



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

APR 08 2019

Eric Watson
Dominion Technology Gases Ltd.
Howe Moss Avenue
Kirkhill Industrial Estate
Dyce, Aberdeen AB21 0GP
United Kingdom

Reference No. 18-0127

Dear Mr. Watson:

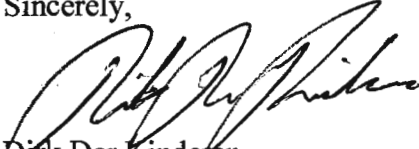
This letter is in response to your October 5, 2018, email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to cylinder requalification. You state that your company has a fleet of United Nations (UN) ISO 9809-2, USA/M8304 cylinders that you intend to retest (requalify) in the United Kingdom under ISO 6406 once they reach their 10-year requalification period. However, you note that testing will be done without a United States Requalification Identification Number (RIN). Specifically, you ask whether these cylinders may be used and transported in the United States after being requalified.

The answer is no. UN pressure vessels due for requalification cannot be filled and offered for transportation in commerce unless they have been successfully requalified and marked in accordance with the HMR (see § 180.207(a)(2)). Section 180.205(b) states that no person may represent that a repair or requalification of a cylinder has been performed in accordance with the HMR unless that person holds a current approval issued under the procedural requirements in Subpart I of 49 CFR Part 107 (see § 107.801). Therefore, the facility where the cylinders are to be tested (requalified) must be an approved and authorized RIN holder.

If a facility is not an authorized RIN holder and seeks approval to engage in the requalification of UN pressure receptacles, an Independent Inspection Agency (IIA) must conduct a review of a facility's requalification operations. Once the review has been completed with satisfactory results, the applicant (ex., Dominion Technology Gases Ltd.) must submit a letter of recommendation from the IIA, an inspection report, and an application certifying that the facility will perform requalification operations for UN pressure receptacles in compliance with the applicable requirements of the HMR (see § 107.805).

I hope this information is helpful. Please contact us if we can be of further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Dirk Der Kinderen". The signature is fluid and cursive, with the first name "Dirk" being the most prominent.

Dirk Der Kinderen
Chief, Standards Development Branch
Standards and Rulemaking Division

Baker
Cylinders
18-0127

Dodd, Alice (PHMSA)

From: INFOCNTR (PHMSA)
Sent: Wednesday, October 10, 2018 1:10 PM
To: Hazmat Interps
Subject: FW: Cylinder Re-qualification
Attachments: 5_S8157811_Flaschenzeichnung.pdf; 6_S8157811_Einschlag.pdf

Hello Alice and Ikeya,

Below is a request for a letter of interpretation.

Thanks,
Jonathon, HMIC

From: Eric_Watson@Praxair.com [mailto:Eric_Watson@Praxair.com]
Sent: Friday, October 05, 2018 11:37 AM
To: INFOCNTR (PHMSA) <INFOCNTR.INFOCNTR@dot.gov>
Subject: Cylinder Re-qualification

The mailing address for the letter of interpretation is:

Dominion Technology Gases Ltd
Howe Moss Avenue
Kirkhill Industrial Estate
Dyce
Aberdeen
AB21 0GP
UK
For attention of Eric Watson

Hey Jonathon,

I've looking in FM and only saw letters that pertained to ISO standard 11119-2.

Since they've already spoken with APD, and there aren't any letters pertaining to his particular standard, I've put in your box to move his request to the next level.

-Breanna

To Whom it Concerns,

Could I ask for a letter of interpretation please, that could explain why retesting (requalifying) these UN, ISO 9809-2, USA/M8304 cylinders in the UK under ISO standard 6406, will not allow their continued use to be transported in USA.

Eric Watson
Engineering Support Manager-Dominion Gas

Telephone +44 1224 215663
Mobile: +44 7711 367505
www.dominion-gas.com

From: "Pascal, Irwin (PHMSA)" <irwin.pascal@dot.gov>
To: "Eric_Watson@Praxair.com" <Eric_Watson@Praxair.com>
Date: 01/10/2018 14:37
Subject: RE: Cylinder Re-qualification

*** Please note the message below originated on the Internet. Please use caution when replying or opening links or attachments. ***

Good Morning Eric

It is my understanding that once the requalification is performed by an **Authorized RIN holder** in accordance with 49 CFR § 180.207, then yes the cylinders would be allowed in the USA, providing that the service life is not exceeded. You can also request an official letter of interpretation from PHMSA's Standard Division (202) 366-8553 (infocntr@dot.gov).

Respectfully

Irwin Pascal CDGP

Transportation Specialist
Pressure Vessels Branch
Approvals and Permits Division – PHH-30
OHMS, PHMSA, U.S. DOT
Office: (202) 366-8181
Fax: (202) 366 3753
East Building, E23-412
1200 New Jersey Ave., SE
Washington, D.C. 20590-0001

From: Bartrum, Zeudi CTR (PHMSA) **On Behalf Of** Approvals (PHMSA)
Sent: Friday, September 28, 2018 3:54 PM
To: Pascal, Irwin (PHMSA) <irwin.pascal@dot.gov>
Subject: FW: Cylinder Re-qualification

Irwin,

Please see the email below. Thanks.

Zeudi

From: Eric_Watson@Praxair.com [mailto:Eric_Watson@Praxair.com]
Sent: Wednesday, September 26, 2018 10:53 AM
To: Approvals (PHMSA) <Approvals@dot.gov>
Subject: Cylinder Re-qualification

To Whom it concerns,

Below is the correspondence trail regarding cylinder re-qualification following the original e-mail

We have gas cylinders in our fleet which were manufactured by Worthington Cylinders GmbH - Austria, to UN, ISO 9809-2, USA M8304.

When these cylinders reach their 10 year re-qualification period, we intend to have the cylinders re-tested by UT (UE) in the UK to ISO 6406 standard (or replacement)
will this re-test also allow continued use of the cylinders in USA if required?

Mr. Watson,

I am working with my colleague in our engineering office to determine the appropriate response to your below email. I will get back to you shortly.

Regards,

Andrew Eckenrode

Eric,

I ended up having to speak with some folks in our Pressure Vessels Branch about this and they are of the opinion that the cylinder must be requalified by a RIN holder in order to be transported within the United States under the HMR. I do not have a regulatory citation that I can point to that confirms this, so you may want to request a letter of interpretation from our Standards and Rulemaking Division.

Regards,

Andrew

Hello Andrew,

As previously advised we have gas cylinders in our fleet which were manufactured by Worthington Cylinders GmbH - Austria, to UN, ISO 9809-2, USA M8304.

It is my understanding that these cylinders can be transported within the United States during the 10 year period after manufacture & testing.

When these cylinders reach their 10 year re-qualification period, we intend to have the cylinders re-tested by UT (UE) in the UK to ISO 6406 standard (or replacement ISO 18119 when issued)

Your e-mail indicates that the retesting of these cylinders by UT in the UK to relevant ISO standard will not be accepted for transport in USA?

Will a RIN holder be able to requalify these cylinders by UT to satisfy both US DOT & ISO 6406?

Regards
Eric Watson

Eric,

If these cylinders are requalified by a RIN holder that is authorized to perform UE testing, there should be no issue.

I am trying to avoid making a definitive statement regarding whether it is absolutely necessary as cylinder requalification is not my

area of expertise. For a definitive answer, I would recommend talking with our Pressure Vessels Branch and/or requesting a letter of interpretation.

Let me know if you have any additional questions.

Regards,

Andrew Eckenrode (PHMSA) has suggested I contact yourselves regarding this subject.

Eric Watson
Engineering Support Manager-Dominion Gas
Telephone +44 1224 215663
Mobile: +44 7711 367505
www.dominion-gas.com

From: "Eckenrode, Andrew (PHMSA)" <andrew.eckenrode@dot.gov>
To: "Eric.Watson@Praxair.com" <Eric.Watson@Praxair.com>
Date: 26/09/2018 15:07
Subject: RE: Cylinder Re-qualification

*** Please note the message below originated on the Internet. Please use caution when replying or opening links or attachments. ***

Eric,

They are in DC. You can try 202-366-4535 as well. The person answering those numbers might not be at their desk, so you can always try back latter. Please feel free to also reach out to them via email at approvals@dot.gov.

Let me know if you have any further issues.

Regards,

Andrew

From: Eric.Watson@Praxair.com <Eric.Watson@Praxair.com>
Sent: Wednesday, September 26, 2018 10:01 AM
To: Eckenrode, Andrew (PHMSA) <andrew.eckenrode@dot.gov>
Subject: RE: Cylinder Re-qualification

Andrew,

Where are they based no answer at that number

Regards
Eric Watson
Engineering Support Manager-Dominion Gas
Telephone +44 1224 215663
Mobile: +44 7711 367505
www.dominion-gas.com

From: "Eckenrode, Andrew (PHMSA)" <andrew.eckenrode@dot.gov>
To: "Eric.Watson@Praxair.com" <Eric.Watson@Praxair.com>
Date: 26/09/2018 14:00
Subject: RE: Cylinder Re-qualification

Eric,

Call 202-366-4511 and ask to speak with someone within the Pressure Vessels Branch. Let me know if you have any issues with that approach.

Regards,

Andrew

From: Eric.Watson@Praxair.com <Eric.Watson@Praxair.com>
Sent: Wednesday, September 26, 2018 7:43 AM
To: Eckenrode, Andrew (PHMSA) <andrew.eckenrode@dot.gov>
Subject: RE: Cylinder Re-qualification

Hello Andrew,

Could you please advise how to contact the Pressure Vessels Branch.

Regards
Eric Watson
Engineering Support Manager-Dominion Gas
Telephone +44 1224 215663
Mobile: +44 7711 367505
www.dominion-gas.com

From: "Eckenrode, Andrew (PHMSA)" <andrew.eckenrode@dot.gov>
To: "Eric.Watson@Praxair.com" <Eric.Watson@Praxair.com>
Date: 26/09/2018 12:21
Subject: RE: Cylinder Re-qualification

Eric,

If these cylinders are requalified by a RIN holder that is authorized to perform UE testing, there should be no issue.

I am trying to avoid making a definitive statement regarding whether it is absolutely necessary as cylinder requalification is not my area of expertise. For a definitive answer, I would recommend talking with our Pressure Vessels Branch and/or requesting a letter of interpretation.

Let me know if you have any additional questions.

Regards,

Andrew

From: Eric.Watson@Praxair.com <Eric.Watson@Praxair.com>
Sent: Wednesday, September 26, 2018 3:07 AM
To: Eckenrode, Andrew (PHMSA) <andrew.eckenrode@dot.gov>
Subject: RE: Cylinder Re-qualification

Hello Andrew,

As previously advised we have gas cylinders in our fleet which were manufactured by Worthington Cylinders GmbH - Austria, to UN, ISO 9809-2, USA M8304.
It is my understanding that these cylinders can be transported within the United States during the 10 year period after manufacture & testing.

When these cylinders reach their 10 year re-qualification period, we intend to have the cylinders re-tested by UT (UE) in the UK to ISO 6406 standard (or replacement ISO 18119 when issued)

Your e-mail indicates that the retesting of these cylinders by UT in the UK to relevant ISO standard will not be accepted for transport in USA?

Will a RIN holder be able to requalify these cylinders by UT to satisfy both US DOT & ISO 6406?

Regards
Eric Watson
Engineering Support Manager-Dominion Gas
Telephone +44 1224 215663
Mobile: +44 7711 367505
www.dominion-gas.com

From: "Eckenrode, Andrew (PHMSA)" <andrew.eckenrode@dot.gov>
To: "Eric.Watson@Praxair.com" <Eric.Watson@Praxair.com>
Date: 25/09/2018 20:03
Subject: RE: Cylinder Re-qualification

Eric,

I ended up having to speak with some folks in our Pressure Vessels Branch about this and they are of the opinion that the cylinder must be requalified by a RIN holder in order to be transported within the United States under the HMR. I do not have a regulatory citation that I can point to that confirms this, so you may want to request a letter of interpretation from our Standards and Rulemaking Division.

Regards,

Andrew

From: Eric.Watson@Praxair.com [<mailto:Eric.Watson@Praxair.com>]
Sent: Friday, September 21, 2018 5:30 AM
To: Special Permits (PHMSA) <specialpermits@dot.gov>
Subject: RE: Cylinder Re-qualification

Hello Andrew,

Have you and your colleague had the opportunity to look into this subject ?

Regards
Eric Watson
Engineering Support Manager-Dominion Gas
Telephone +44 1224 215663
Mobile: +44 7711 367505
www.dominion-gas.com

From: "Special Permits (PHMSA)" <specialpermits@dot.gov>
To: "Eric.Watson@Praxair.com" <Eric.Watson@Praxair.com>
Date: 13/09/2018 17:47
Subject: RE: Cylinder Re-qualification
Sent by: "Eckenrode, Andrew (PHMSA)" <andrew.eckenrode@dot.gov>

Mr. Watson,

I am working with my colleague in our engineering office to determine the appropriate response to your below email. I will get back to you shortly.

Regards,

Andrew Eckenrode

From: Eric_Watson@Praxair.com [mailto:Eric_Watson@Praxair.com]

Sent: Thursday, September 13, 2018 9:27 AM

To: Special Permits (PHMSA) <specialpermits@dot.gov>

Subject: Cylinder Re-qualification

To whom it concerns,

We have gas cylinders in our fleet which were manufactured by Worthington Cylinders GmbH - Austria, to UN, ISO 9809-2, USA M8304.

When these cylinders reach their 10 year re-qualification period, we intend to have the cylinders re-tested by UT (UE) in the UK to ISO 6406 standard (or replacement)

will this re-test also allow continued use of the cylinders in USA if required?

Regards

Eric Watson

Engineering Support Manager-Dominion Gas

Telephone +44 1224 215663

Mobile: +44 7711 367505

www.dominion-gas.com



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U.S. Department
of Transportation

East Building, PHH - 33
1200 New Jersey Avenue, Southeast
Washington, D.C. 20590

Pipeline and Hazardous
Materials Safety Administration

APPROVAL CA2006050031
(15th Revision)

ISSUED BY THE COMPETENT AUTHORITY OF THE UNITED STATES

EXPIRATION DATE: September 21, 2020

1. **APPROVAL HOLDER:** Worthington Cylinders GmbH, Austria
Beim Flaschenwerk 1
A-3291 Kienberg bei Gaming
Austria
2. **REGULATORY AUTHORITY:** 49 CFR §107.807 & 178.37
3. **SYNOPSIS:** Worthington Cylinders GmbH is authorized to to use the term Cro-Moly steel within the required levels for 4130X steel specified in 49 CFR 178.37 for the material used for manufacturing DOT-3AA cylinders. Worthington Cylinders GmbH, Austria is also authorized to manufacturer DOT 3AA cylinder designs: R0180 100 31 11 Rev 1, N5000 229 26 10, N2000 229 26 10, **N1340 204 48 11-1** and UN ISO designs (identified by drawing number): ISO 9809-1 N1600-N65002295811-4, ISO 9809-2 N1500-N62002296611-2 Rev.1, ISO 9809-1 N1200-N32002045211-1, ISO 9809-1 R0300-R13501403611-1 Rev.1, 9809-1 drawing number N1600-N6500 229 47 11-1, 9809-2 drawing number N1500-N6400 229 44 11-1, 9809-2 drawing numbers N1600-N6200 228 60 11-1 and N2500-N8500 268 50 and 9809-1 drawing number R0600-R1600 178 35 11 Rev.1, 9809-2 drawing number N2500-N8500 268 50 11, 9809-1 drawing number N1800-N5500 228 87 11-1, N1600-N6200 229 49 11, N3000-N8800 268 30 11 and 9809-2 drawing number N2500-N8500 268 75 11-1 specification cylinders by **the Billet manufacturing method** at the facility located at the address above, under the supervision of the Independent Inspection Agency identified under section 5(b) of this approval.
4. **BASIS:** This approval is issued in response to Worthington Cylinders GmbH, Austria's application on July 28, 2017 to add one (1) DOT 3AA design, drawing number: **N1340 204 48 11-1** to their current CA Approval.

5. **PERIOD OF VALIDITY AND CONDITIONS OF APPROVAL:** This approval does not provide relief from any requirements of the Hazardous Materials Regulations except as stated herein. This approval is valid until the posted expiration date or until terminated by the Associate Administrator for Hazardous Materials Safety.

a. **Approved Authority:** The holder of this approval is authorized to Manufacture and Mark the following DOT specification cylinders under the supervision of an independent inspection agency approved for that purpose in accordance with § 107.803:

**DOT 3AA, UN ISO 9809-1 and UN ISO 9809-2 Cylinders -
Manufactured in accordance with §§ 178.35, 178.37,
178.69, 178.70 and 178.71.**

Only designs on file with the department may be manufactured and marked under the terms of this approval.

b. **Approved Independent Inspector (IIA):** Only the following IIA is currently authorized to conduct onsite inspections at your manufacturing facility:

**Bureau Veritas Austria GmbH,
Prinz-Eugen-Strasse 8-10,
A-1040 Wien, Austria**

c. **Registration number:** M8304 is your assigned registration number and must be marked on all DOT cylinders manufactured under the terms of this approval.

6. **SAFETY CONTROLS:**

a. If DOT specification cylinder production has not been undertaken for more than six months, The Pipeline and Hazardous Materials Safety Administration must be notified prior to resumption of production. Additional sample testing and/or an onsite inspection may be required prior to resumption of production, at the discretion of PHMSA.

b. No deviation from designs, materials, method of manufacture, inspection procedures or any technical information submitted in support of the manufacturer's or

inspector's applications for approval is authorized unless approved in accordance with 6.d. of this approval.

- c. Failure to assure adequate independent inspection and verification will be grounds for termination or other enforcement action as provided for in the regulations. PHMSA must be notified in writing prior to a change in independent inspection agency service companies.
- d. Advanced notice and written approval is required before any of the following can be implemented:
 - 1) Technical changes in the manufacturing process or procedures are made.
 - 2) Changes in the approved designs on file. However, additional approval is not required for design changes to the UN ISO designs identified above, provided the changes to the design are within the previously approved design type family as identified in the applicable UN ISO specification on file with PHMSA, and as certified by the currently approved Independent Inspection Agency on file with PHMSA. New designs that fall outside the approved design type family, which are identified as a new design type family within the confines of the authorized UN ISO specification, or production of new UN ISO specification cylinder not currently authorized by PHMSA, must be approved prior to manufacture under the terms of this approval.
 - 3) Adding a new DOT or UN ISO specification design, not meeting the requirements above, or which does not currently have design change criteria listed in the respective UN ISO specification (**i.e. UN ISO 11120 tubes**), or authorization to manufacture a cylinder specification not currently authorized to be manufactured under the authority of this approval.
- e. If non-technical information, submitted in your application for approval changes, Approvals and Permits must be notified, in writing, within 20 days.

7. **SPECIAL PROVISIONS:**

- a. A current copy of this approval must be maintained and made available for examination at each location where cylinders are manufactured.

8. **GENERAL PROVISIONS:**

- a. Failure by any person to comply with the terms and conditions of this approval and the Hazardous Materials Regulations, 49 CFR Parts 171-180, may result in the modification, suspension or termination of that person's authority to use this approval. Failure to comply may also subject that person to penalties prescribed by 49 U.S.C. §§ 5123 and 5124. This approval may be modified, suspended or terminated in its entirety if that action is justified in light of changes in circumstances or additional information not available when this approval was issued. Unless immediate modification, suspension or termination is necessary to avoid a risk of significant harm to persons or property, before action is taken, that person will be notified and provided with an opportunity to show why the proposed action should not be taken.
- b. Each "Hazmat employee," as defined in § 171.8, who performs a function subject to this approval must be provided training on the requirements and conditions of this approval in addition to the training required by §§ 172.700 through 172.704.
- c. Any person operating under the terms of this approval must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
- d. This approval, as revised, supersedes all previous versions.**

Issued in Washington, D.C.

Dated: 01/17/2018

A handwritten signature in cursive script that reads "Susan M. Cassidy".

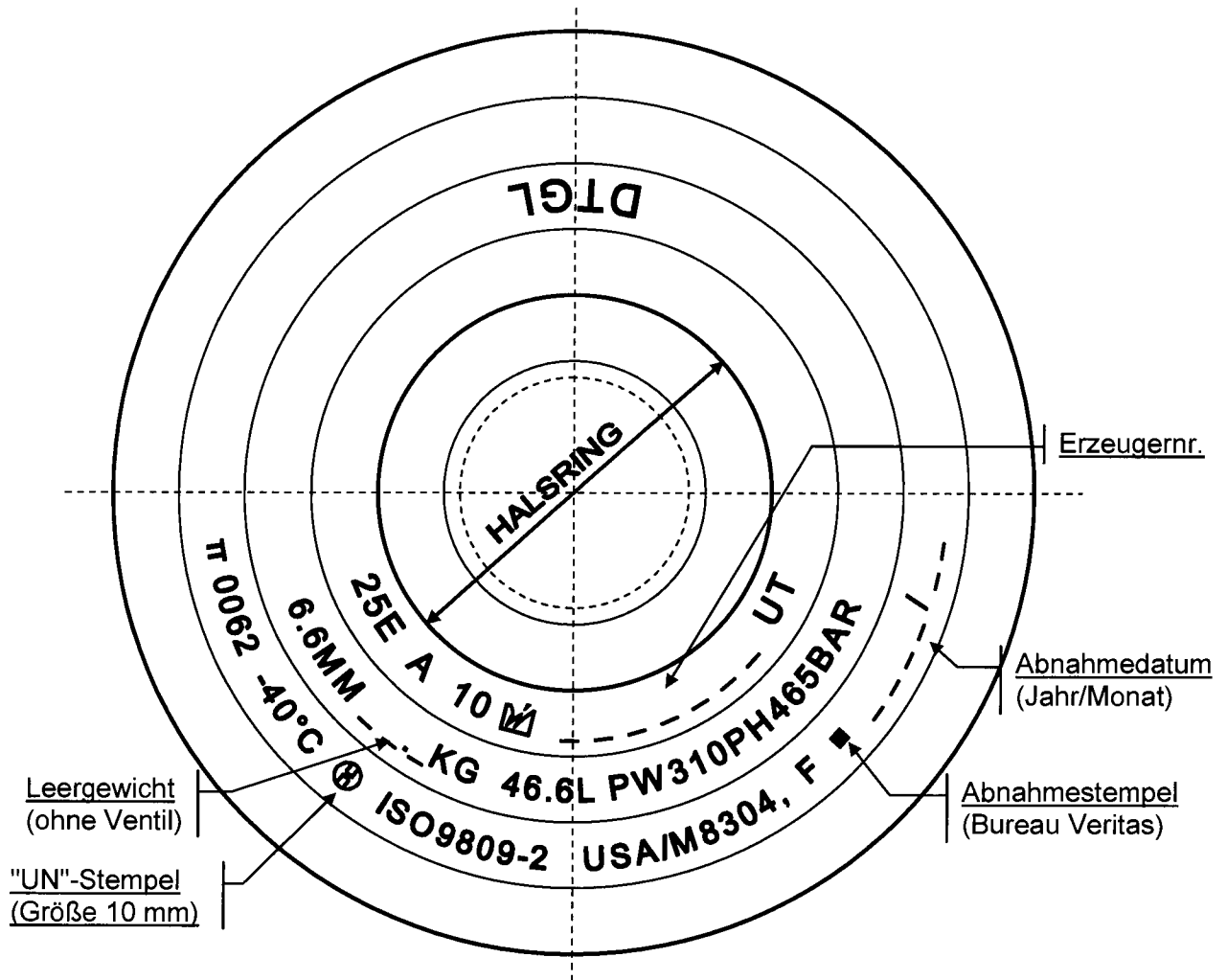
For William Schoonover
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous
Materials Safety, Pipeline and Hazardous Materials Safety
Administration, Department of Transportation, Washington, D.C.
20590. Attention: PHH-30.

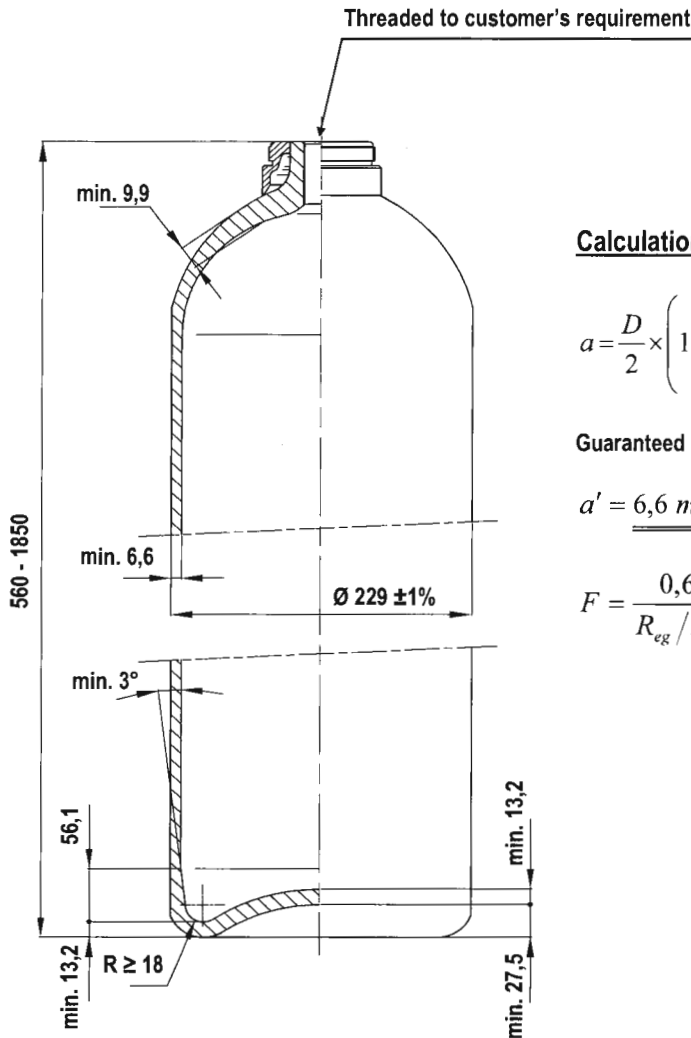
F S81578'11

Gasbezeichnung:

Sonderangaben:



Schrifthöhe: 8 mm



Calculation of wall thickness

$$a = \frac{D}{2} \times \left(1 - \sqrt{\frac{10 \times F \times R_{eg} - Ph \times \sqrt{3}}{10 \times F \times R_{eg}}} \right) = \underline{\underline{6,52 \text{ mm}}}$$

Guaranteed minimum wall thickness:

$$a' = \underline{\underline{6,6 \text{ mm}}}$$

$$F = \frac{0,65}{R_{eg}/R_{mg}} = \frac{0,65}{990/1120} = 0,735$$

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WORTHINGTON
CYLINDERS
A Worthington Industries Company

+) Allowable gases to be filled:

- UN1002 Air
- Gases of group 1,4,5,6,7,8,9,10 according to ISO 11114-1

Beim Flaschenwerk 1
A-3291 Kienberg/Gaming

Specification	ISO 9809-2:2010	Material	34CrMo4 - Steel		Yield point (R _{eg})	990 MPa			
		Heat treatment	quenched and tempered		U.T.S. (R _{mg} / R _{mmax})	1120 / 1240 MPa			
Type	EXTRA - 5	Chemical composition			Elongation	min. 12 % (L ₀ =5,65 √S ₀)			
Name of gas	+))	C	0,32 - 0,35 %	S	≤ 0,005 %	Impact value (trans.)		A-value 35 J/cm²	
Water capacity	15 - 62 l	Mn	0,65 - 0,80 %	Cr	0,95 - 1,15 %	ISO-V (-50°C)		B-value 50 J/cm²	
Filling weight	- kg	Si	0,15 - 0,30 %	Mo	0,17 - 0,27 %	Rev. 0	Rev. 1	Rev. 2	Rev. 3
Working pressure (P _w)	≤ 310 bar	P	≤ 0,010 %	Ni	≤ 0,20 %	PJ	Drawn	PJ	
Test pressure (P _h)	465 bar	V+Nb+Ti+B+Zr ≤ 0,15 %			29.09.10	Date	05.11.10		
Weight empty	29 - 80 kg				WF	Checked	WF		
Title:	Seamless Steel Cylinder					04.10.10	Date	05.11.10	
Notes:	Manufacturer's process: from billet Burst pressure P_b ≥ 744 bar; Yield pressure P_y ≥ 633 bar					Drw. no. N1500-N6200 229 66 11-2 Rev.1			