

PRODUCT CERTIFICATE

Certificate No VTT-C-4737-09
Translation from Finnish

Paroc Oy Ab Technical Insulation

Produce and deliver

Pipe insulations for compartmentation structure penetrations

Fire classifications of the insulations have been done according to the standard EN 13501-1. Properties of the products have been presented in the table 1. Fire resistance of the penetration solutions have been determined according to the standard EN 1366-3. Resistance to fire class is EI90. Results are valid, when penetration is in stone based structure which has density $\geq 500 \text{ kg/m}^3$, wall thickness is $\geq 100 \text{ mm}$ and slab thickness is $\geq 150 \text{ mm}$. Materials of metallic pipes, their diameters and insulation thicknesses are according to the table 2. Summary of the properties with classifications is below:

Table1. Reaction to fire classes of the products

Product group	Fire class EN 13501-1	Nominal density at least (kg/m^3), EN 13470	Coating
PAROC Pipe Section and components made of it	A1 _L	80	No coating
PAROC Section AluCoat and components made of it	A2 _L - s1,d0	80	Aluminium foil Aluminium laminate

Table 2. Applications of the products and Insulation thicknesses

External diameter of the pipe, d_u (mm) and its material	Insulations	Insulation thickness, (mm)	*Fire resistance of the penetration, min
$d_u \leq 22$ steel, copper	Stone wool pipe sections PAROC Section, PAROC Section 140, PAROC Section AluCoat T and PAROC Section AluCoat and components made of them	30	90
$22 < d_u \leq 49$ steel, copper		40	90
$49 < d_u \leq 89$ steel, copper		55	90
$89 < d_u \leq 168$ steel, copper		60/70 slab/wall	90
$168 < d_u \leq 219$ steel, copper		80	90

* Additional information on reverse side

This certificate is valid until 29.11.2014, on the condition that there are no essential changes in the products and certificate holder and VTT has a valid quality control contract. Type and amount of burning material and fire properties are defined in the contract. Information of the validity of the certificate can be asked from VTT. Other conditions are listed on reverse side of the certificate.

Espoo 30.11.2009



Liisa Rautiainen
Assessment Manager

VTT

Po Box 1000, 02044 VTT
Phone +358 20 722 4920, Fax+358 20 722 7003



Matti Immonen
Research Engineer

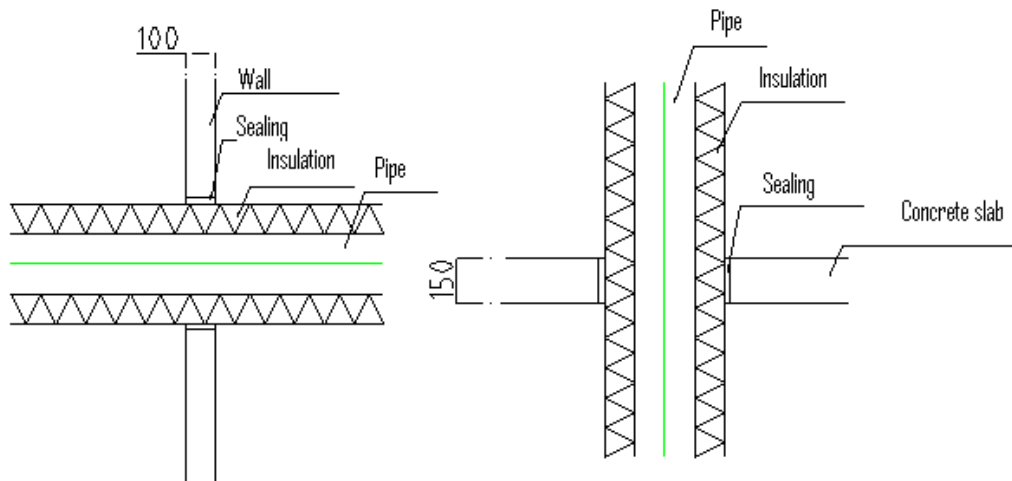
PRODUCT CERTIFICATE

No VTT-C-4737-09

Remarks for table 2

In the table 2 presented fire resistance times provide the following:

- The size and shape of the gap in the structure shall be such that the pipe penetrating the structure can be insulated around the penetrating area and the gap can be tightened in a reliable way.
- In installation of supports for pipes shall the guidance given in the publication Talotekniikka-RYL 2002 (Rakennustieto Oy 2002) in paragraph G1211 be followed.
- Installation of insulation shall be done according to the standard SFS 3978 or according to the Paroc Oy Ab:s instructions Talotekniikan eristykset, asennusopas (April 2009).
- The space between the gap in structure and insulation shall be sealed with mortar with reaction to fire class A1 or A2-s1,d0 or with type approved fire seal.



Conditions of validity:

Where reference is made in this certificate to any regulations, publications, standards or other documents, it shall be construed as a reference to such publication in the form of which it is in force at the date of this certificate.

The manufacturer is responsible for the quality and continuous quality control of the product. In granting this certificate, VTT does not accept responsibility to any person or body for any loss or damage incurred in respect of personal injury arising as direct or indirect result of the use of this product.

The use of VTT's name in advertising or the distribution of a partly copied certificate is allowed only with permission from VTT in writing.