SINTEF Technical Approval

TG 2439

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Amended:
Valid until 01.04.2029
Provided listed on
www.sintefcertification.no

SINTEF confirms that

Milletech Fastening System

has been found to be fit for use in Norway and to meet the provisions regarding product documentation given in the regulation relating to the marketing of products for construction works (DOK) and regulations on technical requirements for building works (TEK), with the properties, fields of application and conditions for use as stated in this document

1. Holder of the approval

Milles Teknikplast AB
Bergsjödalen 55
S-415 68, Gothenburg, Sweden
www.milletech.se

2. Product description

Milletech Fastening System is designed as mechanical fastening system of roofing membranes and thermal insulation in roof constructions. Milletech Fastening System consists of the following components, see fig. 1 – 13:

- Tube washers made of injection moulded modified polypropylene and are produced both with and without studs, fig. 1 and 2
- Steel washer of coated steel, fig 3 – 6
- Screws for fixing in profiled steel sheets, fig. 7 - 9
- Concrete screw, fig 10
- Screw for fixing in light weight concrete, fig. 11
- Screws for fixing in wood, fig. 12 and 13.

3. Fields of application

Milletech Fastening System is used for mechanical fastening of bituminous and synthetic roofing membranes on flat, compact roofs with a supporting construction of profiled steel sheets, concrete, light weight concrete or wood.

4. Product performance

Fastening capacity
Design capacities for fastening in various roofing membranes are given in table 1. Table 2 and 3 show the design capacity for the screws fixed in different substrates.

Corrosion protection
The fasteners in Milletech fastening system is treated with Ruspert corrosion protection and have corrosion resistance corresponding to user group KLA as specified in Building Research Design Guide 544.206 and EAD 030351-00-0402, Annex A2.4 (15 cycles in accordance with DIN:50018 / ISO 6988).

Safety against self unwinding
Milletech Itech screws, for fixing in steel sheets, have been tested for safety against self-unwinding, and are considered safe.

Application properties
Milletech Fastening System has been evaluated to be satisfactory for use under the following conditions:

- Installation at temperatures down to –20 °C
- Oblique loading when fastened at the edge of membrane sheets or at flaps
- Strength against loads caused by dynamic wind loads
- Torch welding of bitumen roofing membranes
- Ageing together with PVC roofing membranes and bituminous roof coverings

5. Environmental aspects

Substances hazardous to health and environment
Milletech Fastening System contains no hazardous substances with priority in quantities that pose any increased risk for human health and environment. Chemicals with priority include CMR, PBT or vPvB substances.

Waste treatment/recycling
Milletech Fastening System shall be sorted as metal waste or residual waste on the building/demolition site. The products shall be delivered to an authorized waste treatment plant for material recovery (metal parts) and energy recovery (non-metal parts).

Environmental declaration
No environmental declaration according to EN 15804 has been worked out for Milletech Fastening System.

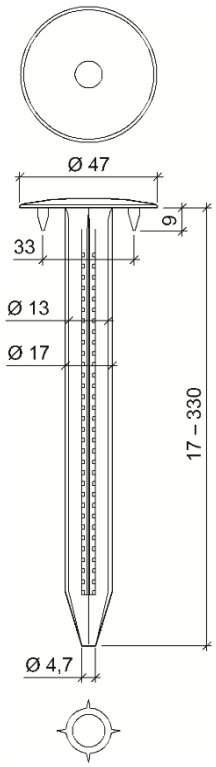

Fig. 1
Quadro – T fastening plug with studs

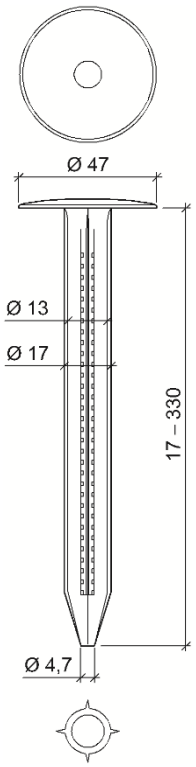

Fig. 2
Quadro fastening plug without studs

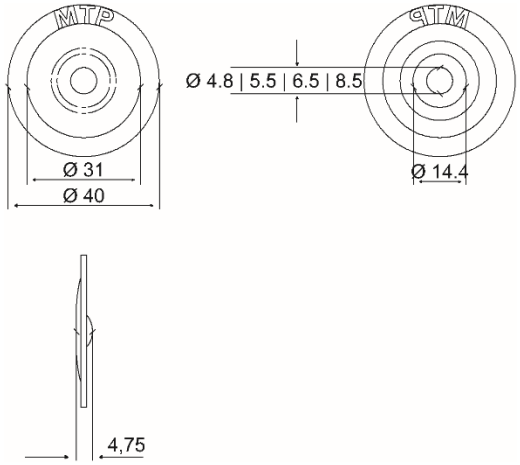

Fig. 3
Milletech Itech 40 steel washer

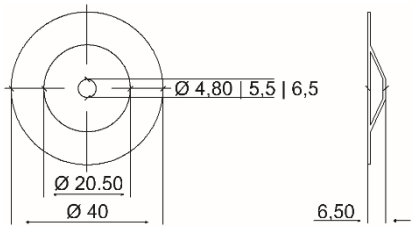

Fig. 4
Milletech Itech 40 countersunk steel washer

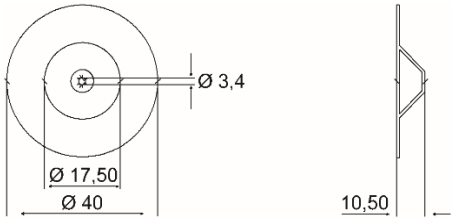

Fig. 5
Milletech Itech 40 countersunk steel washer for use together with wood screws

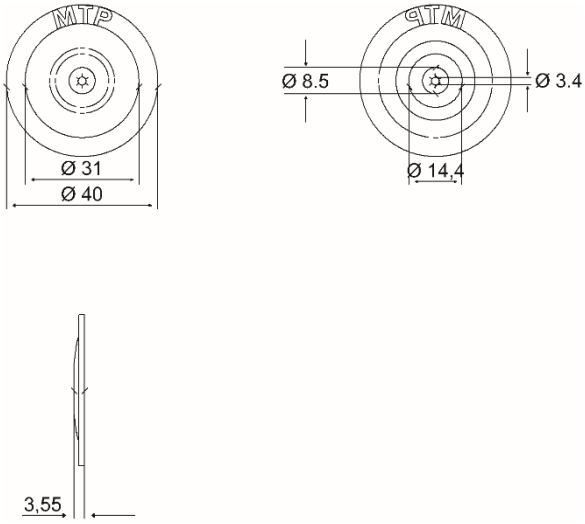

Fig. 6
Milletech Itech 40 steel washer for use together with wood screws

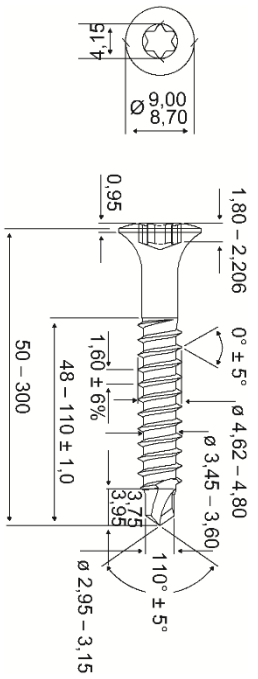

Fig. 7
Milletech Itech 4.8 T25 for fixing in steel sheets

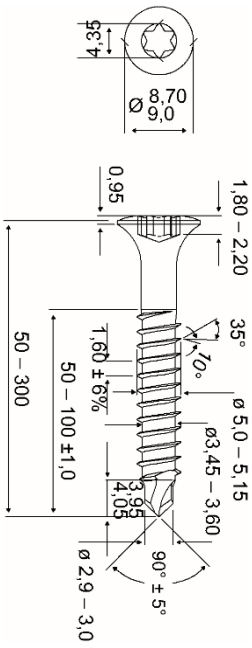

Fig. 8
Milletech Itech 5.1 T25 for fixing in steel sheets

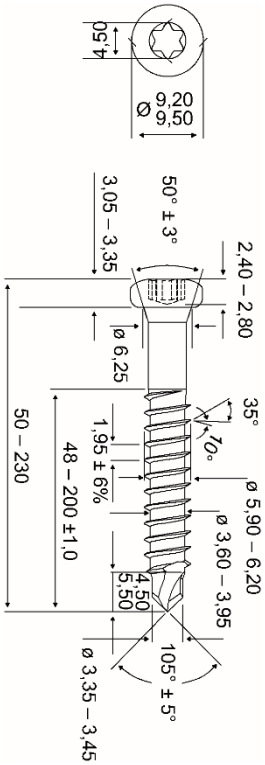

Fig. 9
Milletech Itech 6.1 T25 for fixing in steel sheets

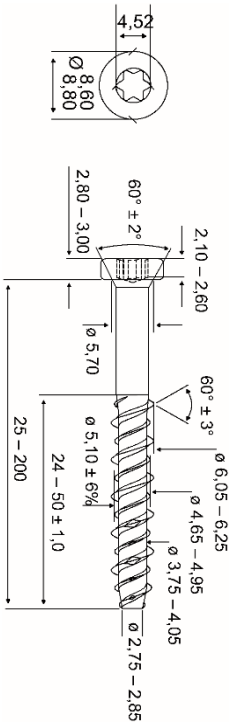

Fig. 10
Milletech Itech 6.1 T25 for fixing in concrete

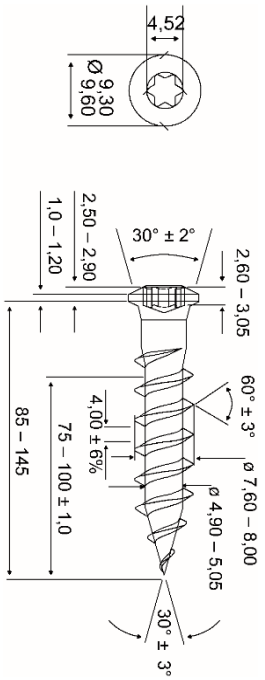

Fig. 11
Milletech Itech 8.0 T25 for fixing in light weight concrete

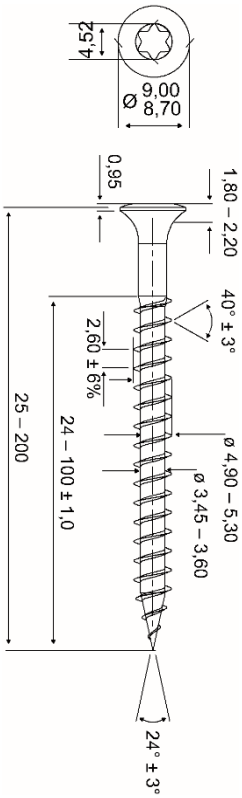

Fig. 12
Milletech Itech 5.2 T25 mm for fixing in wood

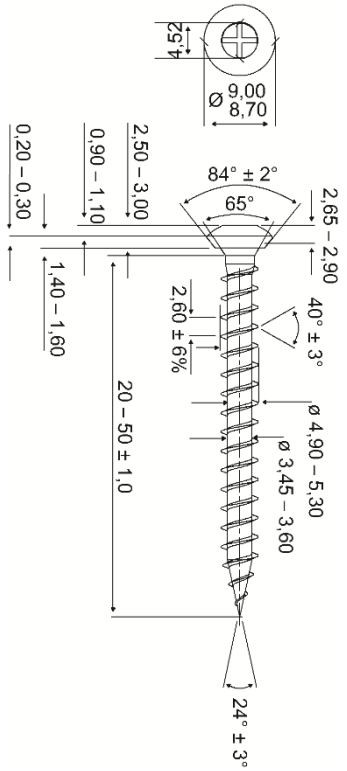

Fig. 13
Milletech Itech 5.2 PH2 for fixing in wood

Table 1
Design capacities in ultimate limit states for Milletech Fastening system washers, fixing various roofing membranes. The values to be used must not exceed the design fastening capacities of the substrate fastening shown in table 2 and 3

Roofing material	Design capacity in N/fastener [1)]		
	Plastic washers		Steel washers
	Quadro	Quadro T	Milletech Itech 40
PVC membrane fastened along membrane edge			
Alkorplan F 35076 1.2 mm		800	
Fatrafol 810/V 1.2 mm		800	
Icopal Monarplan FM EM 1.2 mm	533	667	
Protan SE 1.2 mm	600	798	
Sikaplan 12 VGWT		733	
Single layer bituminous membrane			
Icopal Mono PM	667		
Icopal Mono PR	667		667
Isola Isotekk SEP 5500	733		867
Mataki Unotech	600		600
Mataki Power FR	667		667
Soprema Sopralene MF 5500	667		
Trebolit Elastolit R01	600		600
Trebolit Elastolit E-lit TM	667		667
Katepal SEP5500	733		600
Katepal Dubbel	867		677
Double layer bituminous membrane			
Icopal Base + Icopal Mono PR	733		600
Isola Kraftunderlag + Isola Sveiseoverlag	800		733
Katepal K-MS 17/4000 (YEP 400) + Katepal SEP 5500 R	800		667
Mataki DuoTech Base + Mataki UnoTech FR	800		733
Soprema Soprarock YEP 3600 + Soprema Sopralene MF 5500	600		533
Mataki DuoTech Base + Trebolit Elastoit	800		733

[1)] Design capacities include a safety factor (γm) of 1.5

Table 2
Design capacities at ultimate limit state for fixings with Milletech Fastening System to steel sheets substructures

Fastener	Substucture [1)]	Design capacity in N/fastener
Milletech Itech 4.8 mm steel sheet	Steel sheet 0.65 mm	700
Milletech Itech 4.8 mm steel sheet	Steel sheet 0.70 mm	850
Milletech Itech 4.8 mm steel sheet	Steel sheet 0.80 mm	1100
Milletech Itech 4.8 mm steel sheet	Steel sheet 0.90 mm	1400
Milletech Itech 4.8 mm steel sheet	Steel sheet 1.00 mm	1700
Milletech Itech 5.1 mm steel sheet	Steel sheet 0.70 mm	1050
Milletech Itech 6.1 mm steel sheet	Steel sheet 0.70 mm	1100

[1)] Steel quality S-280

Table 3
Design capacities at ultimate limit state for fixings with Milletech Fastening System to substructures of concrete, light weight concrete and wood

Fastener	Substucture	Design capacity in N/fastener
Milletech Itech 5.2 T25 mm for fixing in wood	18 mm plywood	1800
Milletech Itech 5.2 T25 mm for fixing in wood	20 mm wooden sheating	1400
Milletech Itech 6.1 T25	Concrete C25/C30	1150
Milletech Itech lettbetongskrue 8.0 T25	Light weight concrete 450 kg/m³	900

6. Conditions of use

Anchor load capacities

The number of fastening points shall be calculated as shown in SINTEF Building Research Design Guide 544.206 *Mekanisk infesting av asfalt takbelegg og takfolie på skrå og flate tak* or in "TPF Informerer nr. 5" (TPF Informs no. 5), based on the design capacities in table 1, 2 and 3. The capacity values include a safety factor of 1.5.

Fastening in concrete

When fixing Milletech Itech 6.1 T25 in concrete, the drill hole diameter shall be 5 mm, and the depth minimum 30 mm. The anchorage depth shall be minimum 20 mm.

Fastening in light weight concrete

When fixing Milletech Itech 8.0 T25 in lightweight concrete, the anchoring depth shall be minimum 75 mm.

Fastening in wooden substrates

On-site testing of pull-out capacity shall be performed if substrate type is unknown.

7. Product and factory production control

Milletech Fastening System is produced by Milles Teknikplast AB, Bergsjödalen 55, S-415 68, Gothenburg, Sweden.

The holder of the approval is responsible for the factory production control in order to ensure that the product is produced in accordance with the preconditions applying to this approval.

The manufacturing of the product and the manufacturer's system for factory production control (FPC) is subject to continuous surveillance in accordance with the contract regarding SINTEF Technical Approval.

8. Basis for the approval

The evaluation of Milletech Fastening System is based on reports owned by the holder of the approval.

The evaluation of design and technical solutions are based on recommendations given in SINTEF Building Research Design Guides.

9. Marking

Fasteners in the fastening system shall be marked with the approval holder's product name. All packages are marked with the product name and date of manufacture.

Milletech Fastening System is CE-marked in accordance with ETA 12/0056.

The approval mark for SINTEF Technical Approval TG 2439 may also be used.

10. Liability

The holder/manufacturer has sole product responsibility according to existing law. Claims resulting from the use of the product cannot be brought against SINTEF beyond the provisions of Norwegian Standard NS 8402

for SINTEF

Hans Boye Skogstad

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Approval Manager