INTERNATIONAL STANDARD

ISO 21843

First edition
2018-09

Determination of the resistance to hydrocarbon pool fires of fire protection materials and systems for pressure vessels

Détermination de la résistance aux feux de nappe d'hydrocarbure des matériaux et systèmes de protection incendie des récipients sous pression

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO 21843:2018
https://standards.iteh.ai/catalog/standards/iso/7a0b2689-c560-4eb6-bce4-bb9fdfb572e9/iso-21843-2018

Reference number
ISO 21843:2018(E)

© ISO 2018

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO 21843:2018
https://standards.iteh.ai/catalog/standards/iso/7a0b2689-c560-4eb6-bce4-bb9fdfb572e9/iso-21843-2018



COPYRIGHT PROTECTED DOCUMENT

© ISO 2018

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

 © ISO 2018 – All rights reserved

Contents

Page

Foreword ..... **v**
Introduction ..... **vi**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Symbols and abbreviated terms **3**
5 Principle **4**
6 Test equipment **4**
6.1 General 4
6.2 Burner arrangement 4
6.3 Fuel supply for burners 4
6.4 Test fluids 5
6.5 Test building 5
7 Calibration tests **5**
7.1 General requirements 5
7.2 Calibration test vessel construction 5
7.3 Calibration test procedure 7
7.4 Analysis of calibration tests 8
7.5 Requirements for successful calibration tests 9
7.6 Environmental conditions 10
7.7 Tolerances 10
7.8 Calibration report 11
8 Construction of fire test specimens **11**
9 Instrumentation **12**
10 Fire protection materials and systems **13**
10.1 General 13
10.2 Applied fire protection materials 13
10.3 Assemblies and mounted fire protection systems 15
11 Test procedure **15**
12 Termination of the test **16**
13 Repeatability and reproducibility **16**
14 Uncertainty of measurement **16**
15 Test report **16**
16 Practical application of test results **17**
16.1 Pressure relief valve (PRV) 17
16.2 Propane (or alternative test fluid) fill level 17
17 Performance criteria **18**
17.1 General 18
17.2 Substrate temperature 18
17.3 Coatings and spray-applied materials 18
17.4 Systems and assemblies 18
18 Factors affecting the validity of the test **19**
18.1 Interruption of the test 19
18.2 Failure of thermocouples and DFTs 19
18.3 Failure of pressure transducers 19
18.4 Test related tube and pipe 19

iTeh Standards
(https://standards.iteh.ai)
Document Preview
ISO 21843:2018
https://standards.iteh.ai/catalog/standards/iso/7a0b2689-c560-4eb6-bce4-bb9fdfb572e9/iso-21843-2018

© ISO 2018 – All rights reserved

18.5 Variation in environmental conditions 20
18.6 Directional flame thermometer (DFT) results 20
19 Recommended classification procedures 20
19.1 General 20
19.2 Type of fire 20
19.3 Type of application 20
19.4 Classification based on temperature rise and period of resistance 21
19.5 Classification based on duration before failure 21
Annex A (informative) **Example P&I diagram for test facility 22**
Annex B (informative) **Directional flame thermometers (DFTs) 23**
Annex C (normative) **Method of affixing thermometers 24**
Annex D (informative) **Radiation convection balance 25**
Annex E (informative) **Additional classification procedures: Classification based on duration before failure 30**
Bibliography 35

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO 21843:2018
https://standards.iteh.ai/catalog/standards/iso/7a0b2689-c560-4eb6-bce4-bb9fdfb572e9/iso-21843-2018

© ISO 2018 – All rights reserved

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.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

This document was prepared by Technical Committee ISO/TC 92, *Fire safety*, Subcommittee SC 2, *Fire containment*.

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.

ISO 21843:2018
https://standards.iteh.ai/catalog/standards/iso/7a0b2689-c560-4eb6-bce4-bb9fdfb572e9/iso-21843-2018

© ISO 2018 – All rights reserved

Introduction

This document describes a test procedure to assess the protection afforded by fire protection materials and systems to pressure vessels. It gives an indication of how fire protection materials perform when exposed to a set of specified fire conditions. Actual vessels can vary in construction from that tested and can utilise additional protection systems. The test conditions have been shown to be representative of the severity of unconfined pool fires fuelled by light and medium oil distillates such as LPG and petroleum products.

Test laboratories should be aware of the significant potential hazards involved in pressure vessels testing. Facilities intending to undertake tests in accordance with this document should be designed to be safe in the event of vessel failure.

iTeh Standards
(https://standards.iteh.ai)
Document Preview

ISO 21843:2018
https://standards.iteh.ai/catalog/standards/iso/7a0b2689-c560-4eb6-bce4-bb9fdfb572e9/iso-21843-2018

© ISO 2018 – All rights reserved