

PEOC<sup>®</sup> 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**

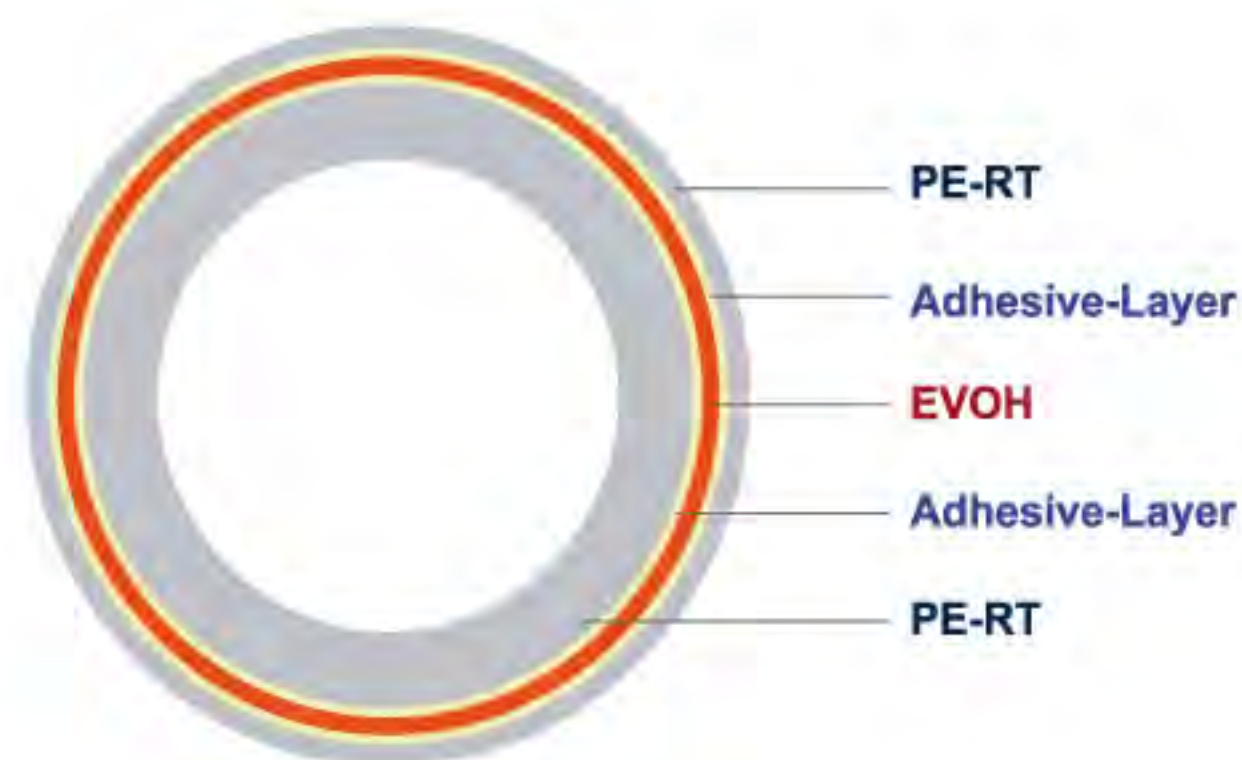
Polyethylene of raised temperature resistance.

##### **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.

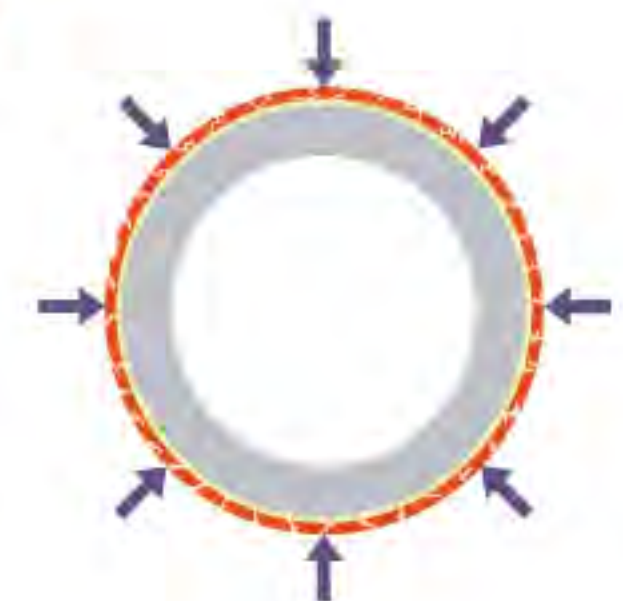
In a 95 °C monitoring test the EVOH layer is attacked by the hot water after several hundred hours. It swells, cracks and thus can no longer contribute to the stability of the pipe.

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 irreversable).

>> 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		
	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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