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Polysulfone (PSU) — Effect of time and temperature on expected strength

Polysulfone (PSU) — Influence du temps et de la température sur la résistance attendue

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Foreword

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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 5, *General properties of pipes, fittings and valves of plastic materials and their accessories —Test methods and basic specifications.*

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.

Introduction

In the early 2000s, manufacturers of plastics and multilayer piping systems for hot and cold-water installations began to consider the use of alternative plastics materials beside the widely used metallic materials (e.g. copper alloys or stainless steel) for components and fittings. Before this point, however, no materials were available which had the high material strengths which are required for fittings and components.

With the market availability of polyvinylidene fluoride (PVDF), polysulfone (PSU) and polyphenylsulfone (PPSU), the option for the use of plastics materials, instead of metallic materials, for fittings and components, as part of plastics and multilayer piping systems, was made possible and products mainly produced by injection molding, have been introduced into the market.

In the beginning, the design and the calculation for the dimensions was based on individual ISO 9080 analyses for each individual PVDF/PSU/PPSU compound.

This document has been developed with the intention to align the values for the expected strength over the time (reference lines) for PVDF/PSU/PPSU, in order to simplify and unify all design procedures for which the expected strength over the time is needed.

The reference lines for polysulfone (PSU) referred to in this document have been agreed upon by a group of experts from ISO/TC 138, SC5, after considering experimental data and have been accepted by the relevant ISO technical committees.

At the date of publication of this document, the following International Standards dealing with plastics and multilayer piping systems for hot and cold water installations have been published:

— ISO 15874 series, Plastics piping systems for hot and cold water installations - Polypropylene (PP)

— ISO 15875 series, Plastics piping systems for hot and cold water installations - Crosslinked polyethylene (PE-X)

— ISO 15876 series, Plastics piping systems for hot and cold water installations - Polybutene (PB)

— ISO 15877 series, Plastics piping systems for hot and cold water installations - Chlorinated poly(vinyl chloride) (PVC-C)

— ISO 22391 series, Plastics piping systems for hot and cold water installations - Polyethylene of raised temperature resistance (PE-RT)

— ISO 21003 series, Multilayer piping systems for hot and cold water installations inside buildings