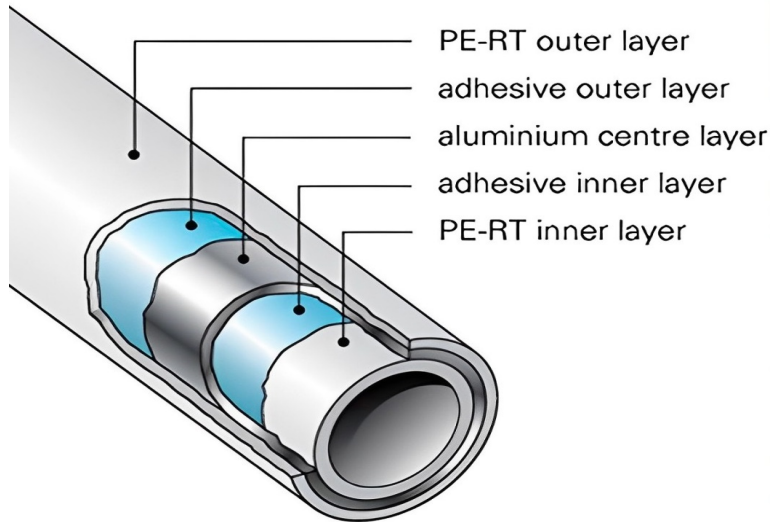




PERT 95-N

Temperature Resistance of Polyethylene



Description

PERT 95-N is (Polyethylene of Raised Temperature Resistance) a multimodal chain branched polyethylene which produced via reactive extrusion offering excellent long-term hydrostatic resistance . We believe no other polyethylene resin has proven to perform like PERT resin in hot water pipes without being cross-linked. PERT resin provides improved hydrostatic strength and processability over existing materials in a variety of heating/cooling systems and hot and cold drinking water supply networks. Pipes produced from the resin also offer excellent stress crack resistance, thermal conductivity, and good flexibility.

Main applications

PERT 95-N Resin is designed for hot and cold water pipe applications. It is well suited for floor heating, radiator connections, snow-melt systems, heat exchangers, solar panels, heat recovery systems, hot or cold drinking water networks, plumbing, and industrial pipe. It can be used in industrial applications where conventional PE usually fails, thanks to its high strength at extreme temperatures.

Typical characteristics

Characteristics	Value	Unit	Test Method
Melt index (190°C / 2.16 kg)	0.14 ± 0.02	g/10min	ISO 1133
Melting Point	139+/-2	°C	ASTM D3418
Vicat softening point	123+/-2	°C	ASTM D1525
Density	0.945 ± 0.001	-	ASTM D1505
Ash content	Less than 0.5	%	-



Physical characteristics

Characteristics	Value	Unit	Test Method
Tensile Strength¹	385+/-8	Kg/cm ²	ASTM D638
Tensile Strength at break¹	370+/-8	Kg/cm ²	ASTM D638
Elongation at break¹	450 +/-10	%	ASTM D638
Impact	No break	-	ASTM D256

¹ Measurement was done on samples prepared from compressed molded sheet (speed test 5mm/min.)

Pipe Extrusion with KARABOND PERT Polyethylene Resins

We are a leading producer of high-quality polyethylene (PE) pipe resins for domestic and industrial applications PERT Polyethylene.

This provides excellent stress crack resistance properties combined with very good long-term hydrostatic strength. The narrow molecular weight distribution makes extrusion of PERT, Polyethylene Resins different from that of LDPE or HDPE, which may require adjustment of the extrusion equipment and processing parameters.

Performance

Typical advantages include:

- Extrusion at high speed (up to 40 m/min) with pipe diameters from 6 to 32 mm is possible.
- Low surface roughness, indicated by high gloss, provides low head loss/ higher throughput.
- PERT, Resin meets the requirements of the national norms and regulations for hot water systems for PE.
- PERT, PE Resins promote one of the most flexible pipes of all resins and maintain flexibility even at low ambient temperatures.
- Pipes made with PERT, Resins do not spring back or out of clamps.

Instruction of the stabilizer masterbatches:

For improving stability of **PERT** during Pipe production and accepted long-term properties advise to mixed 0.5 wt% of the **Stabilizer Master batches** which contain Irganox 1010 and Irgafos 168

(50% - %50% wt) with **PERT** granules.



Pipe Extrusion

To fully benefit from the inherent polyethylene properties of PERT, Resins, the proper extrusion equipment, conditions, and operating procedures must be used in the extrusion of pipe from these resins. This extrusion guide will serve to assure manufacturers of pipe that their final products meet the industry standards and perform in the outstanding manner expected when using PERT, Resins.

Operating Conditions

When extruding PERT, PE Resins specifically for pipe applications, the following heater settings are suggested for a 60 mm barrel extruder with six zones and using a conventional PE screw:

- The temperature profile along the six zones should target a melt temperature of 165-220°C
Example: 165-175-190-205-220°C.
- Often, with PERT, Resins, it is advantageous to run a so-called “reverse temperature profile.” This is especially recommended when a screw with a high compression ratio (3 or above) is used. Example: 180-230-245-250-260-255°C.
- For PERT, Resin, the temperature profile can be reduced by 10°C.

Back pressure and Filter Packs

PERT, PE Resins are known to create higher backpressure than LDPE or HDPE. This is normal and to be expected because of the narrow molecular weight distribution. A fine screen mesh filter pack (80 mesh) is recommended. The level of the obtained backpressure is dependent on the screw design and speed, but typical pressures observed are around 200 bar.

Coloring

Ideally, color masterbatches should be based on the same PERT, Resin as specified in your application. Any pigments based with iron oxides, copper, or manganese must be avoided. Special care must also be taken with TiO₂ (whitening agent); only rutile types, neutralized and coated, can be permitted.



Multilayer (Composite) Pipe

Multilayer coextrusion is standard practice in the pipe industry, typically using an adhesive polymer layer to tie inside and outside PE layers to a central aluminum tube. All PERT, Resins used for pipe applications are also ideally suited for such composite pipe applications. Specifically, PERT, Resin provides outstanding processing behavior.

Security / Precautions of use

PERT 95-N must be stocked in dry conditions below than 50°C and protected from UV rays. Improper storage conditions can cause degradation and have consequences on the physical properties of the product.

Shell life is 2 years from the production date.