

ISO/FDIS 12736-3:2023(E)

Formatted: French (Switzerland)

ISO/TC 67/SC 2

Date: 2023-01-25/04-26

~~Petroleum~~Oil and ~~natural~~gas industries including lower carbon energy — Wet thermal insulation systems for pipelines and subsea equipment — Part 3: Interfaces between systems, field joint systems, field repairs and pre-fabricated insulation

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

ISO 12736-3

<https://standards.iteh.ai/catalog/standards/sist/a1ac0aad-85b1-414b-9611-1b42c33c68df/iso-12736-3>

~~Edited DIS -~~  
~~MUST BE USED~~  
~~FOR FINAL~~  
~~DRAFT~~

Salpem Classification - General Use

© ISO ~~2021~~2023

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

Email: [copyright@iso.org](mailto:copyright@iso.org)

Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

Formatted: German (Switzerland)

Formatted: German (Switzerland)

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

ISO 12736-3

<https://standards.iteh.ai/catalog/standards/sist/a1ac0aad-85b1-414b-9611-1b42c33c68df/iso-12736-3>

Edited DIS -  
MUST BE USED  
FOR FINAL  
DRAFT

© ISO 2021 – All rights reserved

**Contents**

Foreword.....vi

Introduction ..... vii

1 Scope..... 1

2 Normative references ..... 1

3 Terms and definitions..... 1

4 Abbreviated terms ..... 6

5 Conformance ..... 7

5.1 Rounding..... 7

5.2 Conformity to requirement..... 7

6 **Definition for field** joint material, system interfaces and repairs ..... 7

6.1 Material classes..... 7

6.2 Types of interfaces ..... 8

7 Project specific qualification processes for production and application procedures..8

7.1 General requirements.....8

7.2 Purchase order requirements ..... 9

7.2.1 General information ..... 9

7.2.2 Additional information ..... 9

7.3 Production qualification process ..... 10

7.3.1 Process description ..... 10

7.3.2 Project specific qualification considerations ..... 10

7.3.3 Procedure qualification trial ..... 10

7.3.4 Pre-production trial ..... 11

7.3.5 Production testing..... 12

7.4 Application procedures ..... 12

7.4.1 Application procedure specification ..... 12

7.4.2 Inspection and testing plan ..... 13

7.4.3 Qualification of operators..... 13

8 Production testing and inspection..... 15

8.1 General..... 15

8.2 Material tests and inspection ..... 15

8.3 System test and inspection ..... 15

8.4 Inspection documents and traceability..... 15

8.5 Guidance in generating an ITP ..... 15

9 Requirements for field repairs ..... 29

9.1 General..... 29

9.2 Damage/defect characterization..... 29

9.3 Repair materials for each of the material classes and compatibility ..... 29

9.4 Repair execution..... 29

10 Final documentation ..... 29

11 Handling, storage and transportation at site ..... 30

12 Pre-fabricated insulation..... 30

12.1 General..... 30

12.2	Material classes .....	30
12.3	Project specific qualification processes .....	30
12.4	Information to be supplied by the system purchaser .....	31
12.5	Manufacturing of pre-fabricated insulation .....	31
12.6	Inspection and testing plan .....	32
12.7	Installation of pre-fabricated insulation .....	41
Annex A (informative) Guidelines for using this document .....		42
A.1	General .....	42
A.2	Materials .....	44
A.3	Field joint system design .....	44
A.4	Types of interfaces for field joint systems .....	44
A.5	Qualification for production and application procedures for field joint system .....	44
A.6	Field repair .....	45
A.7	Final documentation .....	45
A.8	Handling, storage and transportation .....	45
A.9	Pre-fabricated insulation .....	45
Annex B (informative) Guidelines on the design of field joint systems on a project basis .....		46
B.1	General .....	46
B.2	Design of field joint systems and interfaces .....	46
B.3	Designing for ACC compatibility .....	47
B.4	Designing for system application .....	47
B.5	Other system design considerations .....	47
Annex C (informative) Field joint adhesion testing .....		49
C.1	Chamfer cross section tensile adhesion .....	49
C.1.1	General .....	49
C.1.2	Specimen .....	49
C.1.3	Evaluation .....	49
C.2	Overbuild interface peel adhesion .....	49
C.2.1	General .....	49
C.2.2	Sample size .....	50
C.2.3	Evaluation .....	50
C.3	Chamfer peel adhesion .....	50
C.3.1	General .....	50
C.3.2	Sample size .....	50
C.3.3	Evaluation .....	50
C.4	Pull-off test .....	50

Edited DIS -  
MUST BE USED

PREVIEW

(standards.itech.ai)

ISO 12736-3

<https://standards.itech.ai/catalog/standards/sist/a1ac0aad-85b1-414b-9611-1b42c53c68d1/iso-12736-3>

ISO/FDIS 12736-3:2023(E)

C.4.1	General	50
C.4.2	Specimen	50
C.4.3	Evaluation	51
C.5	Elevated temperature testing	51
Annex D (informative) Guidelines for pre-fabricated insulation		52
D.1	General	52
D.2	Types of pre-fabricated insulation	52
D.2.1	General	52
D.2.2	Half shell thermal insulation covers or shrouds	52
D.2.3	Field joint half shells	53
D.2.4	Specialty pieces	53
D.3	Ancillary components	53
D.3.1	General	53
D.3.2	Fastening system	53
D.3.3	Flood or burp plugs	53
D.3.4	Sealing system	53
D.4	Cathodic protection system compatibility	54
D.5	Pre-fabricated insulation gap analysis for conformance to the ISO 12736 series	54
Bibliography		56

ISO 12736-3  
<https://standards.iteh.ai/catalog/standards/sist/a1ac0aad-85b1-41b42c33c68df/iso-12736-3>

Formatted: Default Paragraph Font, Font: Bold

Formatted: TOC 1, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers

## 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.

Formatted: English (United Kingdom)

Formatted: Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers

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](http://www.iso.org/directives)).

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: std\_publisher

Formatted: std\_docNumber

Formatted: std\_docPartNumber

Formatted: std\_publisher

Formatted: std\_docNumber

Formatted: std\_docPartNumber

Formatted: std\_publisher

Formatted: std\_docNumber

Formatted: std\_docPartNumber

Formatted: std\_publisher

Formatted: std\_docNumber

Formatted: std\_year

~~Attention is drawn to the possibility that some of the elements implementation of this document may be involve the subject of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents), 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](http://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](http://www.iso.org/iso/foreword.html).

~~This document was prepared by Technical Committee ISO/TC 67, Materials, equipmentOil and offshore structures for petroleum, petrochemical and natural gas industries including lower carbon energy, Subcommittee SC 2, Pipeline transportation systems, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 12, Materials, equipmentOil and offshore structures for petroleum, petrochemical and natural gas industries including lower carbon energy, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).~~

This first edition of ISO 12736-3, together with ISO 12736-1 and ISO 12736-2, cancels and replaces ISO 12736:2014.

The main changes are as follows:

- clearer delineation between commercial projects and validation;
- introduction of material classes;
- introduction of interface types;

Edited DIS -  
MUST BE USED  
FOR FINAL  
DRAFT

## ISO/FDIS 12736-3:2023(E)

- elimination of system specific qualification testing tables;
- introduction of project specific functional tests;
- addition of items related to pre-fabricated insulation;
- addition of Annexes A, B and D with **guidelines/guidance** for using this document, design of systems, and pre-fabricated insulation.

Formatted: cite\_app

Formatted: cite\_app

A list of all parts in the ISO 12736 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](http://www.iso.org/members.html).

Formatted: English (United States)

Formatted: English (United States)

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

ISO 12736-3

<https://standards.iteh.ai/catalog/standards/sist/a1ac0aad-85b1-414b-9611-1b42c33c68df/iso-12736-3>

ISO/FDIS 12736-3:2023(E)

**Introduction**

~~Annex A further clarifies the intended use of this document.~~

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

ISO 12736-3

<https://standards.iteh.ai/catalog/standards/sist/a1ac0aad-85b1-414b-9611-1b42c33c68df/iso-12736-3>

Edited DIS -  
MUST BE USED  
FOR FINAL  
DRAFT



ISO/FDIS 12736-3:2023(E)

Petroleum

|

# iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO 12736-3

<https://standards.iteh.ai/catalog/standards/sist/a1ac0aad-85b1-414b-9611-1b42c33c68df/iso-12736-3>

© ISO 2021-2023 - All rights reserved

System Classification - General Use

|  
ix



# Oil and natural gas industries including lower carbon energy — Wet thermal insulation systems for pipelines and subsea equipment — Part 3: Interfaces between systems, field joint systems, field repairs and pre-fabricated insulation

## 1 Scope

This document specifies requirements for project specific product and process qualification of field applied wet thermal insulation systems applied at interfaces (e.g. field joints) and pre-fabricated insulation in the petroleum and natural gas industries.

This document is applicable to wet thermal insulation systems submerged in seawater.

This document ~~does~~ not ~~apply~~ ~~applicable~~ to:

- the project qualification of anticorrosion coatings or the requirements for application thereof;
- thermal insulation in the annulus of a steel pipe-in-pipe system.

## 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 48-4, Rubber, vulcanised/vulcanized or thermoplastic — determination — Determination of hardness — part 4: indentation/Indentation hardness by durometer method (Shore hardness)~~

ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness)*

ISO 1133 ~~(all parts)~~-1, *Plastics — Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics — Part 1: Standard method*

~~ISO 1133-2, Plastics — Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics — Part 2: Method for materials sensitive to time-temperature history and/or moisture~~

ISO 1183-1, *Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pycnometer method and titration method*

ISO 2781, *Rubber, vulcanized or thermoplastic — Determination of density*

ISO 2884-2, *Paints and varnishes — Determination of viscosity using rotary viscometers — Part 2: Disc or ball viscometer operated at a specified speed*

Formatted: Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers

Formatted: std\_docNumber

Formatted: std\_docPartNumber

Formatted: Default Paragraph Font

Formatted: std\_docTitle, Font: Not Italic

Formatted: std\_docTitle, Font: Not Italic

Formatted: std\_docTitle, Font: Not Italic

Formatted: std\_docTitle, Font: Not Italic

Formatted: std\_docTitle, Font: Not Italic

Formatted: Default Paragraph Font

Formatted: std\_docPartNumber

Formatted: std\_docNumber

Formatted: std\_docPartNumber

Formatted: std\_docTitle, Font: Not Italic

Formatted: std\_docTitle, Font: Not Italic

Formatted: std\_docTitle, Font: Not Italic

## ISO/FDIS 12736-3:2023(E)

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

ISO 3219, (all parts), *Rheology*

ISO 6502, (All parts), *Rubber — Guide to the use of cure meters*

ISO 8502-3, *Preparation of steel substrates before application of paints and related products — Tests for the assessment of surface cleanliness — Part\_3: Assessment of dust on steel surfaces prepared for painting (pressure-sensitive tape method)*

ISO 8502-4, *Preparation of steel substrates before application of paints and related products — Tests for the assessment of surface cleanliness — Part\_4: Guidance on the estimation of the probability of condensation prior to paint application*

ISO 12736-1, *PetroleumOil and natural-gas industries including lower carbon energy — Wet thermal insulation systems for pipelines, flow lines, equipment and subsea structures — Part 1*

ISO 12736-2, *PetroleumOil and natural-gas industries including lower carbon energy — Wet thermal insulation systems for pipelines, flow lines, equipment and subsea structures — Part 2*

ISO 80000-1, *Quantities and units — Part 1: General*

ISO 10474, *Steel and steel products — Inspection documents*

### 3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

ISO Online browsing platform: available at <https://www.iso.org/obp>

IEC Electropedia: available at <https://www.electropedia.org/>

#### ~~3.1~~ 3.1

**agreed**  
specified in the purchase order

Note 1 to entry: To be discussed by the *system provider* (3.42)(3.41) and *system purchaser* (3.43)(3.42) with input from *end user* (3.9)(3.9) as required.

#### ~~3.2~~ 3.2

##### **application procedure specification**

**APS**  
quality specification document, or group of specifications, describing procedures, method, equipment, tools, etc. used for *system* (3.41)(3.40) application

#### ~~3.3~~ 3.3

**batch**  
quantity of *material* (3.23)(3.22) produced in a continuous manufacturing operation using raw materials of the same source or grade

#### ~~3.4~~ 3.4

Formatted: Default Paragraph Font

Formatted: std\_docPartNumber

Formatted: Default Paragraph Font

Formatted: std\_docTitle, Font: Not Italic

Formatted: Default Paragraph Font

Formatted: std\_docPartNumber

Formatted: Default Paragraph Font

Formatted: Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers

Formatted: English (United Kingdom)

Formatted: Font: Cambria, 11 pt, English (United Kingdom)

Formatted: No underline, Font color: Auto, English (United Kingdom)

Formatted: Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers, Tab stops: 19.85 pt, Left + 39.7 pt, Left + 59.55 pt, Left + 79.4 pt, Left + 99.25 pt, Left + 119.05 pt, Left + 138.9 pt, Left + 158.75 pt, Left + 178.6 pt, Left + 198.45 pt, Left

Formatted: English (United Kingdom)

Formatted: Default Paragraph Font, English (United Kingdom)

Formatted: No underline, Font color: Auto, English (United Kingdom)

Formatted: English (United Kingdom)

Formatted: Default Paragraph Font, English (United Kingdom)

Formatted: No bullets or numbering

Formatted: No bullets or numbering

Formatted: No bullets or numbering

Formatted: No bullets or numbering

STANDARD PREVIEW  
(standards.iteh.ai)  
Edited DIS -  
MUST BE USED  
FOR FINAL  
DRAFT

**blown foam**

insulation *material* (3.23)(3.22) formed by incorporating a gas phase into a polymer matrix

~~3.5~~ **3.5**

**certificate of analysis**

document provided by the manufacturer that indicates results of specific tests or analysis, including test methodology, performed on a specified lot of the manufacturer's product and corresponding conformity ranges

Formatted: No bullets or numbering

~~3.6~~ **3.6**

**chamfer**

~~Exposed~~**exposed** pre-shaped termination of a *system* (3.44)(3.40) to be interfaced with.

Note 1 to entry: ~~Chamfer~~**chamfer** geometry (e.g. angle, shape) and tolerances are project specific.

Formatted: No bullets or numbering

Formatted: Font: Not Italic

~~3.7~~

~~Cool~~**3.7**

**cool down time**

time taken for a fluid contained within a *pipeline* (3.2625) or *subsea equipment* (3.3938) to reach a pre-determined temperature from specific start temperatures (internal and external) when flow is stopped

Formatted: cite\_sec

Formatted: cite\_sec

~~3.8~~ **3.8**

**cutback**

length of item left uncoated at each end for joining purposes

Note 1 to entry: Welding is an example of joining purposes.

Formatted: No bullets or numbering

~~3.9~~ **3.9**

**end user**

company that owns and/or operates the *pipeline* (3.26)(3.25) or *subsea equipment* (3.39)(3.38)

Formatted: No bullets or numbering

~~3.10~~ **3.10**

**factory applied**

applied in a permanent facility

Formatted: No bullets or numbering

~~3.11~~ **3.11**

**field joint**

**field joint system**

uncoated area that results when two pipe sections, or a pipe section and a *fitting* (3.12)(3.12), with *cutbacks* (3.6) are assembled by welding or other methods

Formatted: No bullets or numbering

~~3.12~~ **3.12**

**fitting**

receptacle on a piece of *subsea equipment* (3.39)(3.38), which interfaces to a *pipeline* (3.26)(3.25)

Formatted: No bullets or numbering

~~3.13~~ **3.13**

**high molecular weight precursor thermoset**

*material* (3.23)(3.22), which is a polymeric compound that remains malleable until application of sufficient heat to cause network formation and then does not flow upon reheating

Formatted: No bullets or numbering

EXAMPLE Butyl rubber.

~~3.14~~ **3.14**

**inorganic syntactic foam**

Formatted: No bullets or numbering

## ISO/FDIS 12736-3:2023(E)

insulation *material* (3.23)(3.22) formed by dispersing inorganic hollow particles within a polymer matrix

### ~~3.15~~ 3.15

#### **inspection and test plan**

##### **ITP**

document providing an overview of the sequence of inspections and tests, including appropriate resources and procedures

Formatted: No bullets or numbering

### ~~3.16~~ 3.16

#### **inspection document**

document issued by the *system provider* (3.42)(3.41) and attesting that the supplied *system* (3.41)(3.40) is in conformity with the requirement given in the purchase order

Note 1 to entry: See also ISO 10474.

Formatted: No bullets or numbering

### ~~3.17~~ 3.17

#### **interface**

location where two *systems* (3.41)(3.40) meet and affect each other

Note 1 to entry: A *field joint* (3.11)(3.11) *system* (3.41)(3.40) has two interfaces.

Note 2 to entry: In the case of multilayer *systems* (3.41)(3.40), interfaces can be made up of multiple sub-interfaces.

Formatted: No bullets or numbering

### ~~3.18~~ 3.18

#### **J-lay**

method of *pipeline* (3.26)(3.25) installation in which pipelines are assembled by welding together pre-insulated pipes with subsequent application of a *field joint* (3.11) *system* (3.41)(3.11) *system* (3.40) in a vertical position, onboard an installation vessel with a tower

Note 1 to entry: The pipeline is lowered into the water vertically and creates a characteristic J-shape when touching the seabed.

Note 2 to entry: This method is used mainly for deep water.

Formatted: No bullets or numbering

### ~~3.19~~ —

#### **jumper**

short section of *pipeline* (3.26) that transfers fluid between two pieces of *subsea equipment* (3.39)

### ~~3.20~~ —

#### **3.19**

#### **liquid precursor elastomeric thermoset**

*material* (3.23)(3.22), which is a polymeric compound with its glass transition below ambient temperature, that is produced via combination of one or more components that can be pumped and flow as liquids and which react to create a crosslinked polymer that does not flow upon reheating

EXAMPLE Liquid precursor silicone rubber.

Formatted: No bullets or numbering

### ~~3.21~~ 3.20

#### **liquid precursor non-elastomeric thermoset**

*material* (3.23)(3.22), which is a polymeric compound with its glass transition above ambient temperature, that is produced via combination of one or more components that can be pumped and flow as liquids and which react to create a crosslinked polymer that does not flow upon reheating

EXAMPLE Liquid epoxy.

~~3.22~~ ~~3.21~~

**mainline**

portion of a *pipeline* ~~(3.26)(3.25)~~ that is not a *field joint* ~~(3.11)(3.11)~~

Formatted: No bullets or numbering

~~3.23~~ ~~3.22~~

**material**

polymeric compound applied to the *substrate* ~~(3.40) to be~~(3.39) protected ~~/ or~~ insulated in units of discrete thickness (layers) to build up a *system* ~~(3.41)(3.40)~~

Formatted: No bullets or numbering

Formatted: Font: Italic

~~3.24~~ ~~3.23~~

**material data sheet**

document containing typical data regarding the physical and mechanical properties of a particular *material* ~~(3.23)(3.22)~~ used in the coating process including guidelines and recommendations for its processing and use

Formatted: No bullets or numbering

~~3.25~~ ~~3.24~~

**material manufacturer**

~~legal~~ entity responsible for the manufacture of one or more *materials* ~~(3.23)(3.22)~~ utilized in a *system* ~~(3.41)(3.40)~~

Formatted: No bullets or numbering

~~3.26~~ ~~3.25~~

**pipeline**

**flowline**

tubular piping used to convey fluids

Formatted: No bullets or numbering

Formatted: Font: Not Bold

Formatted: Term(s)

Note 1 to entry: Pipeline includes *jumpers* ~~(3.19)~~, *risers* ~~(3.33)(3.32)~~ and *field joints* ~~(3.11)(3.11)~~.

Formatted: Font: Not Italic

~~3.27~~ ~~3.26~~

**pi tape**

precision Vernier periphery tape that allows the direct and accurate measurement of the diameter of tubular objects without the need for callipers or micrometres

Formatted: No bullets or numbering

~~3.28~~ ~~3.27~~

**pre-fabricated insulation**

section of stand-alone insulation, which is factory manufactured into its final form and then installed in the field by mechanically fastening or bonding to a corrosion protected structure

Formatted: No bullets or numbering

~~3.29~~ ~~3.28~~

**pre-production trial**

**PPT**

series of tests performed immediately before the start of production, designed to demonstrate that the requirements of the *validated* ~~(3.49)(3.48)~~ *system* ~~(3.41)(3.40)~~ and ~~/or~~ *procedure qualification trial* ~~(3.30)(3.29)~~ or both are achieved

Formatted: Font: Not Italic

Formatted: Font: Not Italic

Note 1 to entry: Requirements for PPT are as outlined in this document and as *agreed* ~~(3.1)(3.1)~~.

Formatted: Font: Italic

~~3.30~~ ~~3.29~~

**procedure qualification trial**

**PQT**

series of tests designed to demonstrate that the *materials* ~~(3.23)(3.22)~~, *system provider* ~~(3.42)(3.41)~~, equipment and procedures can produce the *system* ~~(3.41)(3.40)~~ in accordance with the *validation dossier* ~~(3.50)(3.49)~~ and meet specific *project* ~~(3.31)(3.30)~~ requirements as *agreed* ~~(3.1)(3.1)~~.

Formatted: No bullets or numbering

Formatted: Font: Not Italic