

## WEM Underfloor Heating

Article no. 30020-40

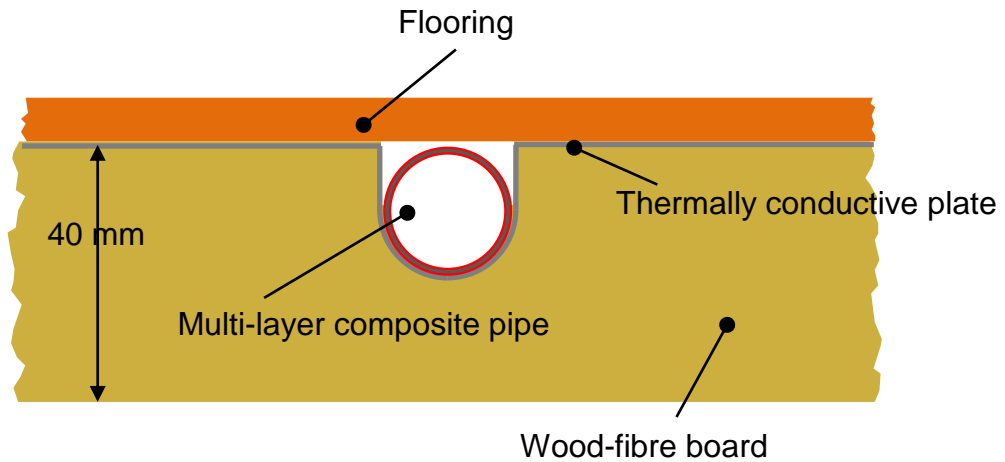
**Description** The WEM underfloor heating is a dry system. It consists of 40-mm-thick wood-fibre boards that accommodate the WEM Multi-Layer Composite Pipes, which have a diameter of 16 mm. Typical floorings are timber planks or tiles. The tiles are laid on top of a load-distribution layer (e. g. Fermacell dry screed). If wooden planks are installed, profiled wood battens are used.

**Scope of application** The low-temperature heating is used either as an exclusive source of heating or to support the existing heating system.



Due to the low weight and the low structural height, it is well suited for new construction as well as for refurbishment of old buildings. Since the WEM Underfloor Heating is a dry system, it is ideal for solid timber houses and timber frame houses.

- Benefits**
- Easy and quick installation
  - No drying times
  - Low weight (ca. 15 kg/m<sup>2</sup>)
  - Good impact sound insulation (reduction of 13 dB)
  - Low structural height (40 mm)
  - Combinable with WEM Wall or Ceiling Heating systems



## Materials

System components	
Wood-fibre boards for pipe laying and levelling	As per DIN EN 13171
Wood profile	Spruce/pine
Thermally conductive plate	Galvanized steel
Multi-layer composite pipe	WEM Multi-Layer Composite Pipe, $\varnothing$ 16 x 2 mm (PE-RT/aluminium/PE-RT), tested as per DIN DVGW*
Edge insulating strip	Coated corrugated cardboard
Levelling fill	Wrapped wooden chips

\* DVGW = German Technical and Scientific Association for Gas and Water

Optional component	
Underfloor cover plate	Wood fibre, as per DIN EN 13986

## Technical data

Wood-fibre boards for pipe laying and levelling	
Edge design	Tongue and groove
Material class	E (normally flammable) as per DIN EN 13501-1
Compressive resistance $\sigma_d$	0.05 N/mm <sup>2</sup>
Specific thermal capacity $C_p$	2.1 kJ/kg·K
Vapour diffusion resistance $\mu$	5
Dimensions	1 015 x 390 x 40 mm
Surface area	0.396 m <sup>2</sup>
Area weight	Approx. 6.4 kg/m <sup>2</sup>

<b>Wood profile</b>	
Edge design	Tongue and groove
Material class	D (normally flammable) as per DIN EN 13501-1
Compressive resistance $\sigma_d$	40 N/mm <sup>2</sup>
Specific thermal capacity $C_p$	2.72 kJ/kg·K
Vapour diffusion resistance $\mu$	40
Dimensions	2 000 x 50 x 35 mm
Surface area	0.1 m <sup>2</sup>
Area weight	Approx. 16.45 kg/m <sup>2</sup>

<b>Thermally conductive plate</b>	
Material class	A1 (non-combustible) as per DIN EN 13501-1
Specific thermal capacity $C_p$	0.5 kJ/kg·K
Dimensions	997 x 120 x 0.4 mm
Surface area	0.12 m <sup>2</sup>
Area weight	Approx. 3.14 kg/m <sup>2</sup>

<b>Multi-layer composite pipe</b>	
Max. temperature	95°C
Max. pressure	10 bars
Material class	D (normally flammable) as per DIN EN 13501-1
Connections	WEM Press-Fit Fittings (press contour U16)
Weight	Approx. 0.12 kg/m
Water content	Approx. 0.11 kg/m

<b>Levelling fill</b>	
Material class	E (normally flammable) as per DIN EN 13501-1
Thermal conductivity	0.06 W/(m·K)
Compressive resistance $\sigma_d$	8.2 N/mm <sup>2</sup>
Bulk density	Approx. 320 kg/m <sup>3</sup>
Filling height	5 to 60 mm
Chip size	1 to 5 mm
Area weight	Approx. 3.2 kg/m <sup>2</sup> per cm of filling height

Edge insulating strip	
Material class (installed state)	D (normally flammable) as per DIN EN 13501-1
Dimensions	10 x 140 mm
Length (reel)	25 m

Underfloor cover plate	
Material class	E (normally flammable) as per DIN EN 13501-1
Thermal conductivity	0.07 W/(m·K)
Compressive resistance	> 150 kPa
Vapour diffusion resistance $\mu$	5
Dimensions	790 x 590 x 7 mm
Surface area	0.466 m <sup>2</sup>
Area weight	Approx. 1.75 kg/m <sup>2</sup>

### Heating power

The performance of the heating depends on the water temperature, the desired indoor temperature and the installed flooring. The following table gives an overview of the heating power in combination with the most frequent flooring materials.

Indoor temp. [°C]	Heating medium temp. supply/return [°C]	Heating power [W/m <sup>2</sup> ]		
		20 mm oak	20 mm softwood	20 mm gypsum fibres dry screed elements with tiles
18 °C	35 / 30	42.5	35	42.5
	40 / 35	60	51	60
	45 / 40	77.5	67.5	77.5
20 °C	35 / 30	35	30	35
	40 / 35	52.5	45	52.5
	45 / 40	70	60	70
22 °C	35 / 30	27.5	23	27.5
	40 / 35	45	37.5	45
	45 / 40	62.5	52.5	62.5
24 °C	35 / 30	22.5	17.5	22.5
	40 / 35	38.8	32.5	38.8
	45 / 40	55	47.5	55