

PEOC[®] Plus
PE-RT 90



High-Tech " Made in Germany "

hpg is much more than just a pure extrusion works.
furthermore the only " Preferred Development Partner " for
pipes and hoses for **DOW, the largest manufacturer of
synthetic materials in the world.**



Did you know that the world's first pipes of PE-RT were developed by **DOW** and **hpg** together and manufactured by **hpg**?

>> High-quality pipes of PE-RT

The high-performance material PE-RT, that has been used successfully for many years in heating and sanitary pipes, is finding more and more fields of application thanks to its outstanding properties. PE-RT pipes are increasingly replacing pipes of PE-X (cross linked polyethylene) on account of their higher functional capacity. The reason is the unique molecular structure of these thermoplastic polymers, from which **hpg** has been making top-quality pipes for over **25 years**.

>> PEOC® Plus pipes

PEOC Plus pipes are particularly suitable for the sanitary sector (hot/cold water) and radiators heating systems.

>> PEOC® Plus > MIDI <® pipes

Ideal pipes for Under-floor & Radiator heating systems, and industrial applications.

A >MIDI<® pipe is a **5-Layered** full plastic composite pipe with diffusion barrier properties according to **DIN 4726**.



> Specifications :

- 5-layer full-plastic multilayer pipe.
- Pipe material PE-RT 90
- Internal and therefore protected oxygen barrier layer.
- Highly flexible and easy to lay.

> MIDI® pipe structure :

PE-RT

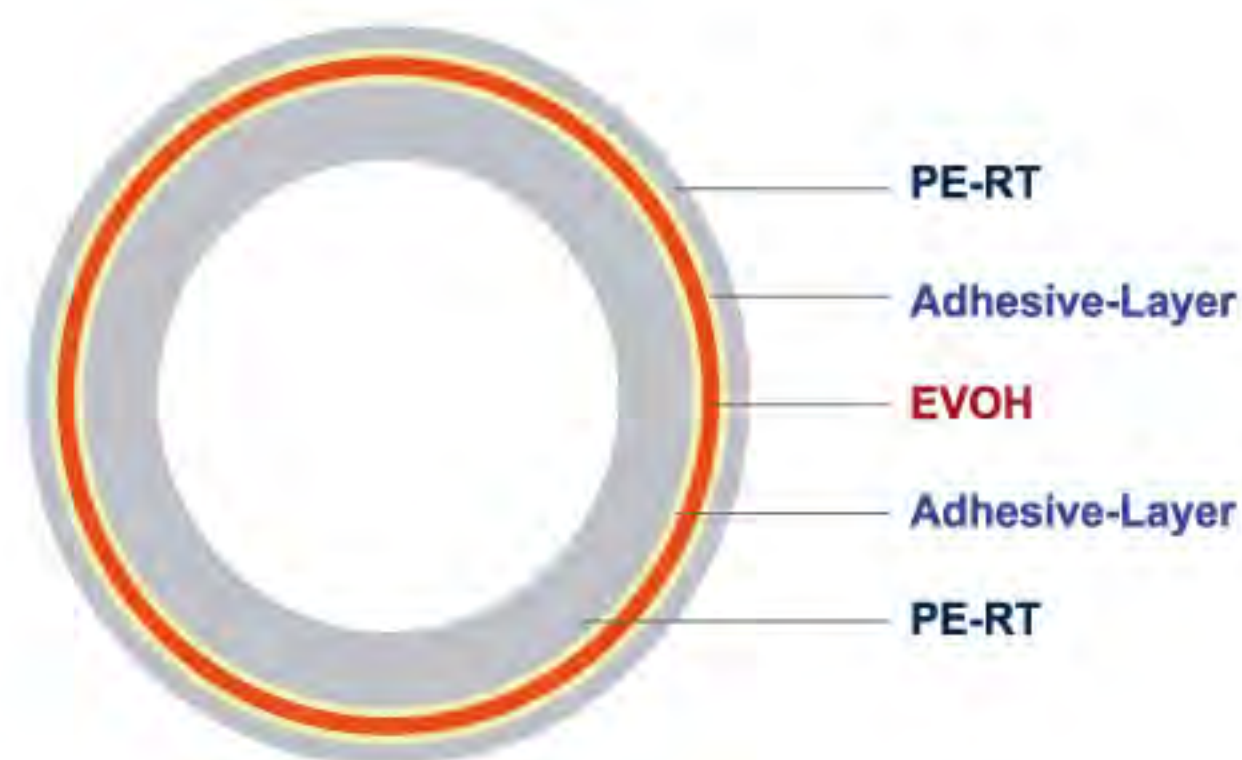
Polyethylene of raised temperature resistance.

Adhesive

Functionalized polyethylene as an adhesive layer.

EVOH

Barrier layer against oxygen diffusion from polyethylene vinyl alcohol.



>The basic material : PE-RT 90

- **Innovative plastic** that does not require **any more cross-linking**.
- Excellent properties at **high pressures and temperatures**.
- Extreme **ageing stability**.
- **Highly flexible** and **easy to use**.

>The oxygen barrier :EVOH

- High barrier material **poly-ethylene vinyl alcohol (EVOH)**.
- Permanently and **seamlessly** fused together with pipe material PE-RT.
- Prevention of oxygen diffusion **up to 80°C**. (requirement of DIN 4726: 0.32 g/(m²d))
- **Oxygen permeability** around **0.06 g/(m²d)**.

>The protective layer: PE-RT 90

- Protects the oxygen barrier against **mechanical damage and ageing**.
- Protects the oxygen barrier against **moisture** and other **environmental influences**.
- **Ideal for push-fittings**: the outer O-ring sealing has no longer impact on the leaktightness.
- **Increases** the **pressure resistance** : The barrier layer of the >MIDI< pipe improves the pipe strength.

Why must the diffusion barrier be protected?

>>The advantages of 5-layer pipes.

The EVOH layer is highly functional, but sensitive. The 5-layer pipes includes an outer layer which enclose and protect the EVOH layer.

Contact with moisture (e.g during installation), in particular at higher temperatures, permanently destroys the diffusion barrier layer.

The 5-layer design of >MIDI<® pipes permanently prevents the damaging effects of ambient moisture on the diffusion barrier layer.

What's more, the outer PE-RT layer offers protection against possible damage to the EVOH layer during transport and installation.

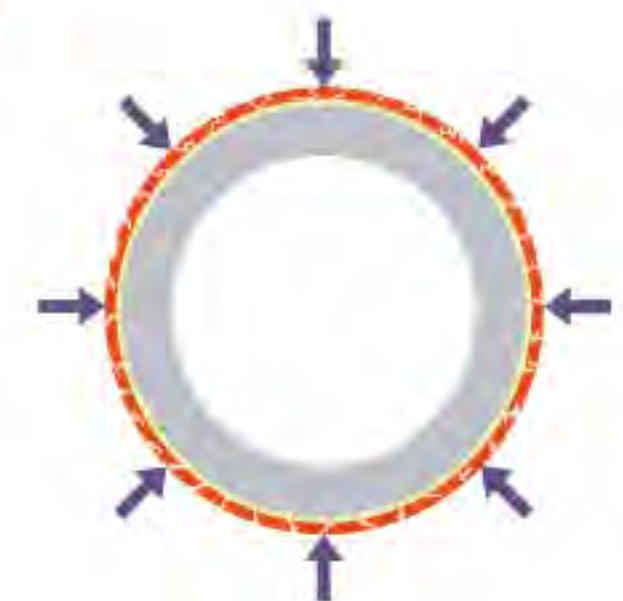
In a 95 °C monitoring test the EVOH layer is attacked by the hot water after several hundred hours. It swells, cracks and thus can no longer contribute to the stability of the pipe.

5-layer pipes



3-layer pipes

Unprotected



>>The advantages of **hpg PEOC® PLUS (Dowlex® 2388)**.

- **Higher flexibility** of **hpg PEOC® Plus** than **PE-X** (easier to lay).
- **Higher relaxation capacity** of **hpg PEOC® Plus** thus **lower residual stress** than **PE-X**.
- **Less shrinkage** of **hpg PEOC® Plus** than **PE-X** (PE-X pipes have values of up to 3% depending on the type of cross-linking).
- **Very low surface roughness** of **hpg PEOC® Plus** pipes (Ø 425 Ångström) reduces the risk of **incrustation** in comparison to **PE-X**, which has a much higher risk depending on the type of installation. This is also due to the **more polar, more adhesion-friendly** surfaces of PE-X pipes (inherent characteristic).
- **5-layer barrier pipes** made of **hpg PEOC® Plus** provide **barrier characteristics against oxygen diffusion up to 80°C**.
- Pipes with a **non-embedded barrier layer** are more sensitive to mechanical **damage**, and the barrier cannot be considered permanent because of the possible **contact with moisture**.
- This is also due to the fact that the **adhesion agents** are **less effective** with **PE-X** than with **hpg PEOC® Plus**. Depending on the change in relative humidity, the oxygen diffusion will increase when the barrier layer is unprotected (sometimes irreversible).

>> Maximum Operating Pressure According To ISO 10508

		Application					Operating Pressure (bar)
		Class 1	Class 2	Class 4	Class 5		
PEOC® Plus > MIDI <® & PEOC® Plus	Sanitary	Sanitary	Sanitary	Under-floor Heating	Radiator Heating		
	Temperature (°C)	20	60	70	40	80	
Pipe Dimensions		Class 1	Class 2	Class 4	Class 5	Operating Pressure (bar)	
PEOC® Plus > MIDI <® & PEOC® Plus	16 x 2 mm	20	10.1	9.6	9.7		8.2
	20 x 2 mm	16	7.8	7.5	7.5		6.4
	25 x 2.3 mm	15	7.2	6.8	6.8		5.8
	32 x 3 mm	15	7.3	7	7	6	

>> Certificates & Documents

hpg pipes comply with all common standards and guidelines in their respective fields of application (e.g. DIN16833, ISO 24033, ISO 21003, ISO 22391, oxygen-tight acc. to DIN 4726, etc.).

They are suitable for sanitary applications, underfloor heating systems and radiator connections in accordance with ISO 10508 Class 1-5.

Pipes made by **hpg** are certified and tested by leading test institutes such as : SKZ, KIWA/KOMO, DIN CERTCO, CE, SWEDCERT, ETA Denmark, MPANRW, etc...

good is not good enough
QUALITY-MANAGEMENT acc. ISO 9001
PRODUCT-QUALITY SKZ, Kiwa, Swedcert, ETA
SYSTEM-QUALITY DIN Certco, CE
DEVELOPMENT-QUALITY Exova, Kiwa



>> Warranty

The 50 - years producer warranty for replacement pipes free of charge, and the 10 - years warranty up to a maximum amount of EUR **3.000.000,00** per individual case up to an aggregate limit of EUR **9.000.000,00** of damage providing the material damage and any subsequent connected damage has been caused due to the use of defective **hpg** piping. These warranties can only be granted if the leak test according to DIN EN 1264-4 is conducted with water.



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