

Second edition
2020-01

Plastics piping systems for non-pressure underground drainage and sewerage — Structured-wall piping systems of unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) —

Part 3: Pipes and fittings with non-smooth external surface, Type B

Systèmes de canalisations en plastique pour les branchements et les collecteurs d'assainissement sans pression enterrés — Systèmes de canalisations à parois structurées en poly(chlorure de vinyle) non plastifié (PVC-U), polypropylène (PP) et polyéthylène (PE) —

Partie 3: Tubes et raccords avec une surface externe non lisse, type B



Reference number
ISO 21138-3:2020(E)

© ISO 2020



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

This is a preview of ISO 21138-3:2020. [Click here to purchase the full version from the ANSI store.](#)

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms, definitions, symbols and abbreviated terms	3
3.1 Terms and definitions.....	3
3.2 Symbols.....	4
3.3 Abbreviated terms.....	4
4 Material	5
4.1 General.....	5
4.2 Unplasticized poly(vinyl chloride) (PVC-U).....	6
4.2.1 General.....	6
4.2.2 Pipe and fitting material characteristics.....	7
4.2.3 Utilization of non-virgin materials.....	7
4.3 Polypropylene (PP).....	7
4.3.1 General.....	7
4.3.2 Pipe and fitting material characteristics.....	7
4.3.3 Melt mass-flow rate classification.....	8
4.3.4 Utilization of non-virgin materials.....	9
4.4 Polyethylene (PE).....	9
4.4.1 General.....	9
4.4.2 Material characteristics of pipes and injection-moulded fittings.....	9
4.4.3 Material characteristics of rotational-moulded fittings.....	10
4.4.4 Utilization of non-virgin materials.....	10
4.5 Sealing ring retaining components.....	10
4.6 Sealing rings.....	10
4.7 Fused or welded joints.....	11
4.8 Adhesives for PVC-U.....	11
5 Designation of wall construction and examples of typical jointing methods	11
5.1 Wall constructions designated as Type B.....	11
5.1.1 Ribbed or corrugated construction.....	11
5.1.2 Typical jointing methods for structured-wall Type B pipes.....	11
5.2 Designation and design of joints.....	12
6 General characteristics for pipes and fittings — Colour	12
7 Geometrical characteristics	12
7.1 General.....	12
7.2 Dimensions.....	12
7.2.1 Designation.....	12
7.2.2 Lengths of pipe.....	12
7.2.3 Diameters of Type B pipes and spigots of pipes or fittings.....	12
7.2.4 Diameters and jointing dimensions of sockets and spigots.....	14
7.2.5 Wall thicknesses.....	15
7.3 Types of fitting.....	16
8 Physical characteristics	16
8.1 Unplasticized poly(vinyl chloride) (PVC-U).....	16
8.1.1 Physical characteristics of PVC-U pipes.....	16
8.1.2 Physical characteristics of PVC-U fittings.....	17
8.2 Polypropylene (PP).....	18
8.2.1 Physical characteristics of PP pipes.....	18
8.2.2 Physical characteristics of PP fittings.....	18
8.3 Polyethylene (PE).....	19

This is a preview of ISO 21138-3:2020. [Click here to purchase the full version from the ANSI store.](#)

8.3.1	Physical characteristics of PE pipes	19
8.3.2	Physical characteristics of PE fittings	19
9	Mechanical characteristics	19
9.1	Mechanical characteristics of pipes	19
9.1.1	General	19
9.1.2	Ring flexibility	21
9.1.3	Tensile strength of seams	21
9.1.4	Additional requirements	21
9.2	Mechanical characteristics of fittings	21
10	Performance requirements	22
11	Marking	24
11.1	General	24
11.2	Minimum required marking	24
11.2.1	Pipes	24
11.2.2	Fittings	24
Annex A	(normative) Virgin PVC-U material	26
Annex B	(normative) Utilization of non-virgin PVC-U material	27
Annex C	(normative) Virgin PP material	30
Annex D	(normative) Utilization of non-virgin PP material	31
Annex E	(normative) Virgin PE material	33
Annex F	(normative) Utilization of non-virgin PE material	34
Annex G	(informative) Survey of possible use of reprocessed and recycled material	37
Bibliography	38

This is a preview of ISO 21138-3:2020. [Click here to purchase the full version from the ANSI store.](#)

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document 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)*.

This second edition cancels and replaces the first edition (ISO 21138-3:2007), which has been technically revised. The main changes compared to the previous edition are as follows:

- the normative references have been updated;
- references to EN test methods have been updated to ISO test methods, when applicable;
- editorial improvements have been made for clarification.

A list of all parts in the ISO 21138 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.

This is a preview of ISO 21138-3:2020. [Click here to purchase the full version from the ANSI store.](#)

Introduction

The ISO 21138 series of standards covers plastics piping systems for non-pressure underground drainage and sewerage, in particular thermoplastics structured-wall piping systems.