

SINTEF confirms that

Kiilto 1C Rapid

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

Kiilto Oy
 FI-33101 Tampere
 Finland

2. Product description

1C Rapid membrane system is designed for use in wet rooms as illustrated in fig. 1. The components comprising the membrane system are shown in table 1. 1C Rapid is a one component and flexible liquid applied membrane based on styrene-butadiene copolymer. The membrane is applied to the underlay with brush, roll or notched spatule.

3. Fields of application

Kiilto KeraPro is used as watertight layer on floors and walls in bathrooms and laundry rooms in homes, hotels and rooms with similar water exposure. Other conditions for use are given in clause 6.

The membrane may be used on concrete or building board underlays. The membrane shall always be covered by ceramic tiles or other type of flooring or wall lining. The membrane has not been assessed for use under concrete slabs.

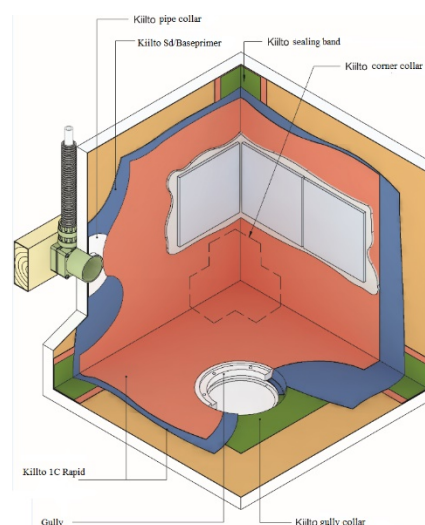


Fig. 1
 Principle design of Kiilto 1C Rapid membrane system

Table 1
 Components in the Kiilto 1C Rapid membrane system

Component	Description
Kiilto 1C Rapid	Liquid applied membrane for floor and wall
Kiilto Sd primer	Primer for higher water vapour transmission
Kiilto Baseprimer	Primer for better bond strength
Kiilto pipe collar 10-16 mm	Pipe collar for pipes between 10-16 mm
Kiilto pipe collar 18-34 mm	Pipe collar for pipes between 18-34 mm
Kiilto pipe collar 34-55 mm	Pipe collar for pipes between 34-55 mm
Kiilto pipe collar 55-75 mm	Pipe collar for pipes between 55-75 mm
Kiilto pipe collar 100-140 mm	Pipe collar for pipes between 100-140 mm
Kiilto inward corner collar	Corner collar for inbound corners
Kiilto outward corner collar	Corner collar for outbound corners
Kiilto strips	Jointing strips
Kiilto gully collar butyl	Butyl gully collar for various floor gullies
Kiilto gully collar fibre	Fibre gully collar for gullies with clamping ring
Kiilto Silicone ¹⁾	Silicone compound for use in wet rooms

¹⁾ The product is not part of the approved membrane system

4. Properties

Table 2 shows properties of the membrane system determined by type testing according to ETAG 022, Part 1.

Table 2
Product properties of Kiilto 1C Rapid membrane system determined by type testing according to ETAG 022

Property	Value	Test method
Water tightness around floor penetrations ¹⁾	Passed Category 2	ETAG 022 Annex A
Water tightness around wall penetrations	Passed Category 2	ETAG 022 Annex F
Water vapour resistance: - Sd primer + 1C Rapid - Baseprimer + 1C Rapid	$s_d > 35 \text{ m}$ $s_d = 5,1 \text{ m}$	EN ISO 12572
Water tightness at 1,5 bar water pressure in 7 days and nights. 2 x primer and 2 x 1C Rapid	Passed	EN 14891: 2012 - A.7
Crack building ability (concrete underlay)	Passed Category 1: 0,4 mm	ETAG 022 cl. 2.4.4.2
Tensile adhesion strength ²⁾	$\geq 0,5 \text{ MPa}$ Category 2	EN 14891 A.6
Joint bridging ability	Passed Category 2: 2,0 mm	ETAG 022 Annex B
Tensile adhesion strength after heat aging ²⁾	$\geq 0,5 \text{ MPa}$ Category 2	EN 14891 A.6.5
Tensile adhesion strength after water contact ²⁾	$\geq 0,5 \text{ MPa}$ Category 2	EN 14891 A.6.3
Tensile adhesion strength after contact with lime water ²⁾	$\geq 0,3 \text{ MPa}$ Category 1	EN 14891 A.6.9
Necessary quantity of primer and membrane: - For 1,0 mm thickness - For 0,5 mm thickness:	2,2 kg/m ² 1,1 kg/m ²	ETAG 022, Annex D

¹⁾ Gully used for testing gully sleeve: Aco EG with sleeve for gluing, Purus with pressure clamping ring, and Vieser with clamping ring fixed with screws

²⁾ Tile adhesive: Kiilto Lightfix

5. Environmental aspects

Substances hazardous to health and environment

The product contains no hazardous substances with priority, or other relevant substances, in quantities that pose any increased risk for human health and environment. Chemicals with priority include CMR, PBT and vPvB substances.

Effect on indoor environment

The product is not regarded as emitting any particles, gases or radiation that have a perceptible impact on the indoor climate, or to have any significant impact on health.

Waste treatment/recycling

For disposal the product shall be sorted as residual waste and delivered to an authorized waste disposal treatment plant for dangerous waste. In dry condition the product is not regarded as dangerous waste.

Environmental declaration

No environmental product declaration (EPD) has been issued for the product.

6. Special conditions for use and installation

Type of floor underlay

The membrane shall be installed on concrete or a subfloor of board sheathing with stiffness and construction details according to Building Research Design Guide 522.861 *Subfloor on timber joists* and 541.805 *Floors in bathrooms and other wet rooms*.

Type of wall underlay

The membrane shall be installed on rendering, concrete or board sheathing according to Building Research Design Guide 543.506 *Wet room walls with ceramic tiles*.

Underlay preparation

The underlay must be clean and dry before application. Cracks, damages and sunken screw heads must be filled with putty. Loose particles, fat and oil must be removed from the underlay. The moisture content in concrete shall not exceed 85 % RH at the time of installation, and the underlay shall always be primed with Kiilto Baseprimer or Sd primer.

Water vapour resistance

Walls and floors where the wet zone faces external climate or rooms with none or limited heating must have an inside water vapour resistance $s_d \geq 10 \text{ m}$. 1C Rapid liquid applied membrane with Sd primer satisfies the recommended water vapour resistance, see table 2. 1C Rapid liquid applied membrane with Baseprimer shall only be used towards warm rooms due to low water vapour resistance, see table 2. No plastic water vapour barrier shall be used behind panel or board sheathing in wet zones of external walls.

Application of primer and membrane

Two layers of primer and two or more layers of membrane to a total thickness of min. 1 mm shall be applied on floors. Two layers of primer and two or more layers of membrane to a total thickness of min. 0,5 mm shall be applied on walls.

Primer and membrane must be surface dry before the next layer is applied. At all joints between floor and wall, at all corners, board joints, and at all connections Kiilto strips and corner collars shall be applied., see fig. 1.

Temperature at application shall be minimum + 5°C.

Tightening around pipe penetrations and wall boxes

Special pipe collars adapted to the pipe diameter are used for pipe penetrations, see table 1. The textiles layer on both sides of the pipe collars must be completely covered by membrane. Membrane shall not be applied behind the rubber core of the of the pipe collar. The pipe shall be well cleaned before installing the pipe collar.

Tightening around floor gully

For gullies with pressure clamping rings a fibre gully collar is installed before applying two layers of membrane on top. The gully collar is lead down in the gully and clamped with the clamping ring after the membrane has dried, see fig. 2.

For gullies with steel sleeve for gluing, a butyl gully collar is first installed over any dry primer before two layers of membrane are applied over the collar, see fig. 3.

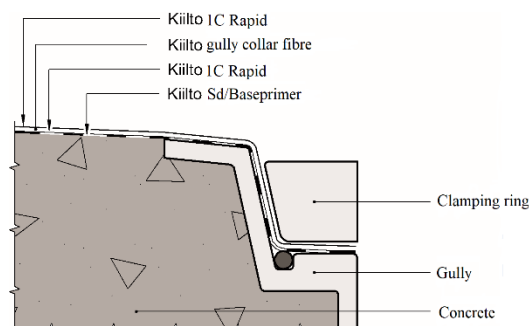


Fig. 2
Detail of floor gully with pressure clamping ring

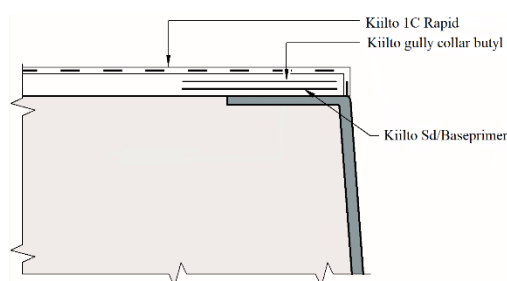


Fig. 3
Detail of floor gully with glued collar

Water tightness test

A water tightness test of the membrane system should be performed before the installation of the flooring layer, see *Byggebransjens Våtromsnorm, BVN 53.010*.

7. Factory production control

The product is produced in Finland for Kiilto Oy.

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 is subject to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

8. Basis for the approval

- VTT report no. VTT-S-02264-16, dated 01.06.2016. ETAG 022, Annex A, F and water tightness
- SINTEF Byggforsk, report 2018.00631, dated 21.08.2018. Tensile adhesion strength after heat aging, water contact and lime water contact, joint bridging ability, thickness and application.
- SINTEF Byggforsk, report 102018727/831, dated 15-10-2018. Water vapour resistance.

9. Marking

The products are marked on the packaging with product name, manufacturer and time of production.

The approval mark for SINTEF Technical Approval TG 20693 may also be used.



Approval mark

10. Liability

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

for SINTEF

Hans Boye Skogstad
Approval manager