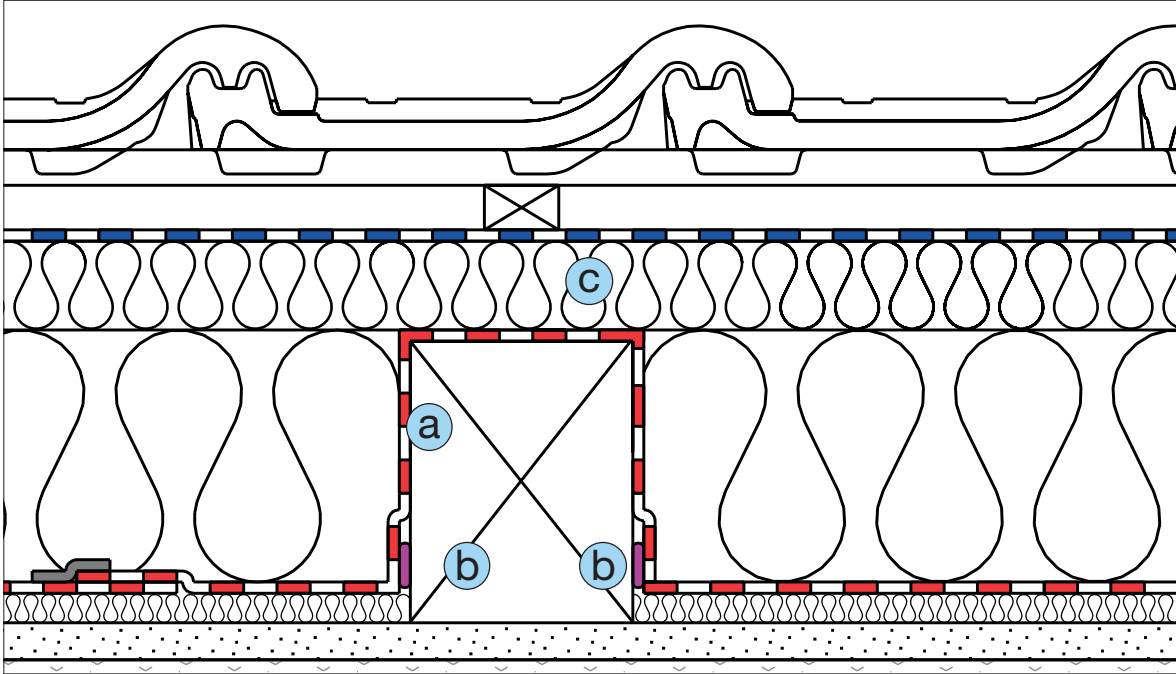


# Roof renovation from the outside with Majrex® and Majpell® 5

SIGA recommends the following structure:



Ⓐ Majrex® / Majpell® 5 (take laying direction into account!)

Ⓑ Twinet®

Ⓒ Thermal insulation layer above the rafter  $R \geq 1.1$  is calculated as follows:

Heat penetration resistance  $R = d/\lambda$  ( $d$  = thickness in m/ $\lambda$  = heat conductivity in W/mK)

**Example 1:** Woodfibre board  $\lambda = 0.047$  W/mK

Minimum thickness  $d_{\min} = R \times \lambda = 1.1 \text{ m}^2\text{K/W} \times 0.047 \text{ W/mK} = 0.052 \text{ m}$

**Example 2:** PUR  $\lambda = 0.03$  W/mK

Minimum thickness  $d_{\min} = R \times \lambda = 1.1 \text{ m}^2\text{K/W} \times 0.03 \text{ W/mK} = 0.033 \text{ m}$

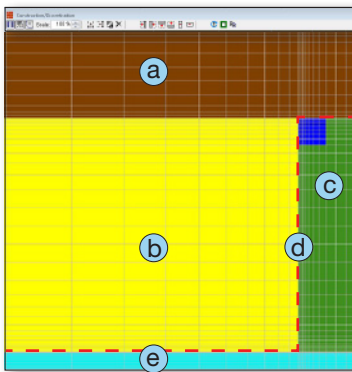
**With the SIGA roof renovation solution:**

- ✓ The overall U-value improves by 10% compared to the standard construction
- ✓ The U-value improves by 30% in the rafter area
- ✓ Better thermal insulation in summer
- ✓ Better sound insulation



# Proof of moisture dynamics with DELPHIN:

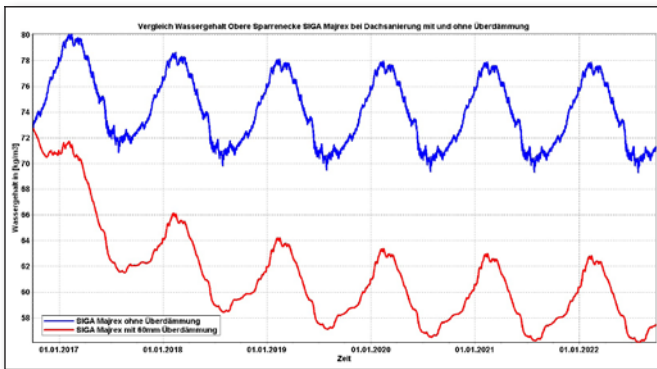
## Exterior renovation roof system:



- a** Soft woodfibre board
- b** Mineral rock wool
- c** Rafters
- d** Majrex® / Majpell®
- e** Interior fittings

Investigation of the structure recommended by SIGA. The top, left-hand corner of the rafter (highlighted in blue) is analysed as per WTA Data Sheet E 6-8 (Moisture analysis of wood structural components).

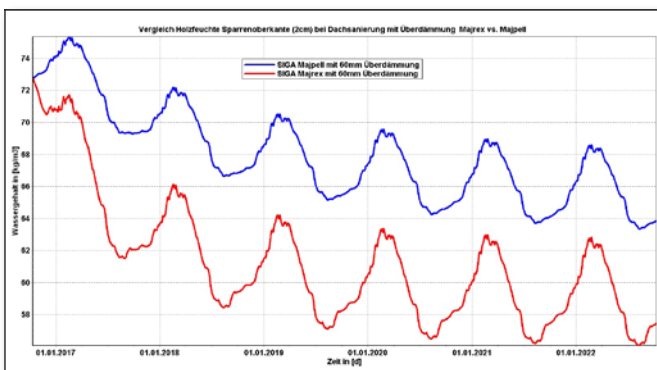
The simulation was carried out using TU Dresden's DELPHIN program.



## Drying potential of Majrex®

- Safe thanks to covering insulation
- Safe thanks to high drying potential

The graph shows the water content in the top, left-hand corner of the rafter over a period of 6 years.



## Alternatively:

### Drying potential of Majpell® 5 Comparison between Majrex® and Majpell® 5

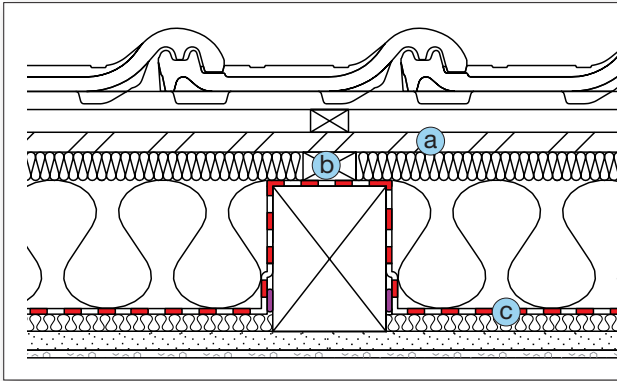
The graph shows the water content in the top, left-hand corner of the rafter over a period of 6 years.

## Conclusion:

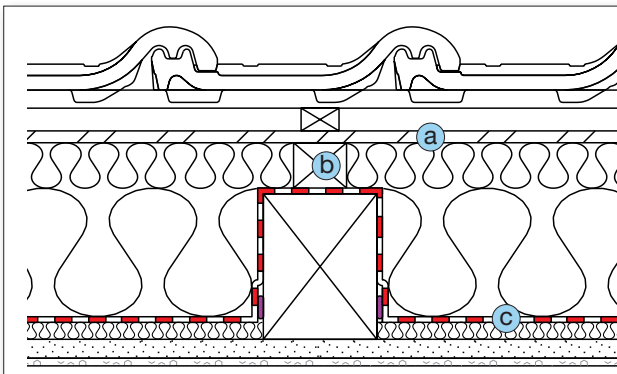
No inadmissible moisture in the existing rafter.

Roof renovation from the outside with Majrex® and Majpell® 5 ensures optimum safety.

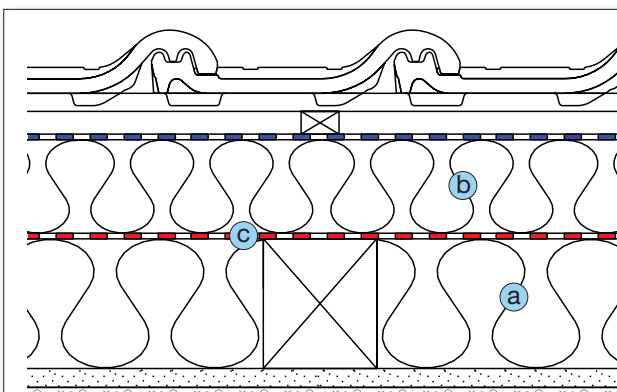
## Other possible constructions:



- Ⓐ 35 mm wood-based softboard
- Ⓑ 50 mm additional layer of wood
- Ⓒ Majrex® / Majpell® 5



- Ⓐ 21 mm wood-based softboard
- Ⓑ 80 mm additional layer of wood
- Ⓒ Majrex® / Majpell® 5



- Ⓐ Thermal insulation between joists
- Ⓑ Covering insulation  $\geq$  thermal insulation between joists
- Ⓒ Majrex® / Majpell® 5

### Example:

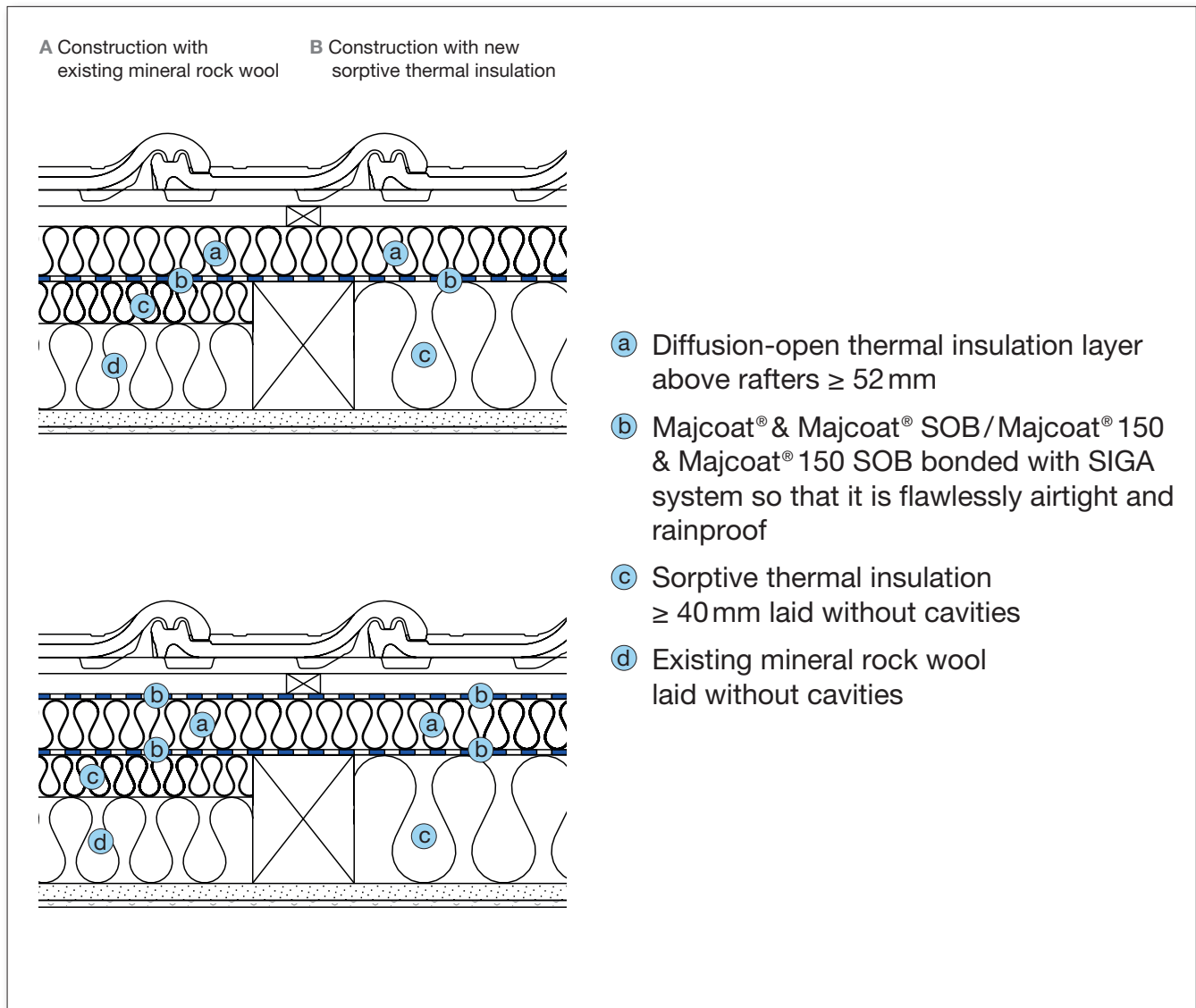
Covering insulation: PUR, 10 cm /  $\lambda = 0.024$  W/mK

Between joists: Mineral rock wool, 14 cm /  $\lambda = 0.040$  W/mK

$$R_{\text{Covering insulation}} = 0.1 \text{ m} / 0.024 \text{ W/mK} = 4.17 \text{ m}^2\text{K/W} > 3.5 \text{ m}^2\text{K/W}$$

$$R_{\text{Between joists}} = 0.14 \text{ m} / 0.040 \text{ W/mK} = 3.5 \text{ m}^2\text{K/W}$$

**Alternative option with Majcoat® & Majcoat® SOB,  
Majcoat® 150 & Majcoat® 150 SOB**



For buildings situated 800 m above NHN, the construction must be assessed by a building physicist. Professional planning, execution and on-site control are prerequisites. Always follow our instructions for use when using SIGA products.