



ASSESSING THE TRUE QUALITY OF DOUBLE WALL CORRUGATED PIPES

Lately, there has been a lot of controversy about the quality of the two-layer plastic corrugated pipes available on the Russian market, and about their evaluation criteria. In response, POLYPLASTIC Group would like to make its position clear.

1. First of all, let us consider the indicators and technical specifications, in accordance with GOST R 54475-2011: "Plastic structured-wall pipes and their fittings for sewerage systems outside the buildings". Some of the key specifications need explaining. Corrugated pipes can be produced from both PE and PP. Each material has its advantages and disadvantages: PE has better impact resistance, especially at low temperatures, whereas PP is more resistant to high temperatures. Unfortunately, some domestically-produced types of PP don't always make pipes with a high impact resistance.

2. GOST R 54475-2011 stipulates two ways of testing for impact resistance: at 0°C (clause 8.6) and at -10°C (Annex A, compulsory). On that basis, a producer can carry out tests using one of these methods, ensuring higher or lower impact resistance at low temperatures. The customer needs to consider that, if the storage, transportation and installation of the pipes is conducted at low temperatures, then they will need to choose their pipes using Annex A of GOST R 54475-2011 (the testing method must be indicated in the pipe specification).

All divisions of POLYPLASTIC Group carry out impact resistance tests on CORSYS and CORSYS PRO pipes according to Annex A of GOST R 54475-2011 at -10°C.

3. Arguments about the differences in the resistance of PE and PP to external loads have no technical grounds. If pipes comply with GOST R 54475-2011, their high deformation during operation can be caused by two reasons: as a result of improper design (the wrong choice of SN), and/or a breach of installation technology, in particular, the sequence of backfill stipulated in the construction regulations.

Pipe resistance to load is characterised by ring stiffness and ring flexibility. Ring stiffness is calculated upon 3% pipe deformation as a result of testing (clause 8.4, GOST R 54475-2011). PP is stiffer compared with PE (flex modulus 1450 and 950 MPa accordingly) and provides a lower profile which is more lightweight and more economically viable for the manufacturer. On the other hand, PE pipes with the same stiffness type have thicker walls ensuring guaranteed extra ring flexibility – an ability to maintain integrity and structure at up to 30% pipe deformation (clause 8.5, GOST R 54475-2011), which provides extra reliability.

POLYPLASTIC Group specialists are available to help customers select pipes during the design phase, and to provide necessary consultations on the installation of plastic pipelines for construction companies.

4. Practically all corrugated pipes in the market are supplied with socket-and-spigot joints. GOST R 54475-2011 allows the use of sockets made by different technologies – in-line moulding and injection moulding with consequent welding to the pipe.

An in-line moulded socket is made directly during the pipe extrusion process. Due to some specifics of technology, in most cases, it has less mechanical resistance, resulting in insufficient structural stiffness at bends, or pipe deformation. Moreover, in-line moulding does not guarantee fine tolerance at the inner diameter of the pipe's end which often leads to loss of tightness on the joint.

The reduced stiffness of in-line moulded sockets is often the reason behind their deformation during storage and transportation. In the best case scenario it complicates installation of the pipes, but in the worst case, it reduces reliability and compromises the integrity of the joint.

Leading European producers of corrugated pipes, including the POLYPLASTIC Group are now only using strictly welded socket technology. The sockets are made by injection moulding, the technology provides high size precision with fine tolerance, and higher integrity owing to strengthening ribs.

Welding is done in-house, automatically, which ensures total compliance of the technology, minimises the possibility of human error, and guarantees the high quality and integrity of all joints. The quality of welding of CORSYS and CORSYS PRO pipes is checked using the destruction method on each batch.

It should be noted that GOST R 54475-2011 does not stipulate any requirements for the ring stiffness of sockets. The arguments of some producers that their sockets have the same ring stiffness as the pipes – up to 16 kN/m² – are incorrect, simply because the production of such sockets is technically and economically unnecessary. The integrity and reliability of the joint is not determined by the higher ring stiffness of the socket, but by its geometrical parameters and material specifications.

The POLYPLASTIC Group recommends designers and customers consider all of this information, and ask pipe suppliers to provide lab test results according to GOST R 54475-2011, as well as any certificates. This will ensure the superior quality of any pipes used for the construction of non-pressure pipelines systems.

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