
Fire extinguishing media — Foam concentrates —

**Part 1:
Specification for low-expansion foam concentrates for top application to water-immiscible liquids**

Agents extincteurs — Émulseurs —

Partie 1: Spécifications pour les émulseurs bas foisonnement destinés à une application par le haut sur les liquides non miscibles à l'eau



This document is a preview generated by ERS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

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

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Grades and uses of foam concentrates	4
4.1 Grades	4
4.2 Use with sea water	4
5 Tolerance of foam concentrates to freezing and thawing	4
6 Sediment in foam concentrates	4
6.1 Sediment before ageing	4
6.2 Sediment after ageing	4
7 Determination of viscosity	4
7.1 Newtonian foam concentrates	4
7.2 Pseudo-plastic foam concentrates	5
8 pH of foam concentrates	5
8.1 pH limits	5
8.2 Sensitivity to temperature	5
9 Surface tension of the foam solution	5
9.1 Before temperature conditioning	5
9.2 Temperature sensitivity	5
10 Interfacial tension between the foam solution and cyclohexane	5
10.1 General	5
10.2 Before temperature conditioning	5
10.3 Temperature sensitivity	6
11 Spreading coefficient of the foam solution on cyclohexane	6
12 Expansion and drainage of foam	6
12.1 General	6
12.2 Expansion limits	6
12.3 Drainage limits	6
13 Test fire performance	6
14 Marking, packaging and specification sheet	7
14.1 Marking	7
14.2 Packaging	8
14.3 Specification sheet	8
Annex A (normative) Preliminary sampling and conditioning of the foam concentrate	9
Annex B (normative) Determination of tolerance to freezing and thawing	10
Annex C (normative) Determination of volume percentage of sediment	12
Annex D (normative) Determination of viscosity for pseudo-plastic foam concentrates	13
Annex E (normative) Determination of surface tension, interfacial tension and spreading coefficient	15
Annex F (normative) Determination of expansion and drainage time	16
Annex G (normative) Determination of test fire performance	22
Annex H (informative) Description of a radiation measurement method	28

Annex I (informative) Compatibility	32
Annex J (informative) Small-scale fire test	33
Bibliography	42

This document is a preview generated by EVS

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 on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 21, *Equipment for fire protection and fire fighting*, Subcommittee SC 6, *Foam and powder media and firefighting systems using foam and powder*.

This third edition cancels and replaces the second edition (ISO 7203-1:2011), which has been technically revised.

The main changes compared to the previous edition are:

- addition of Part 4 containing specifications for Class A foam concentrates;
- extension of [Clause 2](#);
- modification of [Clause 12](#) to run two tests instead of one and take the average of both values instead of having just one datum;
- correction of figures;
- extension of [Annex G](#) by a scheme of a decision tree, and modification of the acceptable temperature range for testing fire performance;
- removal of [Annex J](#): “Typical anticipated performance for various types of foam concentrate”.

A list of all parts in the ISO 7203 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.

Introduction

Firefighting foams are widely used to control and extinguish fires of Class B (flammable liquids) and/or Class A fuels (solid materials, usually of an organic nature) and for inhibiting reignition.

Foams can be used in combination with other extinguishing media, in particular halons, carbon dioxide and powders which are the subject of other International Standards, including, ISO 6183, ISO 7201-1, ISO 7201-2 and ISO 7202. A specification for foam systems can be found in ISO 7076.

Attention is drawn to [Annex I](#), which deals with the compatibility of foam concentrates, and the compatibility of foams and powders.

Fire extinguishing media — Foam concentrates —

Part 1:

Specification for low-expansion foam concentrates for top application to water-immiscible liquids

1 Scope

This document specifies the essential properties and performance of liquid foam concentrates used to make low-expansion foams for the control, the extinction and the inhibition of reignition of fires of water-immiscible liquids. Minimum performance on certain test fires is specified.

These foams are suitable for top application to fires of water-immiscible liquids. The foams that conform with ISO 7203-3 are also suitable for top application to fires of water-miscible liquids.

The foam concentrates can be suitable for use in non-aspirating sprayers or for subsurface application to liquid fires, but the requirements specific to those applications are outside the scope of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 304, *Surface active agents — Determination of surface tension by drawing up liquid films*

ISO 3104, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 3219, *Plastics — Polymers/resins in the liquid state or as emulsions or dispersions — Determination of viscosity using a rotational viscometer with defined shear rate*

ISO 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

ISO 3506-1, *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 1: Bolts, screws and studs*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*

ISO 3734, *Petroleum products — Determination of water and sediment in residual fuel oils — Centrifuge method*

ISO 7203-2, *Fire extinguishing media — Foam concentrates — Part 2: Specification for medium- and high-expansion foam concentrates for top application to water-immiscible liquids*

ISO 7203-3, *Fire extinguishing media — Foam concentrates — Part 3: Specification for low-expansion foam concentrates for top application to water-miscible liquids*

BS 5117-1.3:1985, *Testing corrosion inhibiting, engine coolant concentrate (“antifreeze”). Methods of test for determination of physical and chemical properties. Determination of freezing point*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.