



ISO 16422-2

Pipes and joints made of oriented unplasticized poly(vinyl chloride) (PVC-O) for the conveyance of water under pressure —

Part 2: Pipes

Tubes et assemblages en poly(chlorure de vinyle) non plastifié orienté (PVC-O) pour le transport de l'eau sous pression —

Partie 2: Tubes

First edition
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This document was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 2, *Plastics pipes and fittings for water supplies*.

This first edition of ISO 16422-2, together with ISO 16422-1 and ISO 16422-5, cancels and replaces the second edition of ISO 16422:2014, which has been technically revised.

The main changes are as follows:

- ISO 16422:2014 has been split into several parts, under the general title “*Pipes and joints made of oriented unplasticized poly(vinyl chloride) (PVC-O) for the conveyance of water under pressure*”. The information previously included in ISO 16422:2014 has been divided into ISO 16422-1, ISO 16422-2 (this document) and ISO 16422-5, with the following additions to ISO 16422-2:
 - DN1200 values have been introduced;
 - the tolerances of chamfers in plain ends have been modified;
 - minimum values for orientation factors have been introduced;
 - tolerances in density have been introduced;
 - minimum length of engagement values have been introduced;
 - the long-term test at 60°C is performed on the pipe only;
 - minimum hoop stress values for production control tests have been introduced;
 - differential scanning calorimetry (DSC) has been identified as the preferred test method for gelation in case of dispute.

A list of all parts in the ISO 16422 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Molecular orientation of thermoplastics results in the improvement of physical and mechanical properties. Orientation is carried out at temperatures well above the glass transition temperature.

Orientation of PVC-U pipe-material can be induced by different processes.

In general, the following production process is common.

- A thick-wall tube is extruded (feedstock) and conditioned at the desired temperature.
- The orientation process is activated primarily in circumferential direction under controlled conditions. Axial orientation can also be activated in the product.
- After the orientation process, the pipe is cooled down quickly to ambient temperature.

The orientation of the molecules creates a laminar structure in the material of the pipe wall. This structure gives the ability to withstand brittle failure emanating from minor flaws in the material matrix or from scratches at the surface of the pipe wall.

Improved hoop strength allows reduced wall thickness with material and energy savings. It also results in improved resistance to impact and fatigue.

The classification of the pipe depends on material compound/formulation and stretch ratios used. Therefore, with the classification, these characteristics may be specified or determined.

Regarding potential adverse effects on the quality of water intended for human consumption caused by the products covered by this document, this document provides no information as to whether or not the products can be used without restriction.

The ISO 16422 series, of which this is Part 2, specifies the requirements for a piping system made from oriented unplasticized poly(vinyl chloride) (PVC-O) and its components. The piping system is intended to be used for water supply, pressurized drainage and sewerage and irrigation systems to be used underground or above ground where protected to direct sunlight.

Requirements and test methods for PVC-O components are specified in in this document, as well as in ISO 16422-1 and ISO/TS 16422-3. For other components (not manufactured from PVC-O), reference is made to the following documents: ISO 1452-3 (PVC-U) and EN 12842 (Cast Iron). Characteristics for fitness for purpose (mainly for joints) are established in ISO 16422-5.