

G. INTERPRETATION OF THE ESSENTIAL SAFETY REQUIREMENTS ON MATERIALS

Guideline G-01

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Section 4.2 b)

Question	What is to be understood by harmonised standard as referred to in Annex I, section 4.2 b)?
Answer	<p>A harmonized standard in this context can be a harmonized product standard for an item of pressure equipment or an assembly which may be CE marked.</p> <p>It could also be a harmonized supporting standard, that contains technical data clearly indicating the field of application.</p> <p>In the case of a harmonised supporting standard for materials, presumption of conformity to the ESRs is limited to technical data of materials in the standard and does not presume adequacy of the material to a specific item of equipment. Consequently the technical data stated in the material standard shall be assessed against the design requirements of this specific item of equipment to verify that the ESRs of the PED are satisfied.</p>
Reason	
Note	Subsequent manufacturing processes affecting properties of the base material shall be taken into account when assessing the conformity of the pressure equipment to the material requirements of the directive.

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Guideline G-02

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Section 4.3, third paragraph

Question	What is a ‘competent body’ for the certification of the quality (assurance) systems of material manufacturers?
Answer	<p>A ‘competent body’ for certification of the quality systems of material manufacturers can be any third party body established as a legal entity within the Community which has recognized competence in the assessment of quality (assurance) systems for the manufacture of materials and in the technology of the materials concerned. Competence can be demonstrated, for example, by accreditation.</p> <p>See also PED Guideline G-07.</p>
Reason	
Note 1	A body not established as a legal entity within the Community, even if it has a recognition agreement through the International Accreditation Forum, does not comply with the requirements of Annex I section 4.3.
Note 2	A notified body may perform this task only if it has a recognized competence in the field of quality assurance, materials and related process technology. For this certification, the possible use of the notification number for PED is irrelevant.
Note 3	The certificate of quality system shall make reference to the legal entity established in the Community and its address.

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Guideline G-04

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Section 3.1.5

Question	What are the 'suitable means' for traceability referred to in Annex I Section 3.1.5 ?
Answer	<p>The objective of traceability is to avoid any doubt about the material specification used for a type of equipment. The suitable means shall be determined according to the type of equipment and its manufacturing conditions: for instance, complexity of the product, unitary or serial products, risk of mixing of material grades, etc.</p> <p>These means range from physical marking of individual items by stamping or colour coding to procedural methods. It is not always necessary for the identification of material to be linked to a specific delivery.</p> <p>The traceability system should be proportionate to the risk of mixing material grades during the manufacturing process. When there is no such a risk, the system may be limited to administrative means.</p>
Reason	
Note 1	The traceability system of the manufacturer shall allow him to provide to a market surveillance authority, upon request, the technical documentation related to a specific item of pressure equipment and the material certificate.
Note 2	When a national authority applies the safeguard clause for a particular product due to the material, the decision will relate to all products made from the same material grade specification, if the traceability system does not allow the identification to relate to (a) specific delivery(ies). The same will apply if a manufacturer withdraws non-compliant or defective products from the market.

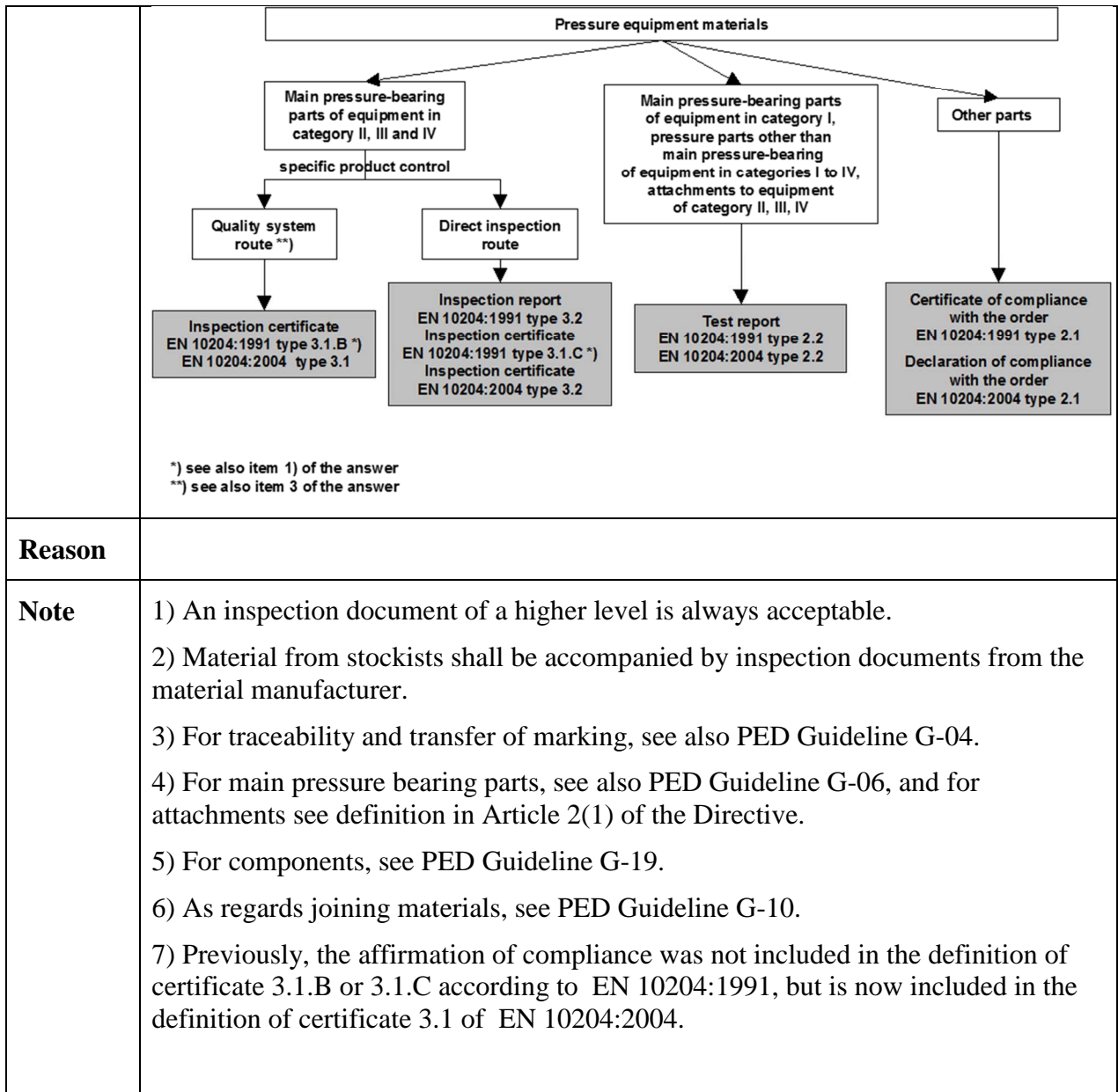
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Guideline G-05

**Pressure Equipment Directive PED 2014/68/EU
Commission's Working Group "Pressure"**

Guideline related to: Annex I Section 4.3

Question	<p>Annex I Section 4.3 of the PED requires that the equipment manufacturer must take appropriate measures to ensure that the material used conforms with the required specification. In particular, documentation prepared by the material manufacturer affirming compliance with a specification must be obtained for all materials.</p> <p>How may these requirements be applied in terms of required inspection documents?</p>
Answer	<ol style="list-style-type: none">1. According to the 1st paragraph of Annex I, section 4.3, the material manufacturer shall certify, that the delivery complies with the requirement of the specification and the order he has received. This affirmation of compliance shall be stated on or appended to the certificate, whichever type is issued.2. According to the 2nd paragraph of Annex I, section 4.3 a certificate of specific product control is required for the main pressure-bearing parts of pressure equipment in categories II, III and IV. Account shall be taken of the requirements in 4.1 and 4.2 (a) of Annex I.3. According to the 3rd paragraph of Annex I, section 4.3 a distinction is made for the material manufacturer's fabrication system: where he has an appropriate quality (assurance) system certified by a competent body established within the Community, and having undergone a specific assessment for materials, an inspection document from the manufacturer is appropriate (see also PED Guidelines G-07 and G-16).4. The general requirements for all other cases are given in the first 2 paragraphs of Annex I, section 4.3.5. A scheme of the relevant inspection documents when following EN 10204:1991 or EN 10204:2004 is given in the following diagram:



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Guideline G-06

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Section 4.3

Question	The 2nd paragraph of section 4.3 of Annex I gives requirements for the main pressure-bearing parts. How are they defined?
Answer	<p>The main pressure-bearing parts are the parts, which constitute the envelope under pressure, and the parts which are essential for the integrity of the equipment.</p> <p>Examples of main pressure-bearing parts are shells, ends, main body flanges, tube sheet of exchangers, tube bundles.</p> <p>The materials for these main pressure-bearing parts of equipment of categories II to IV shall have a certificate of specific product control (see PED Guideline G-05).</p> <p>See also PED Guideline G-08 for bolting parts (fasteners).</p>
Reason	
Note [x]	

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Guideline G-07

**Pressure Equipment Directive PED 2014/68/EU
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Guideline related to: Annex I Section 4.3

Question	To what apply the terms “having undergone a specific assessment for materials” of third paragraph of Section 4.3 of Annex I ?
Answer	It is the quality (assurance) system of the material manufacturer which shall have undergone a specific assessment for materials (and not the competent body).
Reason	
Note 1	See also PED Guideline G-02.

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Guideline G-08

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Section 4

Question	What are the certificates required for bolting parts?
Answer	<p>The bolting parts (screw, nut, stud, etc) are joining components.</p> <p>When these components contribute to the pressure resistance, their materials shall fulfil the relevant requirements of Annex I, section 4.</p> <p>Regarding section 4.3 of Annex I, a bolt is not considered to be a main pressure bearing part unless its failure would result in a sudden discharge of pressure energy.</p> <p>When bolts are used as</p> <ul style="list-style-type: none">- main pressure bearing parts a certificate of specific product control is required (unless the item of pressure equipment itself is in Category I)- pressure bearing parts a test report is sufficient,- non pressure bearing part a certificate of compliance is sufficient <p>(refer to PED Guideline G-05).</p>
Reason	
Note [x]	

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Guideline G-09

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Section 4

Question	Can a material manufactured according to a standard or another publicly available specification for which a European Approval of Materials (EAM) is available, but for which the inspection document only refers to the standard or the specification on which the EAM has been based, be used for pressure equipment manufactured under the PED ?
Answer	Yes, if the EAM does not have any additional technical specification compared to the standard or the specification. The inspection document must satisfy the requirements of section 4.3 of Annex I (see also PED Guideline G-05)
Reason	
Note [x]	

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Guideline G-10

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Sections 3.1.2; 3.1.5; 4.1; 4.2(a) and 4.3 1st paragraph

Question	<p>What are the requirements for the documentation and traceability of welding consumables:</p> <ul style="list-style-type: none">- Inspection document- Suitable procedures for traceability?
Answer	<p>Manufacturers of welding consumables shall provide inspection documents affirming compliance with the specification.</p> <p>Based on section 4 of Annex I and PED Guideline G-05 manufacturers of welding consumables shall provide test report "2.2" as an inspection document in accordance with the standard EN 10204.</p> <p>The traceability requirement of Annex I section 3.1.5 applies also for welding consumables. It can be maintained by procedural methods that cover receipt, identification, storage, transfer to production, temporary storage and use in production, availability of correct inspection documents at the final inspection (see also PED Guideline G-04).</p>
Reason	
Note	<p>Welding consumables are defined by trade name, designation and relevant EN classification standard. Inspection documents of welding consumables should give test results, for technical characteristics according to designation and classification standard, such as:</p> <ul style="list-style-type: none">- Chemical composition of welding filler metal or all-weld metal as appropriate- Tensile properties of all-weld metal: tensile and yield strength, elongation- Impact properties of all-weld metal at temperature according to designation. <p>Test results are based on non-specific inspection and testing. They can be given for example as typical values based on quality control tests.</p>

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Guideline G-11

**Pressure Equipment Directive PED 2014/68/EU
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Guideline related to: Annex I

Question	Do the essential safety requirements of annex I apply to pressure equipment manufactured from plastic, GRP and other non metallic materials?
Answer	Yes.
Reason	
Note [x]	

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Guideline G-12

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Section 4

Question	Shall welding consumables and other joining materials comply with harmonised standards, European approvals of materials or particular material appraisal?
Answer	No
Reason	The PED does not require that these materials fulfil the requirement of Annex I. Section 4.2b).
Note	The joining components referred to in PED Guideline G-08 (bolting parts) are not permanent joining materials.

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Guideline G-13

**Pressure Equipment Directive PED 2014/68/EU
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Guideline related to: Annex I, Sections 4.1a and 7.5

Question	What is meant by "<i>Where appropriate</i>", in the context of Annex I Section 4.1a when it refers to the quantitative values of Annex I Section 7.5?
Answer	<i>"Where appropriate"</i> refers to steel, since this is the only material cited in Annex I Section 7.5. For impact properties see also PED Guideline G-17.
Reason	
Note [x]	

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Guideline G-14

**Pressure Equipment Directive PED 2014/68/EU
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Guideline related to: Annex I Section 7.1.2

Question	What does the exclusion of fine-grained steel in the first indent of Section 7.1.2 of Annex I of the directive mean?
Answer	Those fine grained steels are micro-alloyed steels for pressure purposes as, for example, those given in EN 10028-3 or in EN 10222-4. For these steels, the quantitative value of permissible membrane stress stated in Annex I Section 7.1.2 does not apply. However an equivalent overall level of safety must be achieved (refer to PED Guideline H-06).
Reason	
Note [x]	

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Guideline G-15

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I, section 4.2.b)

Question	<p>Annex I, section 4.2.b), first indent authorises the use of materials which comply with harmonized standards.</p> <p>Is this route still valid for a material for which the specification includes complementary requirements or improved properties to those of a grade in a harmonized EN material standard?</p>
Answer	<p>Yes.</p> <p>Provided all the value limits stated for the particular grade in the harmonized EN material standard are met.</p> <p>Moreover the material manufacturer shall affirm compliance with both the harmonized standard and the additional specification, as requested by Annex I, section 4.3.</p> <p>See also PED Guideline G-01.</p>
Reason	
Note [x]	

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Guideline G-16

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Section 4.3

Question	The PED considers the case of a material manufacturer who "has an appropriate quality-assurance system, certified by a competent body established within the Union and having undergone a specific assessment for materials". How should this requirement be understood in practice?
Answer	<p>In practice, this requirement is satisfied when the material manufacturer has a quality assurance system of at least EN ISO 9001 type, certified by a competent body (according to the definition given in PED Guideline G-02) established as a legal entity within the European Community, and when the field of validity of the certification specifies production of material indicating the relevant material types.</p> <p>The specific assessment of the quality system shall properly cover all the relevant processes and material properties referred to in the material specifications, and attested in the material certificates.</p> <p>A single reference to section 4.3 of Annex I of PED is not sufficient to validate the quality assurance system of the material manufacturer. The reference document for quality assurance system which has been used shall be identified. Reference to the PED in the quality assurance system certification is not a mandatory requirement.</p>
Reason	
Note	See also PED Guidelines G-05, G-07 and I-05.

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Guideline G-17

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Section 4.1a, Annex I Section 7.5, Annex I Preliminary observation 3

Question	What approach can be used to decide if a steel grade selected for a pressurized part requires specific impact properties?
Answer	<p>1. The philosophy of the approach outlined below takes account of the hazard analysis performed by the manufacturer in relation to the toughness necessary for the identified failure modes (e.g. brittle fracture) in the finished pressure equipment.</p> <p>2. The exception concerns “ductile materials which are not subject to a ductile/brittle transition at the foreseeable conditions the equipment will be exposed to”.</p> <p>Examples of such materials are: austenitic stainless steels.</p> <p>Some design codes provide specific rules for the avoidance of brittle fracture that takes account of the anticipated or actual operating conditions prevailing, e.g. material, thickness, temperature, etc. Where the application of these rules indicate that the material will not behave in a brittle manner and all aspects of the chosen design code have been followed, sufficient confidence is gained in the behaviour of the material not to require specified impact properties. When these design codes are applied also other items need to be taken into account (see item 3 below).</p> <p>3. The justification for omission of the impact properties shall be based on the most adverse possible combination of all elements of the steel grade specification, such as:</p> <ul style="list-style-type: none">- the full permissible range of the chemical analysis,- the extreme mechanical properties, <p>as documented and permissible in the specification and not on the values of the actual deliveries.</p> <p>The consequence of the worst combination of chemistry must be considered because the specified range of chemical analysis for some materials could result in brittle behaviour. Where appropriate, such materials could be accepted if the chemical composition and mechanical properties are restricted in the purchase order and in the particular material appraisal to such levels that, from experience, do not give rise to brittle fracture.</p> <p>EXAMPLES include Manganese-Carbon ratio, Carbon, Sulphur, Phosphorus content, Aluminium to Nitrogen ratio.</p> <p>Other restrictions may include:</p> <ul style="list-style-type: none">- avoiding inter-metallic phases,- avoiding large grain sizes,- placing limits on mechanical properties.

	<p>Manufacturers and Notified Bodies must demonstrate that they have taken such factors into account in documenting the necessary PMAs.</p> <p>4. Furthermore subsequent manufacturing processes affecting the impact properties of the material shall be taken into account, when making the above assessment.</p> <p>Following all the rules in the design code should generally ensure that this requirement is met; however additional requirements may also be necessary to ensure that all relevant ESRs have been met.</p> <p>EXAMPLES: forming, heat treatment, welding.</p> <p>5. However, verification testing of specified impact property may not be required in cases where there is no doubt about the fulfilment of the essential safety requirement on sufficient toughness to avoid brittle fracture.</p> <p>EXAMPLES: Most Austenitic Stainless Steels.</p>
Reason	<p>Impact property values are the most common way to fulfil the essential safety requirement of toughness specified in Annex I Section 4.1a.</p> <p>Although impact testing of materials is the commonly accepted route to demonstrate materials have specified minimum toughness, it is not the only route.</p> <p>EXAMPLES: Restrictions on operating temperatures, Fracture mechanics.</p>
Note 1	Every harmonized European steel standard has specified impact properties.
Note 2	<p>A “history of safe use” alone cannot replace the need for the specification of impact properties. This notion is inextricably linked to a particular code, set of safety factors and safety philosophy and can therefore not necessarily be transferred to a different safety philosophy/concept.</p> <p>Following the requirements of an established design Code alone does not provide a “presumption of conformity” and a simple claim by the manufacturer that they “have followed the specified Code” is not in itself justification. Established Codes may be used as the basis for meeting the essential safety requirements however it is necessary to compare the selected Code requirements to the essential safety requirements and identify and address any deviations. This requires those using the Code to have a good understanding of the principles involved, rather than mechanistic following of rules.</p>
Note 3	The term "hazard analysis" refers to Annex I, preliminary observation 3. See also PED Guideline H-04

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Guideline G-18

**Pressure Equipment Directive PED 2014/68/EU
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Guideline related to: Annex I Section 4.1 and Annex I Section 7.5

Question	Do the essential safety requirements on materials specified in Annex I section 4.1 and section 7.5 apply to the base material or to the pressure equipment?
Answer	They apply to the pressure equipment in its entirety, i.e. also to the heat affected zones of a weldment, but not to the non pressure-bearing parts.
Reason	
Note	Subsequent manufacturing processes affecting properties of the base material shall be taken into account when specifying the properties of the base material, as per Annex I, sections 3.1.1, 3.1.2 and 3.1.4 of PED.

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Guideline G-19

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Article 2(1), Annex I, sections 3.1, 4.3 and 7.2

Question	Which requirements apply to components, such as dished ends, bolts, flanges, welded fittings etc, which are placed on the market as such?
Answer	<p>To be incorporated into an item of pressure equipment, components which are manufactured from materials such as plates, coils and bars shall meet all the relevant essential safety requirements related to the manufacturing process used ; for instance in the manufacturing of welded dished ends, sections 3.1 and 7.2 of Annex I are relevant in addition to section 4.</p> <p>In order to prove the conformity to the PED of the pressure equipment containing the component the equipment manufacturer will need relevant documents from the component supplier :</p> <ul style="list-style-type: none">- Material certificates (of the plates, coils, bars ...), <p>and as relevant :</p> <ul style="list-style-type: none">- Welding procedure approvals,- Welder/welding operator approvals,- Non Destructive Testing operator qualifications,- Non Destructive Testing reports,- Destructive Testing reports,- Forming and heat treatment information, <p>etc.</p> <p>This information may be in the form of a component certificate.</p> <p>The requirement in Annex I section 4.3 is not however intended for a component manufacturer, who is not a material manufacturer in the context of PED, even if he modifies the mechanical properties of the material.</p> <p>Forgings (including forged flanges), castings and seamless tubes are generally considered to be materials. Fittings made from these “materials” without subsequent welding or other process which could alter the material characteristics are also considered to be materials. As regard welded tubes, see PED Guideline G-25.</p>
Reason	
Note	<p>Current practice may require components to be delivered with certificates based on standard EN 10204 Metallic products. Types of inspection documents or corresponding requirement when they are placed on the market as such. The PED does not preclude supplying such certificates with components.</p> <p>See also PED Guidelines A-09, A-22, D-03, G-05, G-06, G-08, G-18 and G-</p>

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Guideline G-21

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Article 15; Annex I Section 4.2b

Question	May a notified body perform a particular material appraisal (PMA) at the request of a material manufacturer?
Answer	No If the material manufacturer wants to have his material approved by a notified body the proper way to proceed is to request European approval for material in accordance with Article 15, if the material is not covered by a European harmonised standard under the PED and cited in Official Journal of the European Union (OJEU).
Reason	
Note 1	See PED Guideline I-13 for further information regarding PMA.
Note 2	For further guidance about the process and the content of a PMA refer to the Guiding principles in document PE-03-28 approved by the Working Group Pressure (downloadable from the PED website).

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Guideline G-22

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Sections 4.1 and 7.5

Question	What is meant by the following two terms: "<i>Other values</i>" and "<i>other criteria</i>" in the context of Annex I Section 7.5?
Answer	<p><i>Other criteria</i> in Annex I Section 7.5 refers to further criteria depending e.g. on the type/dimension/product form and resistance level of steel or mode of operation, which shall be taken into account to prove its toughness and ductility.</p> <p><i>Other values</i> in Annex I Section 7.5 refers to those other criteria which can result in more demanding values for elongation or bending rupture energy or specified values for additional properties.</p> <p>See also PED Guideline H-06 for the application of Annex I Section 7.</p>
Reason	
Note [x]	

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Guideline G-23

**Pressure Equipment Directive PED 2014/68/EU
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Guideline related to: Annex I Section 4

Question	With which requirements of Annex I section 4 does the material used for a gasket have to comply?
Answer	The main function of a gasket is to ensure tightness. Its material needs to fulfil only the relevant requirements of Annex I Section 4.1, 4.2 (a) and the first paragraph of 4.3.
Reason	
Note [x]	

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Guideline G-24

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Sections 2.2.3 and 4.3

Question	<p>Annex I Section 4.3 of the Pressure Equipment Directive (PED) requires that the material manufacturer must prepare documentation affirming compliance with the specification required by the equipment manufacturer.</p> <p>Does this requirement mean that material properties used in the design of the pressure equipment must be based on those affirmed (guaranteed) by the material manufacturer?</p>
Answer	Yes, the material properties used in design of the equipment, e.g. yield strength and impact properties, must be based on those of the specification which are affirmed by the material manufacturer.
Reason	
Note 1	This does not mean that the values of the specification need to be written on the certificate. It is sufficient for the material manufacturer's certificate to make reference to the specification where the appropriate values are included. See also PED Guideline G-17 for the need of verification testing of specified impact properties.
Note 2	See also PED Guideline G-18 for the relationship between the essential safety requirements and the properties of the base material.

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Guideline G-25

**Pressure Equipment Directive PED 2014/68/EU
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Guideline related to: Annex I Sections 3.1.2, 3.1.3 and 4.3

Question	How shall welded tubes be considered for the application of the Pressure Equipment Directive (PED)?
Answer	<p>Continuously machine-welded tubes, i.e. tubes made from coils as starting materials in an automatic process, which are usually heat treated after welding shall be in the terms of certification procedures considered as materials provided the essential safety requirements (ESRs) of Annex I section 4 "Materials" as well as applicable ESRs of Annex I section 3 "Manufacturing" (in particular 3.1.2 and 3.1.3) are fulfilled.</p> <p>Further the manufacturer of such tubes shall affirm compliance of the welded tube to the specification.</p> <p>In general, the inspection document shall take the form of a certificate of specific product control, where shall be found the references to the competent third party approval of welding procedures and personnel and to the recognised third party approval of non destructive personnel (for categories III and IV).</p> <p>When the use of the welded tube is limited to pressure equipment of category I, a statement in the test report confirming that personnel and welding procedures are qualified according to suitable internal operating procedures is sufficient.</p> <p>In application of PED Guideline G-16, where the welded tube manufacturer has a certified quality system, this system shall properly cover not only the relevant material properties referred to in the tube specifications, but also the manufacturing process of the welded tubes (in particular welding and NDT).</p>
Reason	
Note	This implies that e.g. tubes made from plates are to be considered components, see PED Guideline G-19.

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Guideline G-26

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Article 2 (14); Article 15

Question	What type of material may follow the European Approval for Materials (EAM) route?
Answer	<p>An EAM may be issued for a special or novel material grade not included in a European material standard harmonized under the Pressure Equipment Directive (PED). Such a material grade shall have a specification associated with particular chemistry and/or conferring specific mechanical properties or characteristics such as corrosion resistance. These mechanical properties or characteristics shall be supplementary to those in similar harmonised standards. See also PED Guideline G-15.</p> <p>An EAM is a route to facilitate the use of safe materials in absence of harmonized standards and to encourage material technology development and innovation.</p> <p>An EAM shall not be issued for:</p> <ol style="list-style-type: none">1. a grade of material listed in a current or former national material standard that has a specification covered by a harmonised European material standard.2. a grade of material which was previously included in a European national material standard but which was not included in the harmonised European material standard which has replaced the European national material standard. <p>In those cases a PMA is to be drawn up, see PED Guidelines G-21 and I-13.</p>
Reason	
Note 1	A “grade of material” may be designated by use of a material number in accordance with EN 10027-2 in the case of metallic materials.
Note 2	The Pressure Equipment Directive (PED) states that European Approval for Materials (EAMs) shall be withdrawn by the notified body if the type of material is covered by a harmonized standard.

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Guideline G-27

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Section 4.3

Question	When an equipment manufacturer receives a certificate type 3.1 according to EN 10204:2004 by the material manufacturer, in pursuance of the third paragraph of section 4.3 of Annex I, what evidence of compliance with these requirements shall be recorded in the technical documentation?
Answer	<p>The equipment manufacturer shall be able to confirm that the material manufacturer's quality system certificate meets the requirements of the third paragraph of section 4.3 of Annex I (field of validity of the certification, range of validity of certification, establishment of the competent body as a legal entity within the European Union, accreditation).</p> <p>The equipment manufacturer should keep track of such information which may be requested by the market surveillance authority. To fulfil this requirement the equipment manufacturer should keep in its technical documentation the appropriate quality system certificate of the material manufacturer or other equally objective evidence.</p> <p>See also PED Guideline G-02 and PED Guideline G-16.</p>
Reason	
Note [x]	

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Guideline G-28

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Section 7.5

Question	How to apply Annex I, section 7.5 on the bending rupture energy measured on an ISO V test piece for base materials whose, due to its thickness, the collection of a test piece of section 10 mm x 10 mm is not possible?
Answer	<p>The value of 27 Joules required on Annex 1, section 7.5, means the use of test piece of section 10 mm x 10 mm and an impact test KV according EN ISO 148-1:2010, Metallic materials – Charpy pendulum impact test – Part 1: Test method.</p> <p>When a standard size test piece of 10mm x 10 mm cannot be obtained, it is recommended to use a sub-sized specimen with a cross section of 7,5mm (7,5mm x 10mm) or 5mm (5mm x 10mm) and to adjust the value of impact test (see EN 13445-2 and EN 13480-2).</p> <p>When a sub-sized specimen (5mm x 10mm) cannot be obtained due to the dimensions of the material, the verification of the specified 27 Joules is not relevant but the properties of the material are still to be guaranteed by the material manufacturer.</p> <p>See also PED Guidelines G-17 and G-13.</p>
Reason	
Note [x]	

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Guideline G-29

**Pressure Equipment Directive PED 2014/68/EU
Commission's Working Group "Pressure"**

Guideline related to: Annex I section 3.2.1 and section 4.3

Question	<p>Based on data contained in a certificate issued by a material manufacturer (EN 10204:2004 3.1-certificate) material has been supplied in accordance with a material specification.</p> <p>May a pressure equipment manufacturer perform additional mechanical or non-destructive testing or have them performed to affirm that the material meets all the requirements specified by the equipment manufacturer?</p>
Answer	<p>No, unless in exceptional circumstances, as outlined below:</p> <p>The extent of additional testing shall be specified by the equipment manufacturer and it should be at least equivalent to the tests specified in the harmonized standard, if available, for a similar type of material and representative of the entire batch of the material used for the equipment.</p> <p>The testing shall be supplementary to the original certificate. It shall not have the purpose to "improve" properties already included in the certificate. It does not justify an increase in the allowable design stress over the values of the base material specification.</p> <p>The equipment manufacturer takes full responsibility for all additional tests being carried out.</p> <p>The certificate issued by the material manufacturer who has a certified quality-assurance system is presumed to certify conformity with the requirements but only to the extent that is specified in the inspection certificate. No new material certificate shall be issued for the additional tests carried out by the equipment manufacturer. However the results shall form part of the records in the technical documentation.</p> <p>This does not apply to EN 10204:2004 3.2-certification where the specified additional tests shall be carried out by the material manufacturer.</p>
Reason	<p>In certain circumstances the equipment manufacturer may require properties of the material that are not normally affirmed by the material manufacturer. If material with these required additional properties is not available, the equipment manufacturer must take appropriate measures to ensure that his equipment complies by undertaking additional tests.</p>
Note 1	<p>The pressure equipment manufacturer shall compile a hazard analysis for the pressure equipment, on the basis of which the essential safety requirements for the equipment are determined, including the required materials properties. The results of the analysis have to be taken into account in design and manufacture of the equipment, as well as in determining possible additional material testing.</p>

Note 2	A particular material appraisal (PMA) shall be drawn up for a pressure equipment material if the material is not in accordance with a harmonized standard or the European approval of materials (EAM). In that case, the additional material testing shall be made in accordance with the PMA document PE-03-28, appendix 2. The document is available on the EU Commission's PED website.
Note 3	The testing laboratory and its personnel performing additional material tests shall be suitably qualified for the tests in question, and the equipment used for the tests shall be calibrated. Accreditation is the most common way to demonstrate the testing laboratory's qualification. See also PED Guidelines G-24, G-30, H-04 and I-13.

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Guideline G-30

Pressure Equipment Directive PED 2014/68/EU Commission's Working Group "Pressure"

Guideline related to: Annex I Section 4.3

Question	<p>A manufacturer produces material only to a chemical analysis without mechanical testing and without affirmation of compliance to a material specification and/or grade.</p> <p>An entity intends to purchase the material and affirm compliance to a material specification by performing the mechanical tests as required by that material specification. There will be no further processing, other than cutting to size. Is this procedure acceptable and may this material be used in pressure equipment under the PED?</p>
Answer	No, even if the mechanical tests are recorded in an EN 10204 inspection certificate which describes the testing entity as the manufacturer of the material.
Reason	Section 4.3 Annex I of the PED requires the material manufacturer to affirm the compliance with a specification. Any entity who is not involved in the material manufacturing process cannot be considered as a material manufacturer.
Note [x]	

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