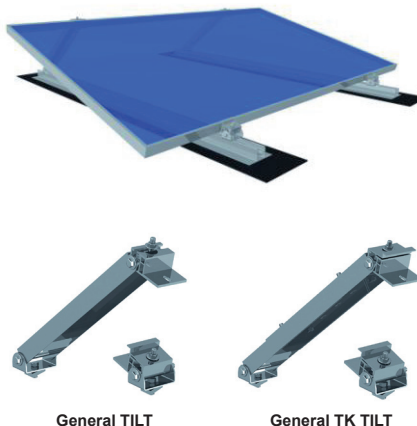
Universal Central Clamp

Lateral Clamp

NAME	HEIGHT
Lateral Clamp 36	34 to 36 mm
Lateral Clamp 42	40 to 42 mm
Lateral Clamp 46	44 to 46 mm
Lateral Clamp 52	50 to 52 mm

GENERAL FIX® Inclined panel installation

GENERAL FIX® is attached to the roof as for a flat installation with either the fixed General Tilt or telescopic TK Tilt profiles fastened to the AluFix® aluminium profile to achieve the required orientation angle. The panel is then clamped to the Tilt profile to complete the installation.



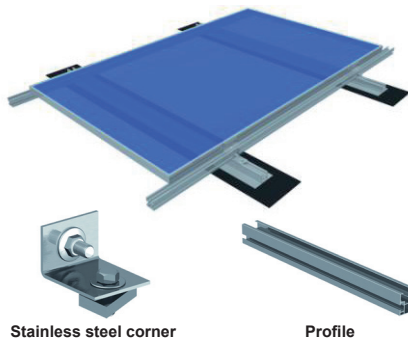
General TILT

General TK TILT

NAME	INCLINATION
General Tilt 13	13°
General Tilt 20	20°
General Tilt 30	30°
General TK Tilt 11 - 15	11 - 15°
General TK Tilt 16 - 23	16 - 23°
General TK Tilt 24 - 30	24 - 30°

GENERAL FIX® Flat panel installation using secondary frames

The system is installed flat but with secondary aluminium profiles fastened at right angles to AluFix® thus creating a greater ventilation flow beneath the photovoltaic panels.



Stainless steel corner

Profile

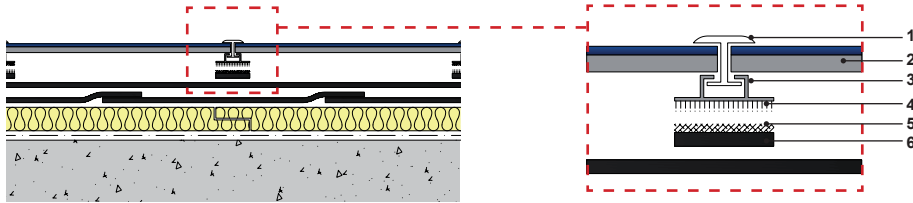
NAME	LENGTH
Profile A3	3 m
Profile A6	6 m

Universal Central Clamp and Lateral Clamp are also required with this installation.

Flat module installation

As part of a different system, Xter General Solar amorphous thin-film photovoltaic modules can also be supplied with strips of hook tape on the under surface, to be fastened directly to BandFix® which has been preadhered to the waterproofing membrane in accordance with the supplied design.

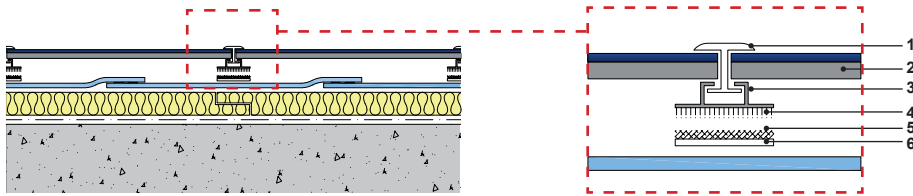
Bituminous membrane installation



1	Panel fixing
2	Photovoltaic panel
3	Aluminium profile
4	VELCRO® hook
5	VELCRO® loop
6	Bituminous SBS membrane

Typical bituminous waterproofing system build-up

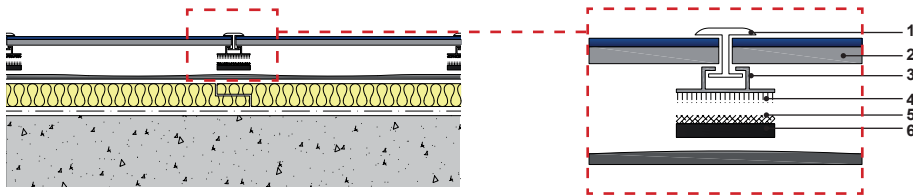
Synthetic membrane installation



1	Panel fixing
2	Photovoltaic panel
3	Aluminium profile
4	VELCRO® hook
5	VELCRO® loop
6	Synthetic PVC/TPO/EPDM membrane

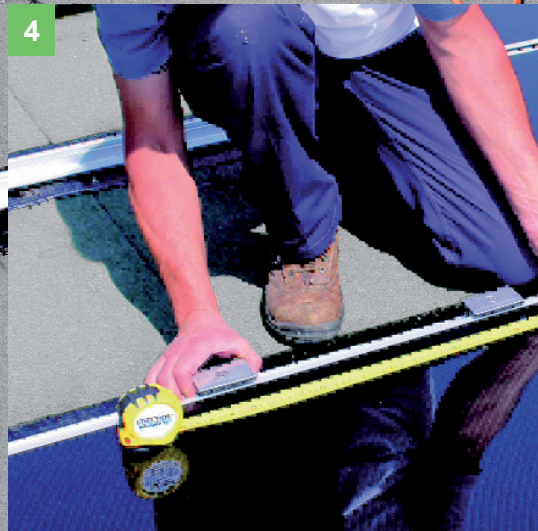
Typical synthetic waterproofing system build-up

Liquid membrane installation



1	Panel fixing
2	Photovoltaic panel
3	Aluminium profile
4	VELCRO® hook
5	VELCRO® loop
6	Liquid membrane

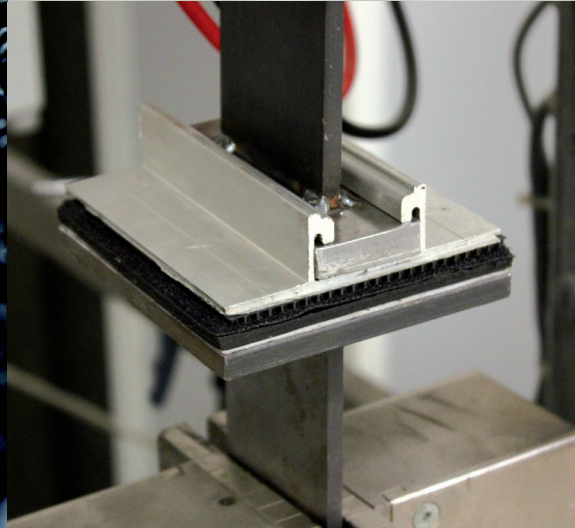
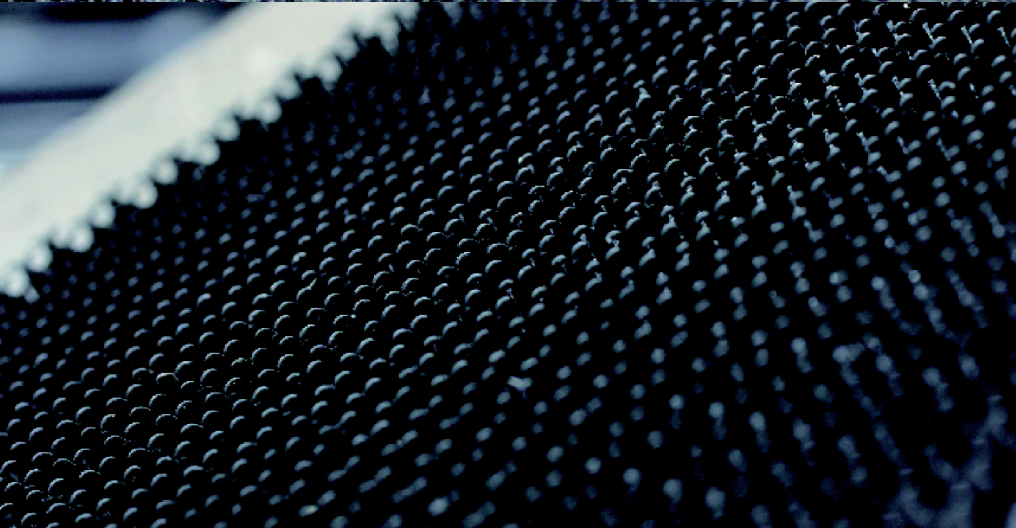
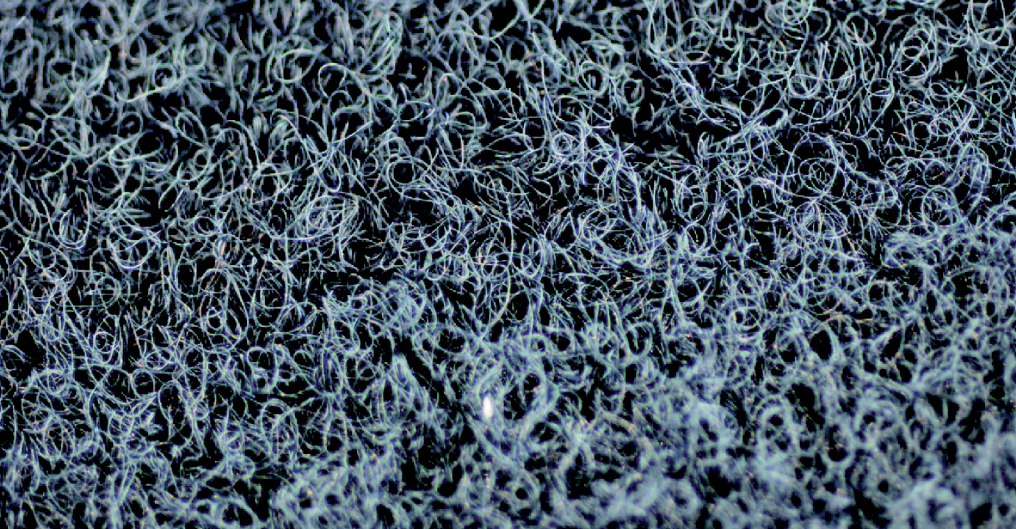
Typical liquid waterproofing system build-up



GENERAL FIX® Fast installation

GENERAL FIX® is anchored to the roof without penetration; installation is simple and fast. GENERAL FIX® is compatible with most commonly used waterproofing systems and is designed for both new build and refurbishment projects when installing photovoltaic crystalline panels and amorphous modules. GENERAL FIX® must be installed by trained Axtershield Installers to ensure quality installation and compliance with Axtershield system guarantee criteria.

- 1 Complete new waterproofing system installation or prepare the existing roof system to receive the GENERAL FIX®
- 2 Install the BandFix® membrane component in accordance with the specific design layout.
- 3 Locate the AluFix® profile component onto the BandFix® and secure.
- 4 Install photovoltaic panels using GENERAL FIX® accessories.



GENERAL FIX® Components and Design

BandFix® – VELCRO loop tape factory bonded to the surface of a 10 cm wide strip of a high adhesive bituminous or synthetic (PVC, TPO or EPDM) membrane.

AluFix® – an aluminium profile, factory bonded with a special aluminium adhesive to a strip of VELCRO® Ultra-Mate hook tape. For amorphous 'thin film' photovoltaic modules the hook tape is pre-adhered to the under surface of the module for direct application to the BandFix®.

Axter provides a complete design solution for the GENERAL FIX® system to ensure correct implementation into the built environment. Wind tests carried out in the Department of Mechanics wind tunnel at the Polytechnic of Milan, provided our partners with sufficient data to create a computer program that enables accurate calculation of the size and position of the GENERAL FIX® system in accordance with Eurocode 9, Part 1-3, BS EN 1999-1-3. This takes into account the building location, height, local topography and type of unit to be fastened.

Due to the unique and innovative design of the GENERAL FIX® system, Axter design partners GENERAL MEMBRANE® have filed for an industrial invention patent entitled "Mechanical device for the anchorage of technological systems to base supports".

Axter specialises in the design and manufacture of high quality, fully integrated robust membranes for roofing including green, brown and photovoltaic systems, structural waterproofing and civil engineering works. Through early involvement in a project, Axter's team can deliver value engineering to meet all design, specification and budgetary requirements.

Further details on the specifications contained in this document can be obtained from Axter Ltd.

www.axter.co.uk

GENERAL[®]
MEMBRANE

 **VELCRO[®]**

 **AXTER**



Axter Limited
West Road, Ransomes Europark, Ipswich, Suffolk, IP3 9SX
Tel: 01473 724056
Fax: 01473 723263
E-mail: info@axterltd.co.uk
Web: www.axter.co.uk

Technical information and specifications within this document are a general guide and are subject to change without notice. Axter Ltd does not accept responsibility for errors or for information which may be construed as misleading. All specifications should be checked with Axter Ltd prior to their use.