

New systems GRAFITE



To better respond to the market needs, **Comisa offers two types of graphite systems.**

SLIM GRAFITE

characterized by **reduced dimensions** and **high nominal density values (EPS 400).**

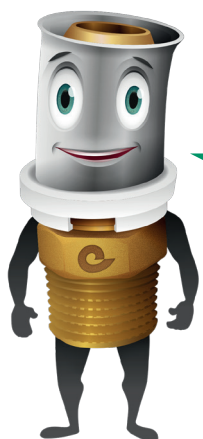
Ideal for renovations where the heights available are limited.

GRAFITE 150

characterized by **insulation tickness conform to UNI EN 1264-4:2003.**

Excellent insulation, maximum efficiency.

New range of systems for **heating and cooling** with expanded **polystyrene insulated panels enriched with graphite.**

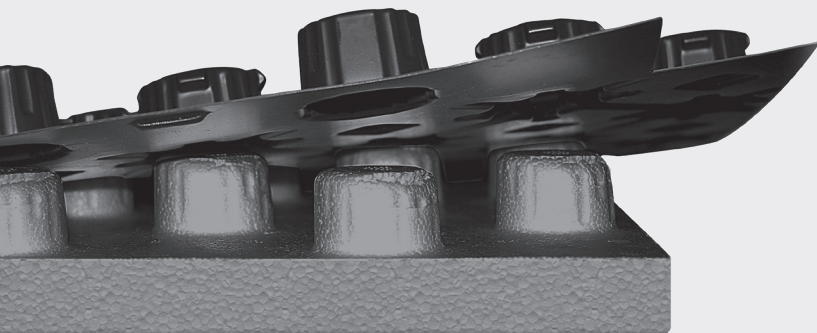


Graphite? Yes please!

The use of **graphite** in the insulated panel construction allows to have **very low thermal conductivity values**, even when using **minimum insulating tickness.**

Read the specification at the end of this document, to learn more!

GRAFITE SYSTEMS



BLACK **THERMOFORMED POLYSTYRENE PROTECTION** HIPS 600 µm



THERMOFORMED **BARRIER WATERTIGHT** BETWEEN PANELS

✓ LIQUID SELF-LEVELLING SCREEDS

✓ PREMIXED SCREEDS (CEMENTITIOUS AND ANHYDRITE)



EPS PANEL **ENRICHED WITH GRAPHITE**



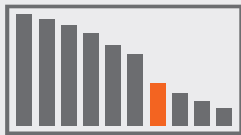
HIGH DENSITY **EPS** EXCELLENT **WEAR RESISTANCE** AND **COMPRESSIVE STRENGTH**

DIMENSIONAL SPECIFICATIONS

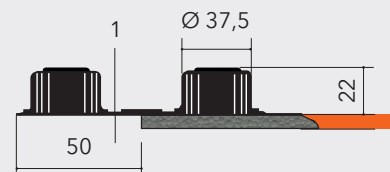
CHARACTERISTIC	SLIM GRAFITE h 27	GRAFITE 150 h 40	GRAFITE 150 h 55
Panel product code	89.10.206	89.10.205	89.10.210
Nominal density	50 kg/m ³ EPS 400	25 kg/m ³ EPS 150	25 kg/m ³ EPS 150
Insulating tickness	5 mm	18 mm	33 mm
Calculation tickness (Sins)*	9 mm	23 mm	38 mm
Total panel tickness	27 mm	40 mm	55 mm
Useful panel dimensions	1400 x 800 mm	1400 x 800 mm	1400 x 800 mm
Total panel dimensions	1450 x 850 mm	1450 x 850 mm	1450 x 850 mm
Useful panel surface	1,12 m ²	1,12 m ²	1,12 m ²
Nr panels per package	14	16	11
Packaging useful surface	15,68 m ²	17,92 m ²	12,32 m ²
Packaging type	cardboard box	cardboard box	cardboard box
Bosses height	22 mm	22 mm	22 mm
Distance between bosses	50 mm	50 mm	50 mm
ø pipe	16 - 17 mm	16 - 17 mm	16 - 17 mm

*average effective thickness according to UNI EN 1264-3

37
mm*



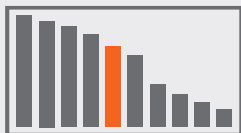
SLIM GRAFITE
EPS 400



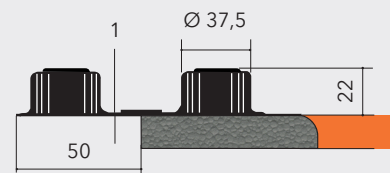
INSULATION
TICKNESS
5
mm

TOTAL
PANEL
TICKNESS
27
mm

70
mm*



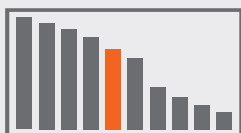
GRAFITE 150
EPS 150



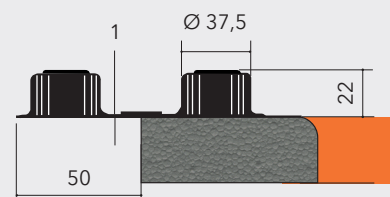
INSULATION
TICKNESS
18
mm

TOTAL
PANEL
TICKNESS
40
mm

85
mm*



GRAFITE 150
EPS 150



INSULATION
TICKNESS
33
mm

TOTAL
PANEL
TICKNESS
55
mm

PHYSICAL CHARACTERISTICS

CHARACTERISTIC	REF. STANDARD	SLIM GRAFITE h 5	GRAFITE 150 h 27	GRAFITE 150 h 33
Thermal resistance on effective average thickness $R_{\lambda,ins}$ [m ² K/W]	UNI EN 1264-3	0,29	0,76 ACCORDING TO UNI EN 1264-4*	01,26 ACCORDING TO UNI EN 1264-4*
Thermal conductivity declared λ_D [W/mK]	UNI EN 13163	0,030	0,030	0,030
Fire resistance class	UNI EN 13501	Class E	Class E	Class E
Compressive strenght at 10% deformation σ_{10} [kPa]	UNI EN 826	400	150	150
Long term water absorption WLT [%]	UNI EN 12087	2	4	4
Tolerance dim. thickness dN [mm]	UNI EN 823	± 2	± 2	± 2
Dim. stability with 23°C / 50% R.U. Δe_l ; Δe_d [%]	UNI EN 1603	0,2	0,2	0,2
EPS vapour diffusion resistance μ	UNI EN 12086	30-70	30-70	30-70
HIPS vapour diffusion resistance μ	UNI EN 12086	10.000	10.000	10.000

UNI EN 1264-4:2003 STANDARD (EXTRACT)

UNI EN 1264 (section 1, 2, 3, 4, 5) is the main national regulation for embedded underfloor heating systems. The contents of the regulation concern planning, installation, laboratory testing and the methods used for efficiency calculation.

In paragraph 4.2.2.1 the thermal resistance insulating values are indicated, to be respected according to the thermal conditions underneath.

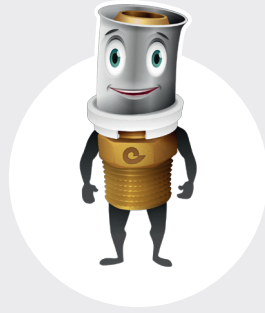
*Minimum thermal resistance of the insulating layers (m² · K/W) of the underfloor heating

	Underneath heated area	Underneath unheated area or not continuously heated or directly on the ground
Thermal resistance (m ² · K/W)	0,75	1,25



The panel is **CE marked** and it is **suitable for underfloor water radiant systems** for heating and cooling embedded in structures **according to UNI EN 1264-4**.

GRAPHITE



WHAT IS GRAPHITE?

GRAPHITE is one of the allotropic states of **CARBON** and it is found in **metamorphic, igneous rocks** and meteorites and it is characterized by a **layered structure** where carbon atoms are found in a series of **crystalline honeycomb lattices**.

USES OF GRAPHITE

Due to its **high thermal stability** and its **chemical inertia**, graphite is used in **refractory materials** characterized by **strong resistance to high temperatures**, corrosion resistance and chipping resistance, qualities that make it **ideal** also in the **realization of insulating panels**.

WHY CHOOSE A GRAPHITE SYSTEM?

The **graphite-enriched panel** system is characterized by **low thermal conductivity**, taking advantage of it compared to the traditional expanded polystyrene panel system.

It also contains **special infrared reflectors**, which act as a "brake" for the transmission of radiant heat thus increasing the **insulating properties** of the material.

These features make it possible to use reduced thicknesses for the insulation of the panel during the design and construction phase (with the same target to be achieved), **reduced thickness for the insulation of the panel**.

**GRAPHITE
POWER**

