ENVIRONMENTAL IMPACT OF PPR

Manufacturing and installation of PPR pipe do not only contribute to the impact on the environment but also to the energy challenges in South Africa. An aspect demanding increased attention today is the environmental impact of products used in the construction industry. This is a very intensely debated and widely misunderstood topic, especially when it comes to PPR plumbing systems. Traditional theory has it that anything plastic is bad for the environment. Recycling of polypropylene products are also a possibility for the production of PPR products. The perception is encouraged with every soft drink bottle or shopping bag discarded by the roadside, or clogging up drains somewhere. Whilst littering and pollution are very definitely environmental issues, the use of plastics in preference to traditional materials for piping is however actually better for the environment!

EMISSIONS

Emissions In a recent study conducted by Professor Kaüfer at the University of Berlin using the VENOB method (comparative standardizing evaluation), the emissions of plastics, steel and copper piping systems were compared, based on a 16 family housing complex with central hot and cold water distribution at 4 bar pressure as its basis. The study assessed the energy consumption related to air, water and soil emissions at every stage of the production and installation route for the piping systems of various materials. It concluded in every instance that plastic systems had less environmental impact than the metallic alternatives, whilst needing less energy to produce the system in the first place.

- Fully recyclable product.
- Neither toxic nor otherwise harmful substances are used in its manufacture.
- No harmful gases with the installation proses.
- No bacterial buildup in pipes.
- Meeting all health requirements.

ENERGY SAVING

Currently in South Africa we facing a serious problem when it comes to electricity and energy loss. Production of PPR pipes and fittings has been refined to a very efficient process. For example, the energy required to produce a cubic meter of PPR averages out at 52,000 MJ, compared with 130,000 MJ for steel and 313,000 MJ for copper. To convert this material into the final product also demands less energy with PPR typically being extruded at less than 300°C compared to copper at 1300°C.

Heat loss occurs when the heat inside a pipe escapes through the material to the surrounding environment. Practically this can be noticed when you turn on your hot tap, and it takes a while for the hot water to come through the pipes. Some of this is caused by cool water standing in the pipe, but some is also caused by energy being wasted in heating up the pipe before releasing hot water through your tap. The important measure here is thermal conductivity, i.e. how easy is it for heat to escape...
through the pipe material. A comparison between copper and PPR, the heat loss from the PPR pipe being less than 1/1000th that of copper.

IMPORTANT HEALTH REQUIREMENTS

Other requirements include that plumbing fixture materials should be smooth, non-absorbent, non-porous and corrosion-resistant. Both internal and external surfaces of plumbing fixtures should be easy to clean and free from hidden surfaces that could become fouled. Plumbing fixtures should be sufficiently durable to give satisfactory service over a long period (Jordan, 2004; Frankel, 2004 - WHO, 2006). They should be user friendly and hygienic and their surfaces should be free of sharp surfaces that may cause injury (Jordan, 2004). Potable water discharged from plumbing fixtures should be limited to a maximum flow rate depending on the requirements for water conservation (Frankel, 2004). Roof tanks and other hidden elements of the plumbing system should be provided with overflows that discharge in such a way as to act as a warning before causing damage.

Inadequate plumbing systems can have severe consequences, including the following:

- Pipes or components may leak or burst, resulting in financial losses to the building owner and/or water supply authority due to water losses, damage to property, temporary loss of use of a property, and possible replacement of the plumbing system.
- A leak or burst on a hot water pipe may also result in serious injury due to scalding, and cases of death have been reported. For instance, in November 2006, a ten-month-old baby in the UK suffered 95% burns when a fault in the plumbing system caused hot water to be released in the bedroom where she was sleeping. She died a month later (BBC News, 2008).
- Under certain conditions, inadequate plumbing systems can cause explosion of high pressure geyser, with potential injury to people and damage to property.
- Various substances, such as lead, copper, cyanide, arsenic, iron, manganese, and zinc, biological and organic matter may enter the water through leaching from plumbing materials or interactions between the plumbing material and water. In serious cases, for instance when sub-standard materials are used, this may cause colour, taste and odor problems in the water, and have negative health impacts, including gastrointestinal discomfort and nausea, brain damage and cancer (EPA, 2007; Thompson et al., 2007).
- Under certain conditions, potentially contaminated return flow from geyser or fixtures may enter the plumbing system and create a health risk.
- Insufficient cleaning and disinfection of the plumbing system after installation or maintenance may cause contaminated water to be supplied.

Unfortunately it is not easy to monitor the negative health effects caused by bad-quality plumbing materials due to the fact that the metal components vary from one building to another and, in the same building the concentration of any particular metal varies at different times of a day (Thompson et al., 2007). In addition, side effects generally appear after many years of exposure and vary from one person to the next.

PLUMBING CERTIFICATE OF COMPLAINCE (COC) EXPLAINED

Plumbing Certificates of Compliance are issued by licensed plumbers to certify that their plumbing work complies with all regulatory installations requirements.

According to The Plumbing Industry Registration Board, CoC is a system and process whereby a licensed plumbing practitioner will self-certify their plumbing work by issuing a plumbing certificate of compliance to the relevant owner, municipality, local authority and / or insurance company. Through the process the licensed plumber takes ownership for their plumbing work and is held accountable for the work he has done.
A PLUMBING CERTIFICATE OF COMPLIANCE WILL BE ISSUED FOR MOST PLUMBING WORK, INCLUDING:

- Where the total value of work, including materials, labour and VAT, is more than R1 500 (material costs must be included, regardless of whether the materials were supplied by another person);
- The installation, relocation or replacement of any electric water heating system, regardless of the cost;
- For every separate installation on a site;
- The construction, installation or alteration of any above or below ground sanitary drain, regardless of the cost;
- The installation, relocation or replacement of any hot water solar water heating system; and
- The installation, relocation or replacement of any heat pump water heating system.

A plumbing CoC is issued within five working days of the completion of the said plumbing works. Only a licensed plumber may purchase and issue compliance certificates. It is illegal for anyone to work on a plumbing installation if they are not a qualified plumber or do not work under the adequate supervision of a qualified plumber.

Registered people under the category of qualified plumbers are qualified to carry out plumbing works and may supervise non-qualified plumbers or plumbing apprentices; however, they will not be allowed to purchase or issue plumbing CoC’s for plumbing installations.