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Thermoplastics piping systems for non-pressure underground drainage and sewerage — Joints for buried non-pressure applications — Test method for the long-term sealing performance of joints with elastomeric seals by estimating the sealing pressure

Systèmes de canalisations thermoplastiques pour branchements et collecteurs d'assainissement enterrés sans pression — Assemblages pour applications enterrées sans pression — Méthode d'essai de la performance à long terme des assemblages avec garnitures d'étanchéité en élastomère par l'estimation de la pression d'étanchéité

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13265 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 1, *Plastics pipes and fittings for soil, waste and drainage (including land drainage)*.

Thermoplastics piping systems for non-pressure underground drainage and sewerage — Joints for buried non-pressure applications — Test method for the long-term sealing performance of joints with elastomeric seals by estimating the sealing pressure

1 Scope

This International Standard specifies a method for determining the long-term sealing pressure of elastomeric seals in assembled joints for buried non-pressure sewerage plastics piping and ducting systems.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9967, *Thermoplastics pipes — Determination of creep ratio*

EN 681-1, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 1: Vulcanized rubber*

EN 681-2, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 2: Thermoplastic elastomers*

EN 681-3, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 3: Cellular materials of vulcanized rubber*

EN 681-4, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 4: Cast polyurethane sealing elements*

EN 837-1, *Pressure gauges — Part 1: Bourdon tube pressure gauges — Dimensions, metrology, requirements and testing*

3 Symbols

B	theoretical pressure, in bar[1)], in the PTFE tube at t = 1 h
D	drop factor of extrapolated pressure data at 24 h and 100 years
M	gradient of the curve
p_t	pressure measured in the PTFE tube at a flow of 120 ml/min and the time t hours
p_0	initial leakage pressure, in bar, measured in the PTFE tube after completing the assembly
$p_{t\mathrm{a}}$, $p_{t\mathrm{b}}$, $p_{t\mathrm{c}}$	pressure measured in the three PTFE tubes in the tested joint, marked a, b and c, respectively, at time t hours
p_x	extrapolated pressure, in bar, at 100 years
p_y	calculated pressure, in bar, at 24 h
p_{xa}, p_{xb}, p_{xc}	extrapolated pressure, in bar, at 100 years in the three PTFE tubes in the tested joint, marked a, b and c, respectively
$p_{100\mathrm{y}}$	arithmetic mean value of the pressures obtained for each of the three extrapolated values, p_x, at 100 years
$p_{24\mathrm{h}}$	arithmetic mean value of the pressures obtained for each of the three calculated values, p_y, at 24 h
R	correlation coefficient
t	time, in hours

4 Principle

The sealing pressure in a joint is estimated by measuring the pressure necessary to lift the seal, in each of three PTFE tubes equally distributed over the circumference of a joint located between the rubber seal and the spigot or socket, as appropriate (see Figure 1).

In a temperature-controlled environment and at increasing time intervals, a constant flow rate of 120 ml/min of nitrogen or air is forced through three flexible PTFE tubes.

The nitrogen or air pressure, p, necessary to achieve this flow, is measured. The pressure, p_t, is measured at increasing time intervals over a period of time. The extrapolated regression lines for p_t are used to calculate the estimated value p_x at 100 years and p_y at 24 h.

1) 1 bar = 0,1 MPa = 10^5 Pa; 1 MPa = 1 N/mm^2.