CEN/TC 267/WG 8/MHD « *Maintenance of EN 13480 series* »
Answers to MHD Questions of 2020
Series EN 13480-1-2-3-4-5-6 and -8:2017

MHD Question N°	Subjects	MHD answers doc. N°	Subsequent actions	MHD answers to questioners
3-001-2020	6.4.9	N 110	Technical comment	2020-11-27
3-002-2020	4.5	N 110	Technical clarification	2020-11-27
3-003-2020	13.1.5.3	N 110	Technical clarification	2020-11-27
3-004-2020	5	N 110	Technical comment	2020-11-27
3-005-2020	7.2.3.3	N 110	Technical comment	2020-11-27
3-006-2020	6.1	N 110	Editorial correction	2020-11-27
3-007-2020	6.6 + Annex D	N 110	Technical clarification	2020-11-27
8-001-2020	B.3	N 110	Technical clarification	2020-11-27

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EN 13480 "Industrial piping and pipelines" Maintenance Group Question form

Request reference number *(to be filled by MHD):* **3-001-2020** **Date: 2020-03-04**

Please fulfil the following

Part:	Issue:	Page	Subclause	National Standard Reference
EN 13480-3	2017	43	6.4.9	--

Subject:

Type of request: ☐ Technical clarification ☐ Editorial correction ☒ Technical comment ☐ Translation correction

From :
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☐ Manufacturer ☒ User ☐ Other (please specify):

Question/comment:

The sentence in subclause 6.4.9 "The greater of these shall apply to the whole reducer." is not clear. My first understanding was that the large end, small end & cone section have to be the same thickness. Upon searching through previous MHD questions, I came across MHD_Questions_2017 3-001-2017. This stated it's for the cone thickness only. I recommend this sentence be changed to avoid any possible confusion or misinterpretation.

Proposed answer(s): *

Its proposed that this sentence should be rewritten as follow:

1. The greater of these shall apply to the cone thickness e_2 and is existent along the whole length of the cone, or
2. The wall thickness e_2 is the maximum calculated in accordance with 6.4.6, 6.4.7 & 6.4.8 and existent along the whole length of the cone

Referring to e_2 will ensure clarity where the cone thickness starts and ends on both the small & large ends as shown in figures 6.4.2-1, 6.4.2-2 & 6.4.8.1-1

Answer from the MHD *(to be filled by MHD):*

Agree with the proposal 1) with slight modification as follows: "The greater of these shall apply to the cone section of the reducer." To be inserted in EN 13480-3:2017. Subject to be taken by CEN/TC 267/WG 3 for consideration into the draft amendment under development EN 13480-3:2017/prA5.

To be sent to EN 13480 Maintenance Group secretariat:	EN 13480 Maintenance Group secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France e-mail: en13480@unm.fr

* *Please note that question with proposed answers will be dealt with as priority.*

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EN 13480 "Industrial piping and pipelines" Maintenance Group Question form

Request reference number *(to be filled by MHD):* **3-002-2020** **Date: 2020-03-04**

Please fulfil the following

Part:	Issue:	Page	Subclause	National Standard Reference
EN 13480-3	2017	25	4.5	--

Subject:

Type of request: ☒ Technical clarification ☐ Editorial correction ☐ Technical comment ☐ Translation correction

From :
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☐ Manufacturer ☒ User ☐ Other (please specify):

Question/comment:

To obtain a joint coefficient z = 1 for Longitudinal welds the first bullet in clause 4.5 reads as follows:

- for equipment subject to **destructive** and **non-destructive** testing which confirms that the whole series of joints show no significant imperfections: 1;

EN 13480-3 does not provide acceptable requirements/reference of destructive testing, but notes Table 8.3-1 of EN 13480-5 for non-destructive testing. However it's not mandatory for standard components e.g. EN 10217 series. Thus not having a criteria to verify with, pipe made to e.g. EN 10217-2 P235GH-TC2 will have to have a joint coefficient z = 0.85 even when impact testing and required NDT options are specified?

Proposed answer(s): *

Its proposed to refer to clause 7.2.5 of EN 13480-5 for destructive testing. This will clarify acceptable requirements and therefore the above example, joint coefficient can be z = 1. This will also be good referencing for nonstandard components.

Answer from the MHD *(to be filled by MHD):*

For clarification, the NOTE shall be completed as follows at the bottom of 4.5 of EN 13480-3:2017:

NOTE See EN 13480-5, Table 8.3-1. In case of the supply of a welded product, the joint coefficient for the wall thickness calculation shall be taken equal to z = 1,0 if the material standard gives the appropriate requirements concerning destructive tests and non-destructive tests (e.g EN 10217 series).

To be inserted in EN 13480-3:2017. Subject to be taken by CEN/TC 267/WG 3 for consideration into the draft amendment under development EN 13480-3:2017/prA5.

To be sent to EN 13480 Maintenance Group secretariat:

EN 13480 Maintenance Group secretariat c/o UNM
Standardization Office on behalf of AFNOR
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EN 13480 "Industrial piping and pipelines" Maintenance Group
Question form

Request reference number *(to be filled by MHD):* **3-003-2020** **Date: 2020-04-06**

Please fulfil the following

Part :	Page	Subclause	National Standard Reference
EN13480 – 3:2017 Clause 13	163	13.1.5.3	

Subject : Welding on intermediate elements or pads for supports

Refering to "13.1.5.3 Where a support component is connected to a pipe via an intermediate element or pad, the material of that pad shall be compatible with the pipe and welding to the pipe shall conform to the pipe welding requirements. The welding of the support to the pad shall conform to Clause 11 and 13.11.1."

On EN13480 – 3:2012 there was the Figure 13.1.5.3 that clarified the clause, but it was deleted on the EN13480 – 3:2017

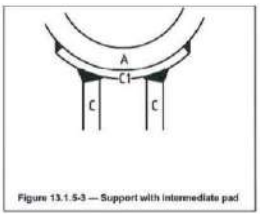

Figure 13.1.5-3 — Support with intermediate pad

- Question 1: The weld between the intermediate element (C1) and the pipe should be as shown in Figure 13.1.5.3, it means fillet weld. Is this assumption correct?

- Question 2: The statement in Clause 11.1 referring to full penetration welds for integral attachments on piping operating in creep range does not apply to welds for the intermediate elements referenced in Question 1 because :

  - Element C1 in the figure above is not an integral attachment as it does not transmit any load to the steel framework or concrete.
  - There is no way to perform a full penetration weld between intermediate element C1 and pipe element (A).

Is this assumption correct?

Proposed answer(s)/correction(s) * :

Yes or no.

From :

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☐ Manufacturer	☒ User	☐ Other please specify :

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Answer from the MHD *(to be filled by MHD):* Usually MHD maintenance Group answers questions on current version of EN 13480 series (2017), but in this case, the answer would be: Q1: Yes Q2: 1st indent - No and 2nd indent - Yes	
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EN 13480 "Industrial piping and pipelines" Maintenance Group Question form

Request reference number *(to be filled by MHD):* **3-004-2020** **Date: 08.06.2020**

Please fulfil the following

Part:	Issue:	Page	Subclause	National Standard Reference
EN 13480-3	2017	26	5	DIN EN 13480-3_2017

Subject: Allowable stress definition for occasional load cases

Type of request: ☐ Technical clarification ☐ Editorial correction ☒ Technical comment ☐ Translation correction

From :
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☐ Manufacturer ☒ User ☐ Other (please specify):

Question/comment:

Comparing calculation procedure applied in EN13480-3 and EN 13445-3 for allowable stresses I have noticed some discrepancies regarding to EN 13480-3 which have significant influence into overall calculations from essential point of meaning. According to EN 13445-3 Clause 6 - allowable stress can be divided into normal operating and exceptional / testing load cases. For each of the purpose there are defined different safety factors which can be treated as a more realistic approach. In case of progressive deformation which can be treated as a operation under creep range design rule even ignore creep rupture stress for this purpose. Below you can find detailed description based on EN 13445-3 standard:

Main points covered in Clause 6

Clause 6.1 “General” splits design stress into two cases:

- Values in creep range (refer to Clause 19)
- Values not depended on time

For values not depended on time according to sub clause 6.1.2 there should be provided division into normal operating, testing and exceptional load cases. In addition there is an information included that the nominal safety factor for exceptional load case shall not be less than that for the testing load cases. To understand it more clearly see below table (attached on next page) which is at the end of Clause 6. We can also say that division into normal operating cases, exceptional and testing disqualify creep range values because testing and exceptional situations are not continues and in this purpose time dependent allowable stresses should be not under consideration. This approach is also covered in standard by below sentence:

Quote:

In assessing testing or exceptional load cases, progressive deformation and fatigue requirements need not be taken into consideration.

Table 6-1 — Maximum allowed values of the nominal design stress for pressure parts other than bolts

Steel designation	Normal operating load cases[a b]	Testing and exceptional load cases[b c]
Steels other than austenitic, as per 6.2 $A < 30\ \%$ [d]	$f_d = \min\left(\frac{R_{p0,2/T}}{1,5}; \frac{R_{m/20}}{2,4}\right)$	$f_{test} = \left(\frac{R_{p0,2/T_{test}}}{1,05}\right)$
Steels other than austenitic, as per 6.3: Alternative route $A < 30\ \%$ [d]	$f_d = \min\left(\frac{R_{p0,2/T}}{1,5}; \frac{R_{m/20}}{1,875}\right)$	$f_{test} = \left(\frac{R_{p0,2/T_{test}}}{1,05}\right)$
Austenitic steels as per 6.4 $30\ \% \le A < 35\ \%$ [d]	$f_d = \left(\frac{R_{p1,0/T}}{1,5}\right)$	$f_{test} = \left(\frac{R_{p1,0/T_{test}}}{1,05}\right)$
Austenitic steels as per 6.5 $A \ge 35\ \%$ [d]	$f_d = \max\left[\left(\frac{R_{p1,0/T}}{1,5}\right); \min\left(\frac{R_{p1,0/T}}{1,2}; \frac{R_{m/T}}{3}\right)\right]$	$f_{test} = \max\left[\left(\frac{R_{p1,0/T\,test}}{1,05}\right); \left(\frac{R_{m/T\,test}}{2}\right)\right]$
Cast steels as per 6.6	$f_d = \min\left(\frac{R_{p0,2/T}}{1,9}; \frac{R_{m/20}}{3}\right)$	$f_{test} = \left(\frac{R_{p0,2/T_{test}}}{1,33}\right)$

[a] For testing group 4 the nominal design stress shall be multiplied by 0,9.
[b] Yield strength R_{eH} may be used in lieu of $R_{p0,2}$ if the latter is not available from the material standard.
[c] See 5.3.2 and 6.1.2
[d] For definition of rupture elongation, see EN 13445-2:2009, Clause 4.

Main points covered in Clause 19

Clause 19 "Creep design" divide route of nominal design stresses calculation into:

- Case where no lifetime monitoring is provided

$$f = \min\left\{f_{nc}; \frac{R_{m/T/t}}{SF_c}; R_{pl,0/T/t}\right\}$$

where:

$SF_c = 1,5$

- Case where lifetime monitoring is provided

$$f = \min\left\{f_{nc}; \frac{R_{m/T/t}}{SF_c}\right\}$$

where:

$SF_c = 1,25$

I would like to point out discrepancies for approach covered by EN 13480-3 for allowable stresses:

- In Clause 5 division into exceptional load case is totally omitted and there are no differences between safety factors. This discrepancies are continued in Clause 12 (which generally is based on ASME approach) and finally there are defined additional factors which allow partial plastification of the material in exceptional load case with low probability.
- Approach for allowable stresses in creep range totally ignore exceptional load cases and calculation rule is the same for single occurring occasional stress as for stress acting for long periods.

At the end it should be mentioned that both of the standards had the same basis for essential meaning for clause under consideration and can be known as Essential Requirements of EU Directive 2014/68/EU. Such a kind of differences should be unexpected in this case. Approach presented in EN 13445-3 is more clear and seems to be possible to accommodate at each stage of designing process. By meaning stage of designing process we treat designing by rules for different load cases (including exceptionals) in wall thickness calculations, Flexibility analysis acc. to Clause 12 as well as Fatigue analysis.

Proposed answer(s): *

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Answer from the MHD *(to be filled by MHD):* This technical question needs to be sent to the relevant European working group CEN/TC 267/WG 3 "Design and calculation". For further study and consideration.	
To be sent to EN 13480 Maintenance Group secretariat:	EN 13480 Maintenance Group secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France e-mail: en13480@unm.fr

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EN 13480 "Industrial piping and pipelines" Maintenance Group Question form

Request reference number *(to be filled by MHD):* 3-005-2020 **Date: June 15, 2020**				
Please fulfil the following				
Part: EN 13480-3	Issue: 2017	Page 65	Subclause 7.2.3.3	National Standard Reference English Version
Subject: Ambiguous result due to note with limitation for $C_2 < 0.3$				
Type of request: ☐ Technical clarification ☐ Editorial correction ☒ Technical comment ☐ Translation correction				

From :
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☐ Manufacturer ☐ User ☒ Other (please specify): Engineering – Consultancy - Software

Question/comment: The iteration from 0 MPa to find the MAWP leads to a different result than iteration from for example 50 MPa to find the MAWP, in the example the MAWP is 4.29 MPa versus 7.91 MPa.

This happens due to the note for C_2 on page 65. For the iteration from 0 MPa upwards, C_2 is valid and the second part of formula 7.2.3-6 is valid. For the iteration from 50 MPa downwards C_2 becomes negative and the second term of 7.2.3-6 is not required, and the factor C_1 is smaller than C_2

Attached is the example flat plate, with dimensions, material and design conditions.

Proposed answer(s): *

Change note to: When the values of e_{eq}/D_i and p_c/f_{min} result in a value of the coefficient C_2 less than 0.3, the internal pressure p_c is too high.

Answer from the MHD *(to be filled by MHD):*

When the coefficient C2 is less than 0,30 (and negative), it is never a determining factor.
The first term of the condition should be used. The note of page 65 should not be changed.

To be sent to EN 13480 Maintenance Group secretariat:	EN 13480 Maintenance Group secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France e-mail: en13480@unm.fr

***** *Please note that question with proposed answers will be dealt with as priority.*

Red-Bag
Engineers Consultants Software

Klinknagelstraat 2
3089 JP Rotterdam
The Netherlands

To: EN 13480 "Industrial piping and pipelines" Maintenance Group

From: Rutger Botermans – Red-Bag

Subject: Ambiguous MAWP for EN 13480-3 clause 7.2.3

Date: 2020-06-15

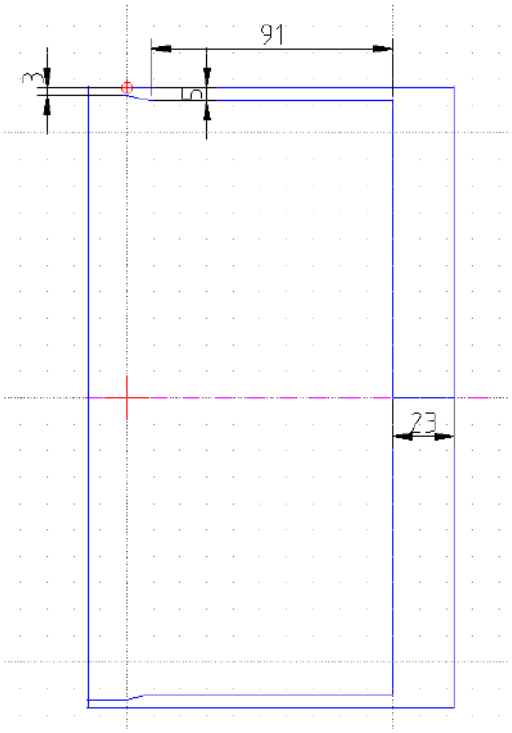

Figure: unflanged (not knuckled) flat end

Design data:

- Dimensions as above with 0.5 mm corrosion
- Material SA-105 flat end, SA_106 gr. B cylinder/pipe
- Design condition: pressure 1.36 MPa, temperature 250 Celsius

Iteration results:

Pressures	1.36 MPa	4.29 MPa [1])	7.91 MPa [1])	50 MPa
C1	0.365	0.399	0.408	0.436
C2	0.361	0.554	-0.573	-0.126
e_a analysis thickn.	22.5 mm	22.5 mm	22.5 mm	22.5 mm
e (7.2.3-6)	8.25 mm	22.48 mm	22.1 mm [2])	59.29 mm [2])

[1]) possible MAWP results

[2]) excluding second term in formula 7.2.3-6

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EN 13480 "Industrial piping and pipelines" Maintenance Group Question form

Request reference number *(to be filled by MHD):* **3-006-2020**			**Date: 2020-10-07**	
Please fulfil the following				
Part: EN 13480-3	Issue: 2017	Page 30	Subclause 6.1	National Standard Reference SS-EN 13480-3:2017
Subject:				
Type of request: ☐ Technical clarification ☐ Technical comment			X Editorial correction ☐ Translation correction	

From : Company: SIS Name: Pierre Carpentier Postal address:	e-mail: pierre.carpentier@sis.se phone: +.....

☐ Manufacturer	☐ User	XOther (please specify): Normalisation

Question/comment:

Proposed answer(s): *

For the equations 6.1-1 and 6.1-2: insert a space between f and Z like in the equations 6.1-3 and 6.1-4

Answer from the MHD *(to be filled by MHD):*

Yes, agree and also use "z" (no capital Z)

To be inserted in EN 13480-3:2017. Subject to be taken by CEN/TC 267/WG 3 for consideration into the draft amendment under development EN 13480-3:2017/prA5.

To be sent to EN 13480 Maintenance Group secretariat:	EN 13480 Maintenance Group secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France e-mail: en13480@unm.fr

***** *Please note that question with proposed answers will be dealt with as priority.*

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EN 13480 "Industrial piping and pipelines" Maintenance Group Question form

Request reference number *(to be filled by MHD):* **3-007-2020**			**Date: 2020-10-22**	
Please fulfil the following				
Part: EN 13480-3	Issue: 2017	Page -	Subclause 6.6 + Annex D	National Standard Reference NF EN 13480-3:2017
Subject:				
Type of request: ☒ Technical clarification ☐ Editorial correction ☐ Technical comment ☐ Translation correction				

From : Company: ENDEL ENGIE Name: Julien GRAVET Postal address:	e-mail: julien.gravet@endel.engie.com phone: +.....

☐ Manufacturer	☒ User	☐ Other (please specify):

Question/comment:

In 6.6 of EN 13480-3, relating to bolted flange connections, formula 6.6.2-1 uses the parameters C and G. These lengths are defined in the table with the same number.There is no particular indication on these values.

Annex D of EN 13480-3 we find the dimensions C and G in the different figures D.5.1 to D.5.3.

In 5.2 there is a condition which allows G to be determined, as a function of b0 and a criteria of 6.3 mm, and this is used to calculate the bolt tightening forces.

The question: should this criteria with b0 and 6.3mm also be taken into account for the determination of the length G of the formula 6.6.2-1 for a Peq calculation?

Proposed answer(s): *

-

Answer from the MHD *(to be filled by MHD):*

Yes, the definition of G in clause 5.2 Annex D and in clause 6.6 is identical.

To be sent to EN 13480 Maintenance Group secretariat:	EN 13480 Maintenance Group secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France e-mail: en13480@unm.fr

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EN 13480 "Industrial piping and pipelines" Maintenance Group Question form

Request reference number *(to be filled by MHD):* **8-001-2020** **Date: 2020-01-16**

Please fulfil the following

Part:	Issue:	Page	Subclause	National Standard Reference
EN 13480-8	2017	31	B.3	BS EN 13480-8

Subject: Hydrostatic Test Pressure

Type of request: ☒ Technical clarification ☐ Editorial correction ☐ Technical comment ☐ Translation correction

From :
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☐ Manufacturer ☐ User ☒ Other (please specify): Designer / Operator

Question/comment:

In Clause B.3 it is stated that the transition joint shall withstand 4 times the design pressure without leaking.

We don't understand how an item could ever be expected to withstand this pressure, let alone without leaking.

Proposed answer(s): *

We have interpreted this to mean that the joint itself needs to be rated for a "design pressure" which is 4 times higher than the surrounding pipework. I.e. that the wall thickness needs to be significantly higher around the joint than it would otherwise, owing to the expectation that the integrity of the joint may be difficult to guarantee.

Answer from the MHD *(to be filled by MHD):*

This technical question needs to be sent to the relevant European working group CEN/TC 267/WG 9 "Aluminium and aluminium alloy". For further study and consideration for EN 13480-8:2017.

To be sent to EN 13480 Maintenance Group secretariat:	EN 13480 Maintenance Group secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France e-mail: en13480@unm.fr

* *Please note that question with proposed answers will be dealt with as priority.*