INSTALLATION INSTRUCTION NO. 7, FOR APPLICATION OF VAPOUR PERMEABLE MEMBRANES AS SEALING OF ROOFINGS LAID DIRECTLY ON SHEATHINGS

This instruction concerns the most important regulations of installation vapour-pemeable membranes further referred to as “ICM” with DoP type 120 – type 265 in function of material sealing coverings fixed to the sheathing in ventilated and non-ventilated roofs. Such coverings include coverings in form of tiles made of different materials – e.g. natural slate (stone), fiber-cement, wooden or metal tiles etc.

The way of installation of ICM on sheathing is the same in both types of roof (ventilated and non-ventilated), but the requirements for the ventilation under the sheathing are different depending on the type of sheathing on which the covering will be laid and also on the type of the covering itself. The coverings fixed to the sheating can be applied in two material systems:

1. On ventilated roofs with ventilation gap under the sheathing (pic. 2). In such way, all enumerated types of tiles, on every type of sheathing can be installed: on boards, on OSB and on other wood-based panels. In such roofs, **ICM** should be installed according to our **instruction no. 4.**
2. On non-ventilated roofs without ventilation gap, but **only on boards** (pic. 3). Such application of **ICM** concerns **only thick tile coverings**, i.e. slate or wooden laths (etc.). Other tile coverings (fiber-cement and scales or metal tiles) can be used in this application only if their manufacturers allow this.

The principle of operation of ICM in this function (point II) in non-ventilated roofs requires gaps between the tiles which would enable air exchange to take out the humidity from under the tiles. The water vapour coming through the ICM is received from under the tiles by air constantly flowing through the gaps. In such cases, the intensity of water vapour exchange is decided by the speed and force of the wind, which is a random factor.

Because of that, installation of thermal insulation touching the boards (according to pic. 3) is allowed for thermal insulation whose relative diffusion coefficient of water vapor is µ ≥ 30 (e.g. closed-cell PUR/PIR foams). Installation of different types of wool thermal insulation (rock or wooden wool) in such system is possible only if the following conditions are met:

1. Thermal insulation from hydrophobic wool is dry at the moment of installation – maximum 10% (of weight).
2. Rooms on the attic are well-ventilated.
3. Sheathing is made of boards with dimensions given below in: “Requirements for sheathing made of boards”.
4. Vapour-insulations installed from inside of the roof must have increased diffusion resistance (Sd > 60 m) and must be installed tightly (for water vapour and air).

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Pic.2

Pic.3

Pic.1

Requirements for sheathing made of boards

1. Wooden sheathings made of boards should create a flat surface with irregularities on connections not bigger than 1 mm.
2. Boards should not have bigger humidity than 20%.
3. Minimum thickness of the boards used for construction of sheathing should be 24 mm and should not exceed 38 mm.
4. In non-ventilated roofs (without ventilation space under the sheathing), especially when the thermal insulation of the roof will touch sheathing boards where ICM is laid, the sheathing boards should not be wider than 11 cm.
5. Non-calibrated and calibrated boards should be laid with gaps on connections between them on their whole length. They cannot be connected by tongue groove. Boards wider than 11 cm demand bigger gap between them.
6. The boards should be impregnated but the impregnate should be well-dried and absorbed by the wood. The means of wood protection and the way they are used should not act destructively (damage or prevent water vapour transmission) on ICM laid on boards.
7. Boards should be fixed to each rafter by means of at least two torsion nails, ring nails or similar.

Fixing of ICM

1. Basic fixing of ICM to the sheathing is formed by counter-battens.
2. Additionally, staples or nails with wide head fixing ICM on the sheathing should be placed in places where counter-battens will cover them. Such fixing of ICM can cause its damage if the number of fixing points is excessive. Additional fixing should have as little staples or nails as possible. Full sealing of such connection can be assured by tape sealing counter-batten from the bottom (tape MARMA K1).
3. To drive staples, upholstery staplers (tackers) are most suitable, because hammer staplers are not precise enough and promote hasty drive of excessive number of staples.
4. If there is a need to fix ICM between counter-battens, it is best to do that under overlap between following stripes of membrane.

**The basic way of installation of ICM in both systems (I and II) is the same as in Instruction no. 1.**

**Instruction written according to the state of knowledge from May 2019.**

Additional information on websites: [www.marma.com.pl](http://www.marma.com.pl) i [www.dachowa.com.pl](http://www.dachowa.com.pl) .