FM Approvals Limited
1 Windsor Dials
Windsor,Berkshire, SL4 1RS,
United Kingdom
Tel.: +44 1753 750000
E-mail: cpr@fmapprovals.com
Internet: www.fmapprovals.com

Designated according to Article 29 of Regulation (EU) No 305/2011

Member of EOTA
www.eota.eu

European Technical Assessment

ETA 12/0153
of 01/06/2018

General Part

Technical Assessment Body issuing the ETA:	FM Approvals Limited
Trade name of the construction product	EverGuard® TPO and EverGuard Extreme® TPO
Product family to which the construction product belongs	Systems of mechanically fastened flexible roof waterproofing membranes
Manufacturer	GAF 1 Campus Drive Parsippany New Jersey NJ 07470 USA
Manufacturing plant(s)	Locations “A”,“B”,“C” and “D”
This European Technical Assessment contains	6 pages including 17 Annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	Guideline for European Technical Approval, ETAG 006 (edition March 2000, amended November 2012), “Systems of mechanically fastened flexible roof waterproofing membranes”, used as a European Assessment Document (EAD).
This version replaces	ETA-12/0153 issued on 04 June 2013

Specific parts

1. Technical description of the product

1.1 General

The systems of mechanically fastened flexible roof waterproofing kits EverGuard® TPO and EverGuard Extreme® TPO covered by this European Technical Assessment (ETA), consist of the single ply flexible thermoplastic polyolefin (TPO) membranes EverGuard® TPO and EverGuard Extreme® TPO in combination with specific mechanical fasteners, all supplied by the ETA holder, GAF.

Based on the criteria of EN 13956, the waterproofing sheets are compatible with contact with bitumen.

The waterproofing membranes and the mechanical fasteners are the components of the "kit" which in combination form the systems covered by this ETA. Any insulation material incorporated into the system is not part of the "kit".

Throughout this ETA, other than for product names, the convention is always to give metric units first (together with any applicable tolerances), followed when relevant by imperial units shown in brackets.

1.2 Waterproofing membranes

The GAF waterproofing membranes EverGuard® TPO and EverGuard Extreme® TPO are reinforced membranes manufactured from a non-woven polyester reinforcement sandwiched between two layers of thermoplastic polyolefin. The membranes are produced by an extrusion/lamination process and are CE-marked in accordance with EN 13956.

The waterproofing sheets are delivered in rolls with a typical length of 30.4 meters (100 feet). The waterproofing sheets are available in various widths. The nominal maximum width covered by this ETA is 1.52 meters (5 feet).

EverGuard® TPO is available in 4 nominal thicknesses of 1.2mm, 1.5mm, 1.8mm and 2.0mm. EverGuard Extreme® TPO is available in 4 nominal thicknesses of 1.2mm, 1.5mm, 1.8mm and 2.0mm. For EverGuard® TPO the top surface can be white, grey or tan in colour and the bottom surface is black. For EverGuard Extreme® TPO the top surface is white and the bottom surface is black. Characteristics of the membranes appear in Tables 1 and 2.

Table 1

Property	EverGuard® TPO 1.2mm	EverGuard® TPO 1.5mm	EverGuard® TPO 1.8mm	EverGuard® TPO 2.0mm
Effective thickness (mm) (-5%, +10%)	1.2	1.5	1.8	2.0
Mass/unit area (g/m^2) (-5%, +10%)	1224	1536	1842	2048
Roll Length (m) (-0%, +5%)	30.4	30.4	30.4	30.4
Width (m) (-0%, +5%)	1.52	1.52	1.52	1.52

Table 2

Property	EverGuard Extreme® TPO 1.2mm	EverGuard Extreme® TPO 1.5mm	EverGuard Extreme® TPO 1.8mm	EverGuard Extreme® TPO 2.0mm
Effective thickness (mm) (-5%, +10%)	1.2	1.5	1.8	2.0
Mass/unit area (g/m^2) (-5%, +10%)	1224	1536	1842	2048
Roll Length (m) (-0%, +5%)	30.4	30.4	30.4	30.4
Width (m) (-0%, +5%)	1.52	1.52	1.52	1.52

1.3 Mechanical fasteners and substrate

Mechanical fasteners are supplied direct from the ETA holder (GAF) for use with profiled steel deck. Fasteners which fall within the scope of the investigation for this European Technical Assessment are shown in Table 3 below:

Table 3

GAF name of roof fasteners (black coated carbon steel)	GAF name of allowable washer (plate) combinations (Galvalume coated steel)
GAF Drill-Tec #12 screw	GAF Drill-Tec 3” galvalume plate.
GAF Drill-Tec #14 screw	GAF Drill-Tec 3” galvalume plate.
GAF Drill-Tec XHD screw	GAF Drill-Tec 2 3/8” barbed XHD or GAF DrillTec 2 ¾ ” barbed SXHD
GAF Drill-Tec SXHD screw	GAF Drill-Tec 2 3/8” barbed XHD or GAF DrillTec 2 ¾ ” barbed SXHD

Fastener and washer geometry (with tolerances) and assessed combinations are shown in Annexes A1 to A6. Properties and performance of the assessed combinations are contained in Annex A7.

2. Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

The roof waterproofing system can be installed on flat roofs (<10 degrees slope) to resist the passage of water to the building's internal structure, where requirements concerning safety in case of fire, hygiene, health and the environment and safety and accessibility in use as well as the durability in the sense of the Basic Requirements of Regulation 305/2011 shall be satisfied.

The allowable substrate is profiled steel deck (minimum 0.75mm thick, grade S280GD to EN 10346).

The insulation material must be CE marked according to the relevant harmonized European standards and shall have a minimum performance as stated in Annex B1.

The provisions made in this ETA are based on an assumed intended working life of the mechanically fastened waterproofing system of 10 years, provided that the roof waterproofing kit is subjected to appropriate installation, use and maintenance.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or FM Approvals Limited, but are to be regarded only as a means for choosing the appropriate products in relation to the expected, economically reasonable working life of the works.

The performances given in Section 3 below are only valid if the mechanically fastened flexible roof waterproofing membrane systems are used in compliance with the specifications and conditions given in Annexes B1 to B6.

3. Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Not applicable

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Component: Membrane	according to EN 13956, see Annexes A8, A9 and A10.

3.3 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Component: Membrane	according to ETAG 006 used as an EAD, see Annexes A9 and A10.
Component: Fastener	See Annex A7.
System	
Release of dangerous substances:	The manufacturer has declared the components of the system do not contain dangerous substances identifed in EOTA Technical Report 034 (version October 2015).

3.4 Safety and accessibility (BWR 4)

Essential characteristic	Performance
Component: Fastener	See Annex A7.
Component: Membrane	
Slipperiness	No performance determind (NPD)
System	
Resistance to wind uplift	See Annex A11.

3.5 Protection against noise (BWR 5)

Not applicable

3.6 Energy economy and heat retention (BWR 6)

Not applicable

3.7 Sustainable use of natural resources (BWR 7)

For the sustainable use of natural resources no performance was assessed for this ETA.

3.8 General aspects

The verification of durability is part of testing the essential characteristics and by additional tests on the component membranes, see Annexes A9 and A10. Durability is only ensured if the conditions of Annex B are taken into account in practice.

4. Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to Decision of the European Commission of 03 February 1998 (98/143/EC), the system of AVCP (see Annex V and Article 65 Paragraph 2 of EU Regulation 305/2011) shown in the table below applies.

Product	Intended use(s)	Level or class	AVCP System
Systems of mechanically fastened flexible roof waterproofing Membranes	For roof waterproofing	—	2+

5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are held within a factory control plan that is held by FM Approvals Limited.

Issued in Windsor, UK on 01.06.2018

By

R Zammitt

Senior Engineer

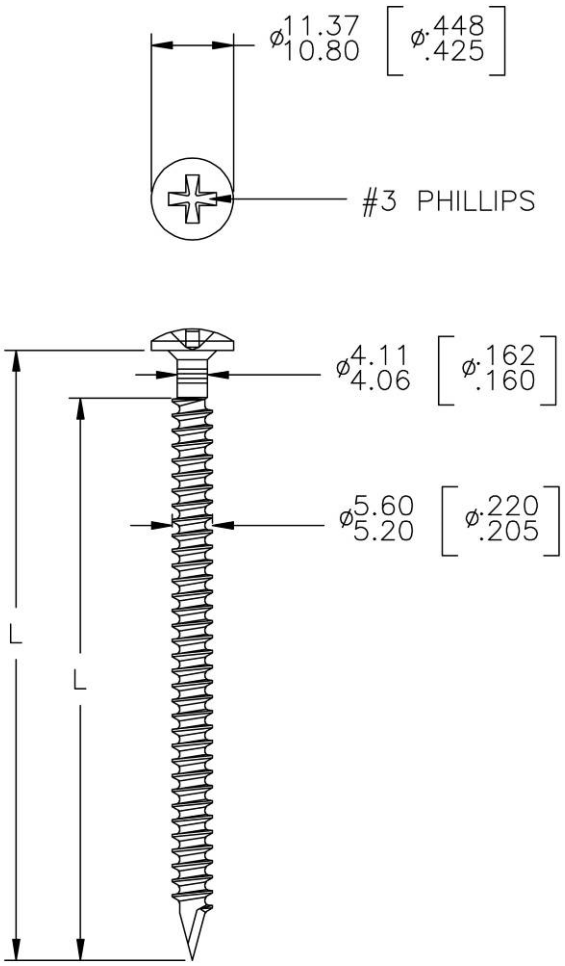
Digitally signed by Andrew J. Was
DN: cn=Andrew J. Was, o=FM Approvals Ltd, 1 Windsor Dials, Windsor, Berkshire, SL4 1RS, UK, ou=Assistant Vice President - Auditing & Quality Manager - EMEA, email=andrew.was@fmapprovals.com, c=GB

A Was

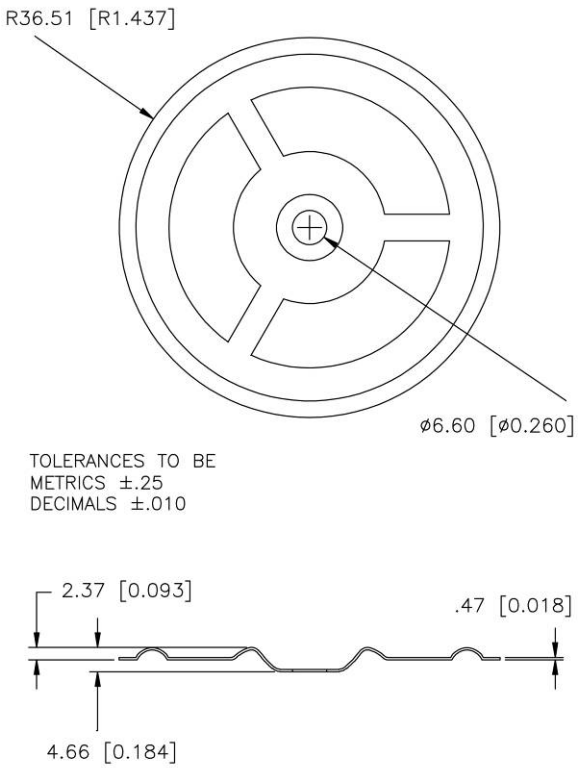
Deputy Certification Manager

Annexes

GAF Drill-Tec #12 Fastener



GAF Drill-Tec 3" Galvalume Plate

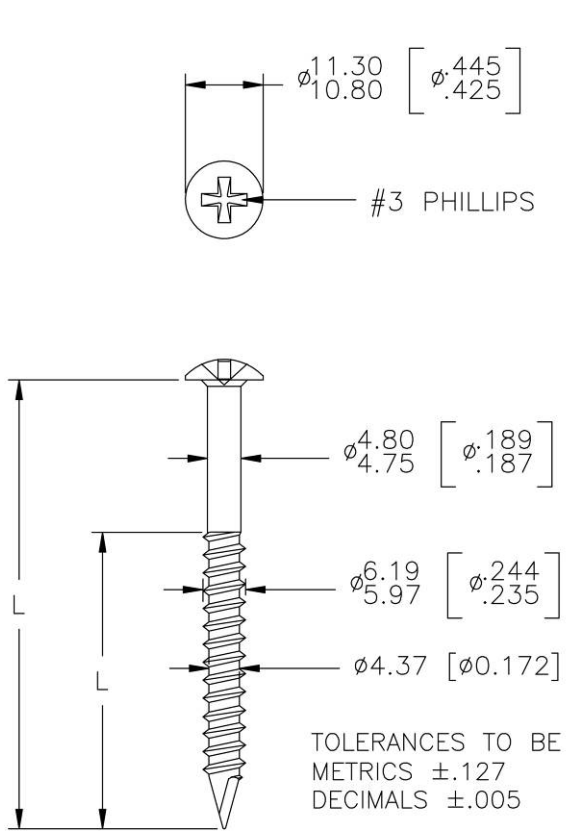


Note:

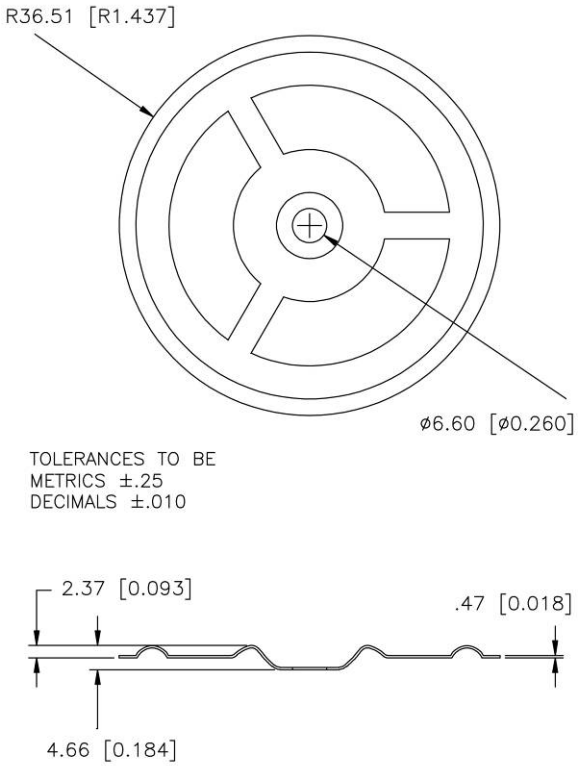
In the above figures key dimensions are given both in metric (mm) and imperial (inches) units. Metric units are indicated first, followed by imperial units in square brackets.

Combination A1	**Annex A1**
	Of the European Technical Assessment
GAF Flat Roof Fasteners	**ETA – 12/0153**

GAF Drill-Tec #14 Fastener



GAF Drill-Tec 3" Galvalume Plate

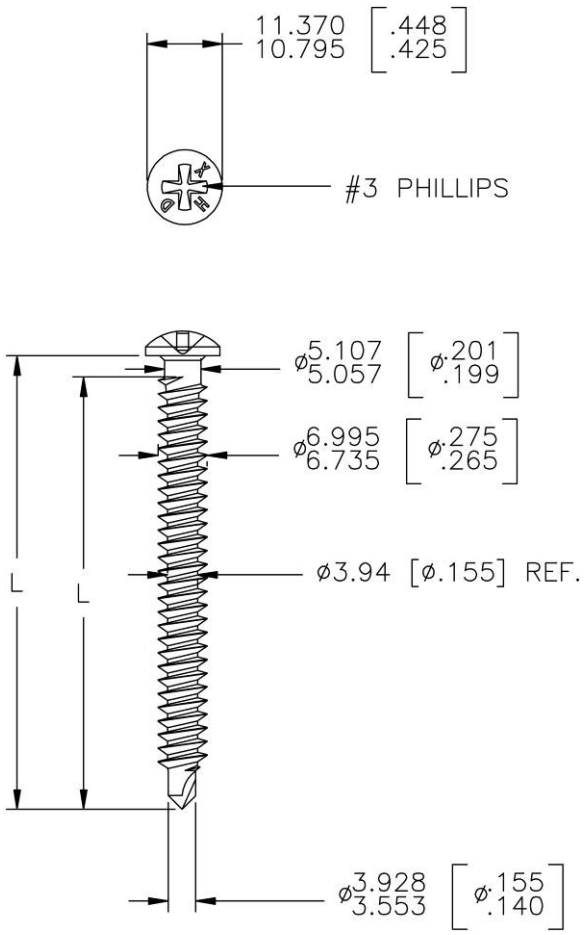


Note:

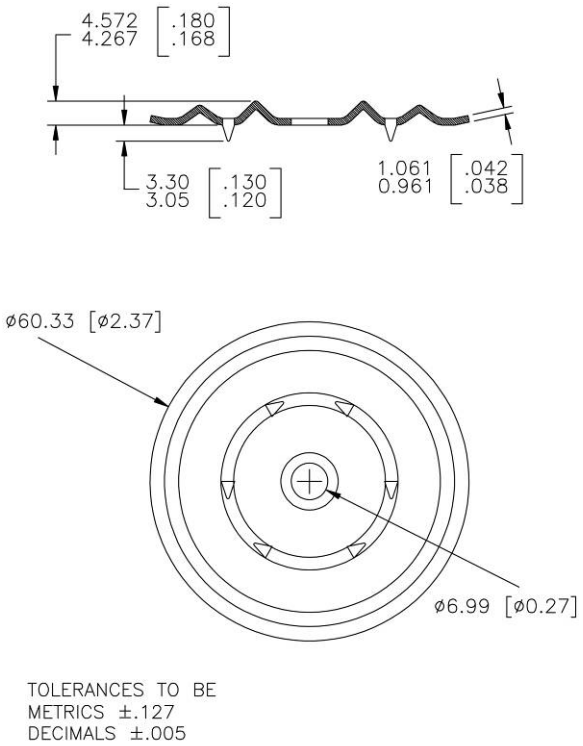
In the above figures key dimensions and tolerances are given both in metric (mm) and imperial (inches) units. Metric units are indicated first, followed by imperial units in square brackets.

Combination 2	**Annex A2** Of the European Technical Assessment **ETA – 12/0153**
GAF Flat Roof Fasteners	

GAF Drill-Tec XHD



GAF Drill-Tec 2 3/8" barbed XHD seam plate

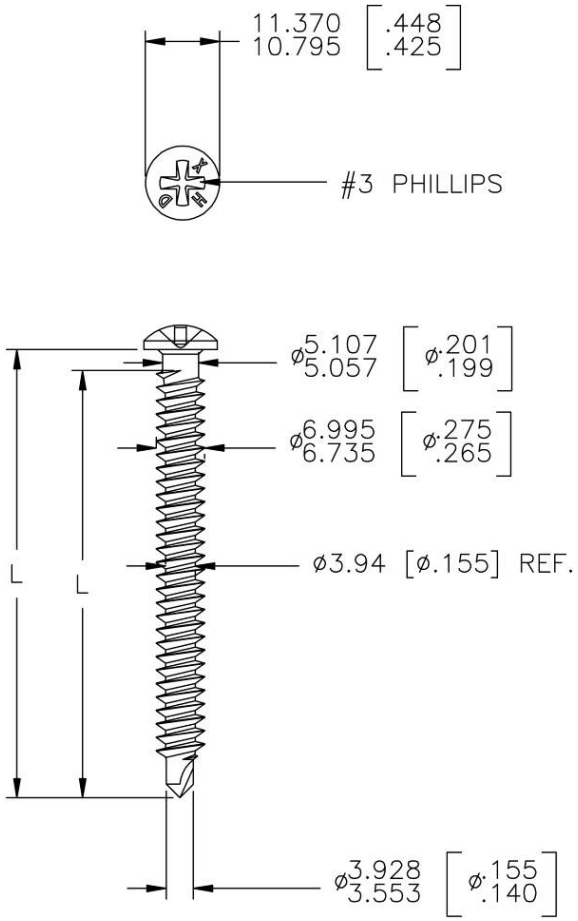


Note:

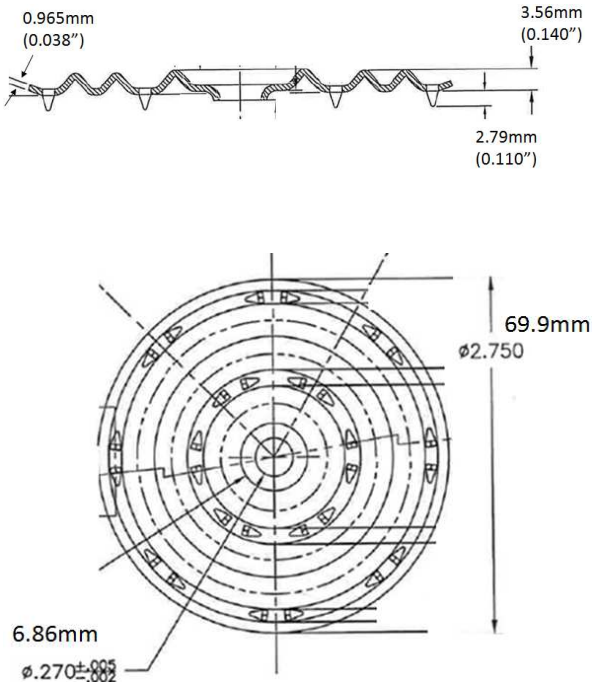
In the above figures key dimensions and tolerances are given both in metric (mm) and imperial (inches) units. Metric units are indicated first, followed by imperial units in square brackets.

Combination A3	**Annex A3** Of the European Technical Assessment
GAF Flat Roof Fasteners	**ETA – 12/0153**

GAF Drill-Tec XHD



GAF Drill-Tec 2 ¾" barbed SXHD seam plate

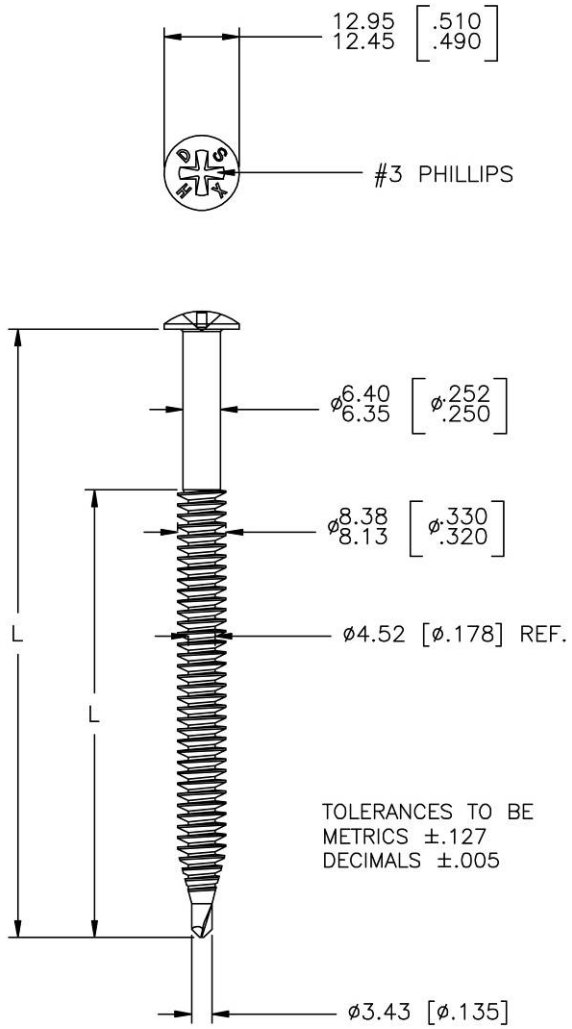


Note:

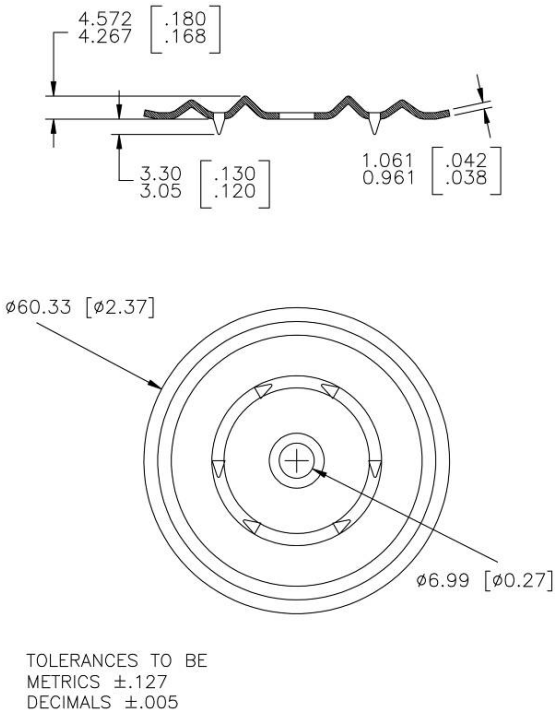
In the above figures key dimensions and tolerances are given both in metric (mm) and imperial (inches) units. Metric units are indicated first, followed by imperial units in square brackets.

Combination A4	**Annex A4**
	Of the European Technical Assessment
GAF Flat Roof Fasteners	**ETA – 12/0153**

GAF Drill-Tec SXHD



GAF Drill-Tec 2 3/8" barbed XHD seam plate

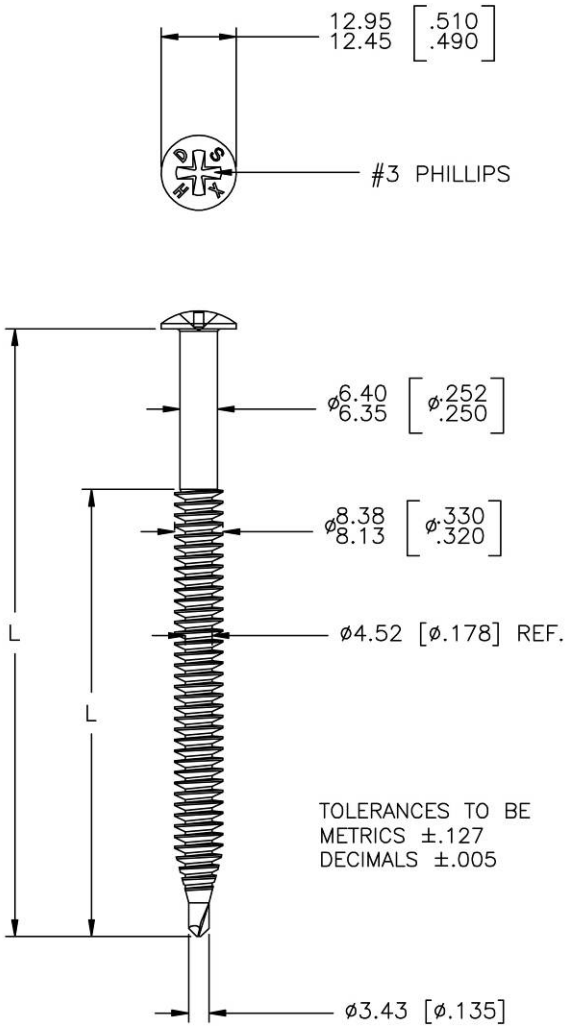


Note:

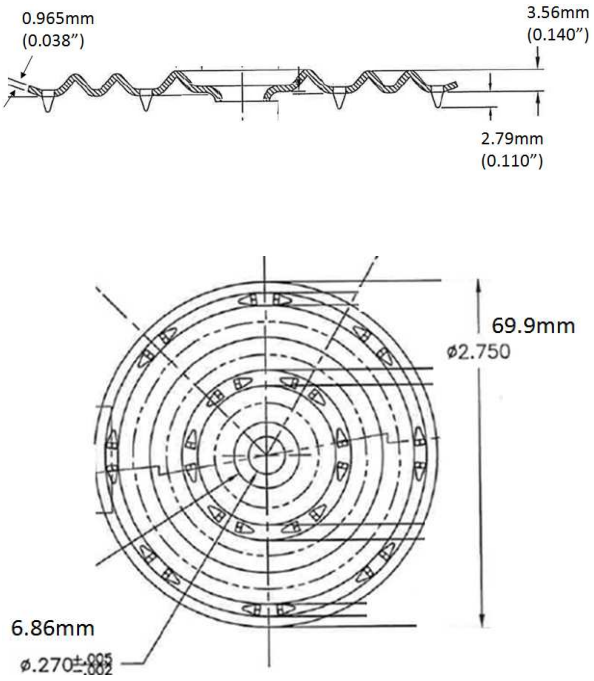
In the above figures key dimensions and tolerances are given both in metric (mm) and imperial (inches) units. Metric units are indicated first, followed by imperial units in square brackets.

Combination A5	**Annex A5** Of the European Technical Assessment **ETA – 12/0153**
GAF Flat Roof Fasteners	

GAF Drill-Tec SXHD



GAF Drill-Tec 2 ¾" barbed SXHD seam plate



Note:

In the above figures key dimensions and tolerances are given both in metric (mm) and imperial (inches) units. Metric units are indicated first, followed by imperial units in square brackets.

Combination A6	**Annex A6** Of the European Technical Assessment
GAF Flat Roof Fasteners	**ETA – 12/0153**

	Performance of GAF fasteners					
Annex	GAF Roof Fastener Combination		Characteristic value of axial load resistance (kN)	Mean value of axial load resistance (kN)	Resistance to Corrosion after 15 cycles to method of D.3.1.1 of ETAG 006.	Resistance to unwinding to Annex D of ETAG 006
	Name of screw	Name of washer	Steel substrate (minimum 0.7mm thick S280GD to EN 10346)	Steel substrate (minimum 0.7mm thick S280GD to EN 10346)		
A1	Drill-Tec #12	Drill-Tec 3" galvalume plate	0.72	0.88	Pass	Pass
A2	Drill-Tec #14	Drill-Tec 3" galvalume plate	0.56	0.79	Pass	Pass
A3	Drill-Tec XHD	Drill-Tec 2 3/8" barbed XHD	1.00	1.35	Pass	Pass
A4	Drill-Tec XHD	Drill-Tec 2 ¾" barbed SXHD	1.00	1.35	Pass	Pass
A5	Drill-Tec SXHD	Drill-Tec 2 3/8" barbed XHD	1.53	1.80	Pass	Pass
A6	Drill-Tec SXHD	Drill-Tec 2 ¾" barbed SXHD	1.53	1.80	Pass	Pass

Characteristic and Mean Values of Axial Load Resistance		**Annex A7** Of the European Technical Assessment **ETA - 12/0153**
GAF Flat Roof Fasteners		

Annex A8

External Roof Fire Classification for EverGuard® TPO and EverGuard Extreme® TPO systems

All the roof systems* detailed below achieved a **B_{ROOF} (t1)** classification in accordance with EN 13501-5 for the following field of applicaiton:

range of pitches: greater than or equal to 0° and less than 20°

range of decks: any profiled and non perforated steel deck
any non-combustible continuous deck with a minimum thickness of 10 mm

Construction #1

1.2mm EverGuard® TPO, mechanically attached
60mm Kingspan Thermaroof TR27 FM insulation
1.5mm generic polyethylene vapour control layer
Profiled trapezoidal steel deck

Construction #2

2.0mm EverGuard® TPO, mechanically attached
60mm Kingspan Thermaroof TR27 FM insulation
1.5mm generic polyethylene vapour control layer
Profiled trapezoidal steel deck

Construction #3

1.2mm EverGuard Extreme® TPO, mechanically attached
60mm Kingspan Thermaroof TR27 FM insulation
1.5mm generic polyethylene vapour control layer
Profiled trapezpoidal steel deck

* Full details for each construction identified above (# 1 to 3) are contained in the formal Classification Reports establishing the **B_{ROOF} (t1)** performance in accordance with EN 13501-5.

EverGuard® TPO

Cladding/Backing layer [g/m²]	Nominal thickness mm	MDV Thickness mm (-5%, +10%)	MDV mass per unit area [g/m²] (-5%, +10%)
None	1.2	1.2	1224
	1.5	1.5	1536
	1.8	1.8	1842
	2.0	2.0	2048

Characteristic	Test Method	Units	Value	Expression
Reaction to fire	EN 11925-2		class E	EN 13501-1
Water tightness	EN 1928 test B	kPa	Pass	Pass
Peel resistance of joints	EN 12316-2	N/50 mm	≥ 150 MD/CD	MLV
Shear resistance of joints	EN 12317-2	N/50 mm	≥ 800 MD/CD	MLV
Tensile strength	EN 12311-2	N/50 mm	≥ 1150 MD/CD	MLV
Tensile elongation	EN 12311-2	%	≥ 20 MD/CD	MLV
Resistance against dynamic indentation	EN 12691	mm	400 (Method A) 1500 (Method B)	MLV
Resistance against static indentation	EN 12730	kg	20 (Method A) 15 (Method B)	MLV
Tear Resistance	EN 12310-2	N	≥375(MD), ≥475(CD)	MLV
Dimensional stability	EN 1107-2	%	≤ 0.4(MD), ≤ 0.3(CD)	MLV
Resistance to cold bending/folding	EN 495-5	°C	-25	MLV
Resistance to UV exposure	EN 1297	visible	Pass	Pass
Hail resistance	EN 13583	m/s	≥ 19	MLV
Water vapour permeability	EN 1931	μ	≥100,000	MLV
Exposure to bitumen	EN 1548	-	Pass	Pass
Resistance to liquid chemicals including water	EN 1847	-	Pass[1)]	Pass[1)]
		[1)] in accordance with Annex C of EN 13956		
Resistance to heat ageing (EN 1296)				
Peel resistance of joints	EN 12316-2	%	Δ ≤ 20	Pass
Shear resistance of joints	EN 12317-2	%	Δ ≤ 20	Pass
Resistance to cold bending/folding	EN 495-5	°C	Δ ≤ 15	Pass
Resistance to UV radiation (EN 1297)				
Resistance to cold bending/folding	EN 495-5	°C	Δ ≤ 15	Pass
Resistance to ozone, EN 1844				
not necessary for plastic sheet ETAG 006 clause 5.2.7.3				

[1)] In accordance with Annex C of EN 13956

EverGuard® TPO **Characteristics** MD = Machine (Longitudinal) Direction CD = Cross-machine (Transverse) Direction	**Annex A9** Of the European Technical Assessment **ETA – 12/0153**
GAF EverGuard® TPO	

EverGuard® Extreme TPO

Cladding/Backing layer [g/m²]	Nominal thickness mm	MDV Thickness mm (-5%, +10%)	MDV mass per unit area [g/m²] (-5%, +10%)
None	1.2	1.2	1224
	1.5	1.5	1536
	1.8	1.8	1842
	2.0	2.0	2048

Characteristic	Test Method	Units	Value	Expression
Reaction to fire	EN 11925-2		class F	EN 13501-1
Water tightness	EN 1928 test B	kPa	Pass	Pass
Peel resistance of joints	EN 12316-2	N/50 mm	≥ 150 MD/CD	MLV
Shear resistance of joints	EN 12317-2	N/50 mm	≥ 800 MD/CD	MLV
Tensile strength	EN 12311-2	N/50 mm	≥ 1150 MD/CD	MLV
Tensile elongation	EN 12311-2	%	≥ 20 MD/CD	MLV
Resistance against dynamic indentation	EN 12691	mm	400 (Method A) 1500 (Method B)	MLV
Resistance against static indentation	EN 12730	kg	20 (Method A) 15 (Method B)	MLV
Tear Resistance	EN 12310-2	N	≥375(MD), ≥475(CD)	MLV
Dimensional stability	EN 1107-2	%	≤ 0.4(MD), ≤ 0.3(CD)	MLV
Resistance to cold bending/folding	EN 495-5	°C	-25	MLV
Resistance to UV exposure	EN 1297	visible	Pass	Pass
Hail resistance	EN 13583	m/s	≥ 19	MLV
Water vapour permeability	EN 1931	μ	≥100,000	MDV
Exposure to bitumen	EN 1548	-	Pass	Pass
Resistance to liquid chemicals including water	EN 1847	-	Pass[1)]	Pass[1)]
		[1)] in accordance with Annex C of EN 13956		

Resistance to heat ageing (EN 1296)				
Peel resistance of joints	EN 12316-2	%	Δ ≤ 20	Pass
Shear resistance of joints	EN 12317-2	%	Δ ≤ 20	Pass
Resistance to cold bending/folding	EN 495-5	°C	Δ ≤ 15	Pass
Resistance to UV radiation (EN 1297)				
Resistance to cold bending/folding	EN 495-5	°C	Δ ≤ 15	Pass
Resistance to ozone, EN 1844				
not necessary for plastic sheet ETAG 006 clause 5.2.7.3				

1) In accordance with Annex C of EN 13956

EverGuard Extreme® TPO
Characteristics

MD = Machine (Longitudinal) Direction
CD = Cross-machine (Transverse) Direction

GAF EverGuard Extreme® TPO

Annex A10

Of the European Technical Assessment

ETA – 12/0153

Annex A11 : Wind Uplift system performance

The systems of mechanically fastened flexible roof waterproofing membranes EverGuard® TPO and EverGuard Extreme® TPO have obtained the admissible design loads (W_{adm}) shown in the Table below for wind uplift in accordance with ETAG 006 used as an EAD. Values apply for use on a profiled steel deck (minimum thickness 0.75mm and "S280GD" (or higher) grade to EN 10346).

GAF Roof Membrane	GAF Fastener screw name	GAF Washer name	W_{adm}
EverGuard® TPO (all thicknesses)	Drill-Tec XHD or Drill-Tec SXHD	Drill-Tec 2 3/8" barbed XHD seam plate or Drill-Tec 2¾" barbed SXHD seam plate	**942 N/fastener**
EverGuard Extreme® TPO (all thicknesses)	Drill-Tec XHD or Drill-Tec SXHD	Drill-Tec 2 3/8" barbed XHD seam plate or Drill-Tec 2¾" barbed SXHD seam plate	**867 N/fastener**

Wind Uplift Performance	**Annex A11** Of the European Technical Assessment **ETA – 12/0153**
EverGuard® TPO and EverGuard Extreme® TPO	

Annex B1 : Intended use specification

Design and dimensioning

Correct design of all roofs incorporating the systems detailed in this ETA shall be a requirement. In particular full account shall be taken of:

- dead and imposed loads,
- relevant design codes and national rules (eg EN 1991-1-4 and relevant national annexes),
- relevant design wind pressure on all roof areas (eg field of roof, perimeters and corners),
- structural strength, stiffness and deflection limits,
- attachment of the roof deck to the structural framing,
- provision of insulation,
- assessment of condensation risk and provision of vapour control layers,
- sound insulation,
- fire precaution,
- roof attachments, fixtures and penetrations,
- falls and drainage,
- means of access for inspection and maintenance.

Practical application of detailing as shown in Annexes B2 to B6 and the ETA holders installation manual shall be considered.

The substrate onto which the waterproofing kit is to be laid should be sufficiently rigid, dense and dimensionally stable to support the system.

In respect of the compression behaviour of any insulation material, it shall be ensured that the insulation material on site has a minimum performance of:
Compressive strength at 10% deformation ≥ 50 kPa (to method of EN 826)
Point load behaviour ≥ 500 N, at 5mm deformation (to method of EN 12430)

The insulation material must be CE marked according to the relevant harmonized European standard. The durability shall be assessed in accordance with these standards. The required thickness of the insulation material should be designed in accordance with national regulations.

Installation

The performance of the mechanically fastened roof waterproofing system as defined in this ETA can be assumed, only if the installation is carried out according to the instructions stated in the ETA holders installation manual and any other applicable national requirements. In all cases taking account of the following points:

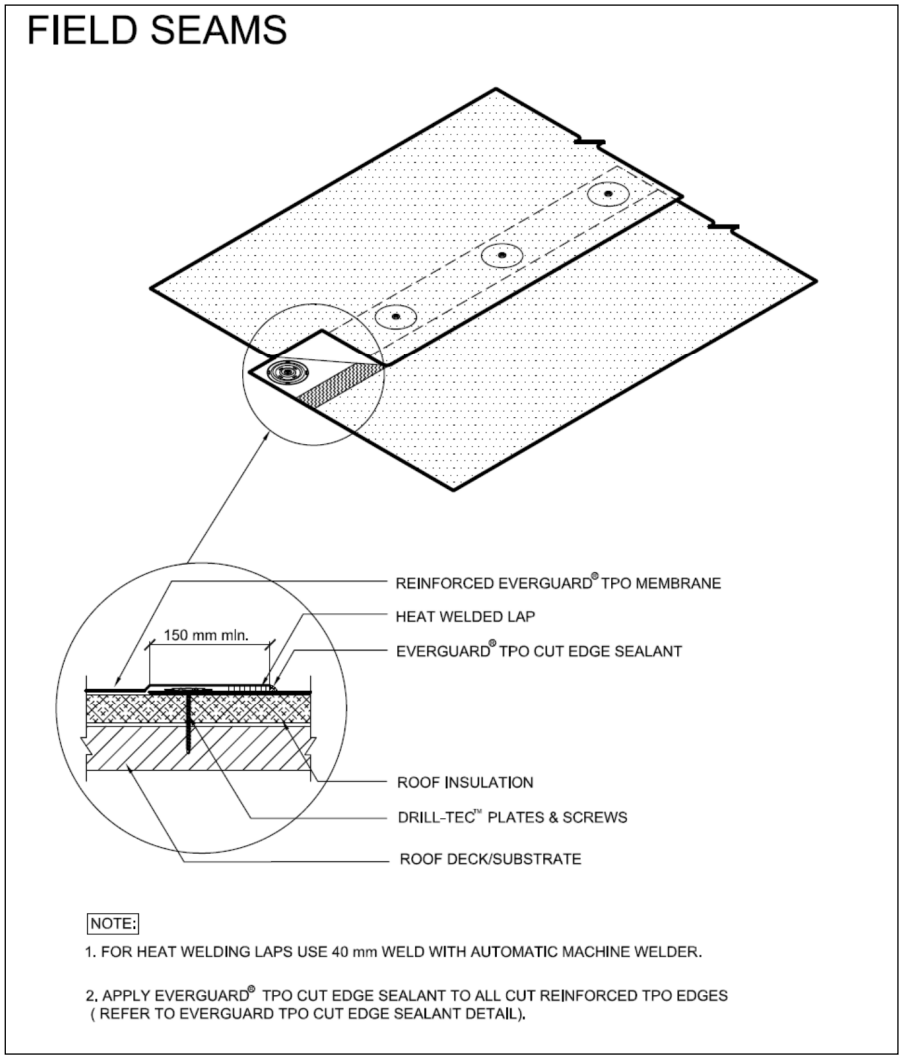
- installation by appropriately trained personnel, familiar with the requirements of the GAF installation manual,
- installation of only those components which are marked as components of the system,
- installation with the required tools and equipment,
- safety during installation,
- inspecting the substrate surface for cleanliness and correct preparation,
- checking compliance with suitable weather conditions, avoid installation when temperature falls under 5°C and the following weather conditions: high humidity, rain, snow or fog. By preheating the seam areas, welding is also possible at lower ambient temperatures if performed in accordance with the GAF installation manual,
- inspections during installation and of the finished roof waterproofing system and documentation of the results.

EverGuard® TPO and EverGuard Extreme® TPO	**Annex B1**
Intended use specification	Of the European Technical Assessment **ETA – 12/0153**

Annex B2 : Longitudinal Joints (Field Seams)

Overlap of Reinforced EverGuard® TPO Membranes Longitudinal Joints (Field Seams):

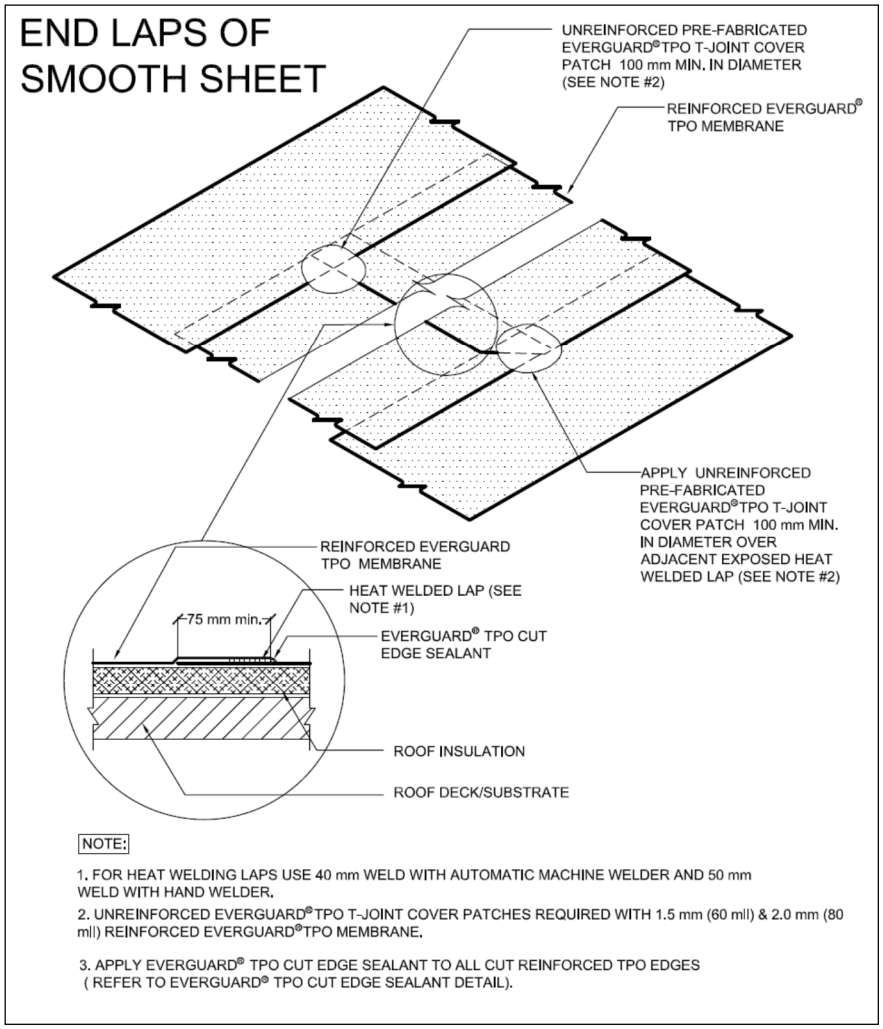
The field seams of mechanically fixed, EverGuard® TPO and EverGuard Extreme® TPO reinforced sheets (see Figure below) must be at least 150 mm wide and shall be sealed with minimum 40 mm (1.5 in.) wide heat welds applied by an automatic (robotic) hot air welder.



EverGuard® TPO and EverGuard Extreme® TPO	**Annex B2**
Longitudinal joint details	Of the European Technical Assessment **ETA – 12/0153**

Annex B3 : Transverse Joints (End Laps)

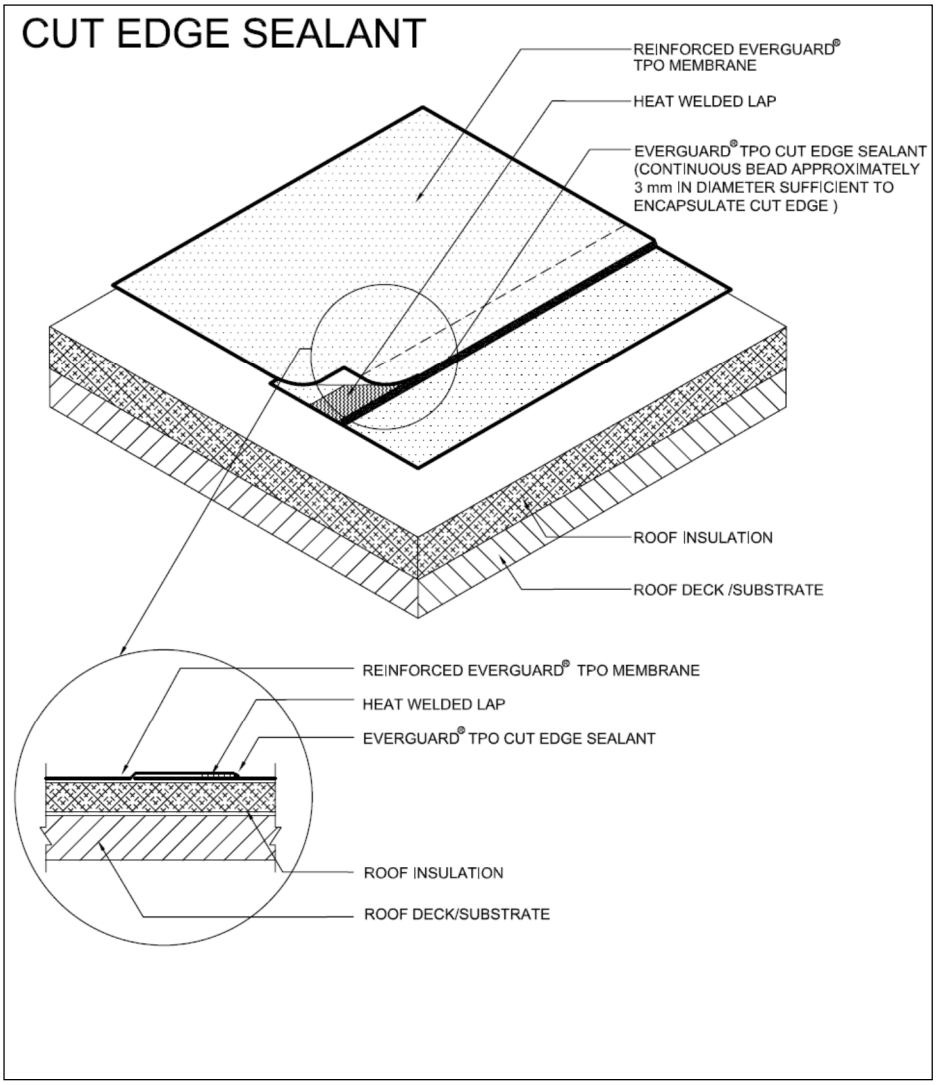
The end laps of reinforced EverGuard® TPO or EverGuard Extreme® TPO sheets (see figure below) must be at least 75 mm (3 in.) wide and shall be sealed with minimum 40 mm (1.5 in.) wide heat welds applied by an automatic (robotic) hot air welder or with minimum 50 mm (2.0 in.) wide heat welds applied by a hand held hot air welder. When minimum 1.5 mm thick reinforced EverGuard® TPO or EverGuard Extreme® TPO membrane is installed then unreinforced EverGuard® TPO T-Joint Cover Patches, min. 100 mm (4.0 in.) in diameter, shall be heat welded over the perpendicular intersections of the edges of the end laps and field seams.



EverGuard® TPO and EverGuard Extreme® TPO	**Annex B3**
Transverse joint details	Of the European Technical Assessment **ETA – 12/0153**

Annex B4 : Sealing cut edges of EverGuard® TPO and EverGuard Extreme® TPO Membranes

Cut edges of all reinforced EverGuard® TPO and EverGuard Extreme® TPO membranes shall be sealed (see Figure below) by applying a continuous bead of EverGuard® TPO Cut Edge Sealant, approximately 3 mm (0.125 in.) in diameter, sufficient to encapsulate any exposed polyester reinforcement along the cut edge.



EverGuard® TPO and EverGuard Extreme® TPO	**Annex B4**
Sealing Cut Edges	Of the European Technical Assessment **ETA – 12/0153**

Annex B5 : Ancillary products

Ancillary products identified below are used as part of the installation procedures in order to achieve the system performance stated in this ETA.

EverGuard® TPO Cut Edge Sealant

A sealant applied to all cut edges of reinforced EverGuard® TPO or EverGuard Extreme® TPO membranes to encapsulate any exposed polyester reinforcement along the cut edge.

Ecoseal EP (TPO) Bonding Adhesive

A solvent based bonding adhesive that may be used to secure smooth, reinforced EverGuard® TPO or EverGuard Extreme® TPO membranes to walls and kerbs in vertical flashing applications.

Unreinforced EverGuard® TPO or EverGuard Extreme® TPO T-joint Cover Patches

These are unreinforced, 100mm diameter, cover patches for sealing of “T-joints” of 1.5mm thick and 2.0mm thick reinforced EverGuard® TPO, or for sealing of “T-joints” of 1.5mm, 1.8mm thick and 2.0mm EverGuard Extreme® TPO membrane installations.

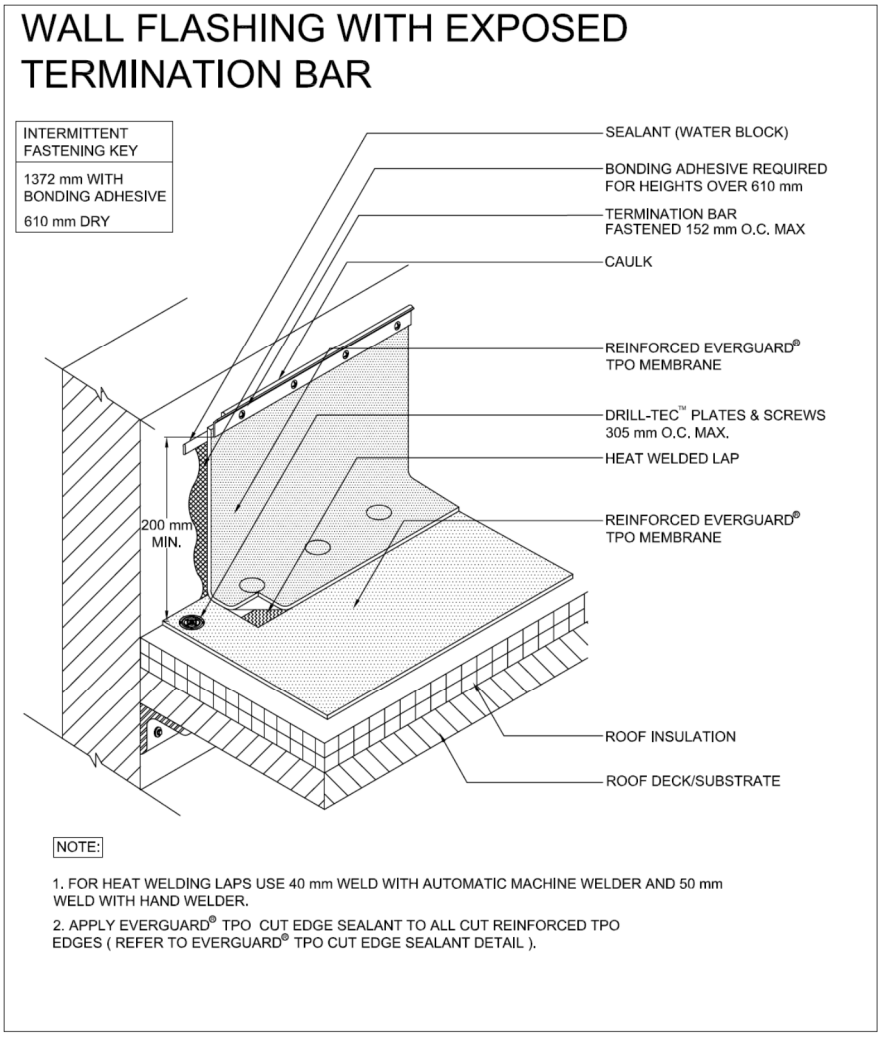
EverGuard® TPO or EverGuard Extreme® TPO Flashing Strip

A 200mm wide flashing strip is available for use with EverGuard® TPO or EverGuard Extreme® TPO membrane installations, in defined applications, all as detailed in the GAF installation manual.

EverGuard® TPO and EverGuard Extreme® TPO	**Annex B5** Of the European Technical Assessment **ETA – 12/0153**
Ancillary products	

Annex B6 : Typical Upstand detail

A typical wall flashing detail is shown below. Further guidance and installation details are available from the detailed installation manual available from the ETA holder.



EverGuard® TPO and EverGuard Extreme® TPO	**Annex B6**
Upstand Detail	Of the European Technical Assessment **ETA – 12/0153**