



Topic 11 INSULATION OF PIPES

Part 2: Thermal insulation materials used in pipes

We should always keep in mind that thermal insulation and waterproofing are made in parallel. Improper application of insulation on pipes can lead to corrosion and leaks that are difficult to repair.

- **Prefabricated rubber foam insulation** – this foam is used in cold and warm plumbing pipe



Figure 1. Prefabricated rubber foam in pipe form

- **Prefabricated polyethylene foam insulation** – It is an efficient insulation tool that prevents heat loss. It is manufactured in certain sizes according to the pipes.
- **Prefabricated glass wool/stone wool insulation** – these products are covered with aluminium foil. They can be installed on pipes with various diameters. They are used for thermal insulation, in hot pipelines, and against vibrations in pressurized water pipe systems.



Figure 2. Prefabricated glass wool in pipe form

- **Prefabricated XPS – EPS** – XPS and EPS are foam materials with homogeneous cell structure. EPS is a newer product. Both materials take the shape of the place where they are applied by inflating the polystyrene grains and holding tightly to it.



- **Prefabricated polyurethane-phenol foam** – it is obtained by inflating and hardening the phenol-formaldehyde. It is a solid but brittle material with both open and closed pores; its surface becomes dusty by friction. It is manufactured both in sheets and in tubular form. It has lower pressure resistance but higher temperature resistance
- **White glass wool or stone wool mattress** – the stone wool insulation material is produced by melting basalt minerals into fibre at high temperatures. In addition to thermal insulation, it can provide sound insulation and fireproof for buildings. Because of its high temperature and fire resistance, it is an ideal insulation material for installation and industrial applications. The product is available in different densities
- **Injected Polyurethane** – it is possible to solve water leakages permanently by applying this product in areas where the source cannot be detected from the outside or where there is no chance of intervention. When the injected polyurethane comes into contact with the leaking water, it swells 30 to 40 times its own volume and permanently clogs all water-leaking capillaries
- **Calcium silicate** – it is formed by pouring calcium silicate powder into a kiln in which it reacts with inorganic fibre at high pressure and temperature. It is an excellent thermal insulation material. It is used in hot water pipelines, boilers, etc.



Figure 3. Calcium silicate