ROTH Mions SAS
43, rue des Brosses
69780 Mions - France
Tél 04 72 28 15 60
Fax 04 78 21 16 26

Déclaration UE de conformité (Directive 2014/68/UE)
EU Declaration of conformity (2014/68/EU Directive)

Le fabricant ROTH Mions SAS, soussigné, certifie, sous sa seule responsabilité, que les équipements mentionnés ci-dessous satisfont aux exigences de la directive 2014/68/UE. Les équipements et composants mentionnés ci-dessous ont été fabriqués en accord avec les spécifications techniques cités ci-dessous, et l'évaluation de conformité à la directive a été établie par Bureau Véritas S.A., Newtime, 52 boulevard du Parc, Ile de la Jatte, 92200 Neuilly sur Seine, France, organisme notifié n° 0062.

The undersigned ROTH Mions SAS manufacturer certifies under its own responsibility, that the equipments specified below satisfy the requirements of the 2014/68/EU directive. The equipments and components specified below have been manufactured in accordance with the technical specifications described below and the conformity assessment to the directive has been established by Bureau Véritas S.A., Newtime, 52 boulevard du Parc, Ile de la Jatte, 92200 Neuilly sur Seine, France, notified body n° 0062.

Equipement / *Equipment* : Récipient sous pression / *Pressure vessel*

Capacité / *capacity* :	50 L	Pression maxi admissible / *maxi allowable pressure* PS :	360 bar
Référence / *reference* :	50 L G 360 bar	Pression d'épreuve / *test pressure :*	515 bar
Nature du fluide / *type of fluid*	Groupe 1, Art.13-1a Dir. 2014/68/UE	Température de service / *service temperature* :	-40/+80°C
Tube utilisé / *used tube* :	219,1 x 8,35 mm mini	Matière / *material* :	34CrMo4-SPEC014
N° plan / *drawing N°* :	RT551 - 810240	Nbre cycles à ΔPmax / *cycles number at ΔPmax*	4093

Calcul basé sur norme / *Calculation based on standard* : AD2000-Merkblatt B0, B1, B3, B9, B10, S1
Normes harmonisées applicables / *Applicable harmonized standard* : Néant / *none*
Autre directive applicable / *other applicable directive* : Néant / *none.*

Module D "Assurance Qualité Production" / *"Production Quality Assurance"* : CE-0062-PED-D-RTM-001-18-FRA_revA
Module B "Examen CE/UE de type" / *EC/EU type examination* : CE-PED-B-RTM 007-13-FRA rev.C type : A010.800/AD/CrMo

Qté / *Qty* : 70 pièces / *parts*

N° série *Serial N°*			N° coulée matière *Material heat N°*	Repère coulée *Material heat code*	Fabricant tube *Tube manufacturer*	N° lot *Batch N°*
26199	to	26205	340414	JC	Vallourec - Rath-Stopfen	VA137
26206	to	26268	319376	JZ	Vallourec - Rath	WA262
	to					
	to					

Contrôle réception matière / *control of material at reception* :	Conforme / *conform*
Traitement thermique réalisé / *accomplished heat treatment* :	Conforme / *conform*
Résultats d'essais mécaniques / *mechanical tests results* :	Conforme / *conform*
Test hydrostatique réalisé / *accomplished hydrostatic test* : 100%	Conforme / *conform*
Contrôle marquage / *control of marking* :	Conforme / *conform*
Contrôle visuel / *visual control* :	Conforme / *conform*
Contrôle dimensionnel / *dimensionnal control* :	Conforme / *conform*

Date d'épreuve / *hydrostatic test date* 08/10/2019

Les équipements sont déclarés CONFORMES / *Equipments are declared CONFORM.*

Signature au nom du fabricant / *signed on behalf of the manufacturer* :

Nom / *name* : N. Bailly
Resp. Technique & Qualité / *Technical & Quality Resp.*
Date / *date* : 09/10/2019

fait à Mions / *signed at Mions*

Dimensions principales / Main dimensionnal caracteristics	
Diamètre extérieur / *Outside Diametre*	219,1 mm
Epaisseur mini partie cylindrique / *Mini Thickness at cylindrical part*	8,35 mm
Longueur hors tout / *Maxi length*	1825 mm
Ouverture 1 : diam maxi x épaisseur / *Opening 1 : diam maxi x thickness*	26,725 x 13,5 mm
Ouverture 2 : diam maxi x épaisseur / *Opening 2 : diam maxi x thickness*	26,725 x 13,5 mm

Toute réclamation au-delà de 3 mois après réception des pièces ne sera pas acceptée / Any claim beyond 3 months after reception of products will not be accepted.

Be careful, this shell is a pressure vessel. Failure to follow instructions may result a danger for the security of people and goods.

To preserve the quality of your product from delivery and throughout its use in the best conditions of security, it is recommended that you read this manual carefully and strictly follow the instructions it contains.

1. Description

Use :

The vessel function is to store pressurized fluids.
The vessel itself cannot store fluid under pressure. It has to be equipped with suitable pieces defined by the manufacturer of those pieces.
The vessel can store different fluids, depending of its application :

- Hydraulic oil and Nitrogen for bladder accumulator (fluids of group 2).
- Gaseous Hydrogen. Hydrogen involves embrittlement phenomenon on the steel. (fluid of group 1).
  Declaration of conformity mentions “Hydrogen” and marking indicates “H2”.
- Compressed air for diving bottle for example, Water (fluids of group 2).
- Compressed oxygen. Combustion fluid. (fluid of group 1).
- For the other applications or particular fluids, ROTH has to be informed by the user, before filling the vessel.

The vessel cannot store corrosive fluids.
The vessel is not designed for Transportation of Fluids.
The vessel is not designed to be exposed to the action of a flame.

Regulation :

The vessel is conforming to European Directive 2014/68/UE (PED) concerning Equipments under pressure.
It is a vessel homologated under Category IV. Therefore, the vessel is approved following conformity evaluation procedure module B+D ; this conformity evaluation procedure allows the vessel to be homologated for lower categories.
The vessel is able to store fluids of group 1 and/or group 2 as defined in the PED Article 13 and following above restrictions (see fluid group mentioned in UE Declaration of conformity).

Fabrication :

The vessel is manufactured in seamless steel, forged at each ends.

2. Technical feature

Some technical features are mentioned in the Conformity Declaration or may be stamped on the product (see §4).

Storing Temperature (vessel without pressure)	-60°C to +350°C
Maxi Temperature for applying coating	350°C

ROTH Mions S.A.S.
43, rue des Brosses
F – 69780 - MIONS

Instructions Manual for pressure vessels

NIT PED v06
English version

Weight depending on model	4 kg to 150 kg
Standard delivery conditions (except specific request) – Internal protection	Dessicant bag or oil spread inside the vessel. Cap at each end.
Standard delivery conditions (except specific request) – External protection	Primary coating or finishing paint or anticorrosive protection or without. Anticorrosive protection + finishing paint for diving bottles.
Fatigue calculation is done following recognized Code. Cycles number is depending on the vessel range of pressure of use (see cycles number on Declaration of Conformity). For diving bottles, cycle number is defined in Manufacturing standard.	

3. Instructions

Instructions shall be considered during all the life of the vessel, it means for the shell alone, for the shell equipped, before and during use, and at the end of its life.
It concerns handling, storing, installation, fixing, commissioning, use, maintenance, removal, disposal or recycling.

3.1 Handling, storage, installation

Handling :

The vessel shall be handled with care to save it against shocks or stresses which can deform, scratch, crack or create metal wrenching.
Once installed, if necessary, protection around the vessel shall be provided.
For heavy vessel, a magnet, belt or other suitable means may be used for handling.
During transportation, the vessel shall be packed in suitable packaging : carton, container, plastic coated pieces secured on pallets... Packaging shall be done with a limited number of levels depending on the size of the vessels.
During handling, the vessel weight shall be well considered.

Storage :

Storage shall be made out of the weather, moisture, runoff, condensation. Storage temperature : see §2. The vessel shall be protected with same means than delivery : see §2.

Protection :

The vessel shall be protected against anything which may cause a corrosive action, whether inside or outside.
Depending on the conditions of use and location, the vessel can be coated with a protective paint or other coating. The compatibility of the coating and application temperature shall be checked to be in conformance with requirements of §2.

Installation :

During installation and before the first pressurization, the user shall visually check that the vessel has suffered no damage.
If the manufacturer ROTH has not stamped the group of fluid (and its possible nature if necessary) in the initial marking of the vessel, the fluid is from group 2 and non corrosive for the tube walls.
The vessel shall be equipped at ends with connecting pieces designed and manufactured in conformance with the design of the vessel.

It is recommended to fix the vessel using suitable clamps adapted to the diameter of the vessel, and suitable supports for the hemispherical part.
It is forbidden to carry out a repair by welding, drilling, riveting or any operation creating a removal of material, or a rise in temperature.
Compatibility of the fluid with steel and with possible internal and external protection elements shall be checked.
A pressure relief system on the equipment or installation shall be fitted to avoid the system pressure becomes over the maximum allowable pressure of the vessel.
The filled fluid shall not increase the internal defined pressure at temperature of use.
Regulations in force shall be followed during installation.

Additional recommendations :
The vessel shall not be exposed to the action of flame or sparks.
The vessel shall not be exposed to the effect of electric and magnetic fields which could create sparks or overheating.
The vessel shall be protected against the effects of lightning.
The vessel shall not be installed and used as a structural component and shall not be used to support other components or assemblies.
The vessel shall not be exposed to external loads.

3.2 Use

Temperature and pressure phenomena :
In use, an increase of temperature involves an increase of pressure ; likewise a pressure variation generates a temperature change (an increase of pressure generates an increase of temperature, and a relaxation of the pressure generates a temperature decrease). The user shall ensure these behaviors to avoid exceeding the vessel limits of use.

Inspection and periodical follow up :
The user is responsible of following up periodical inspections according to regulatory requirements.
In addition and depending on use or on the application, the user shall regularly check that the vessel (inside and outside ; cylindrical part, heads, threads if any) does not show evidence of deterioration such as corrosion, deformation, shock, leak, crack...

Wear and fatigue phenomena :
Depending on the conditions of use, fatigue phenomena may occur.
The user shall regularly proceed to inspection of the general condition of the vessel.
In case of use with abrasive fluid, a filter shall be fitted on the installation and/or additional internal inspections shall be done.

3.3 Maintenance, dismantling, destruction, recycling

Before any maintenance or disassembly on the vessel equipped with connecting pieces, the pressure lines shall be purged, and the absence of residual pressure inside the vessel shall be ensured.

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Instructions Manual for pressure vessels

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Before destruction or recycling, the pressure lines shall be purged, and the absence of residual pressure inside the vessel shall be ensured.
If necessary, the remaining gas shall be removed using a neutral gas.

3.4 For other situations, please ask to ROTH.

4. Marking

The vessel is marked with the following non-exhaustive information in a reinforced area so as not to weaken the part.

ROTH	Name or brandt symbol of the manufacturer
ZZZZZ	Name or brandt symbol of the customer, if any
AAAA	Manufacturing year
XXXX	Serial number of the vessel
PS ____ BAR	Maximum allowable working pressure, in bar
TS __/__°C	Temperature of use, in degree Celsius
V XX L	Capacity, in litre
XXXX	Use (ACCU for example)
PT ___ BAR	Test pressure, in bar
AAAA / MM	Date of test pressure, year/month
CE XXXX	CE mark followed by notified body N°
XXXX	Group (preceded by G or GROUP) or nature of the allowed fluid, if any
XXXX	Diving bottle : thread information
XXXX KG/L	Maxi filling rate, if any
CH XX KG	Filling mass, if any
XXXX KG	Mass of the vessel (with accessory), if any

The user shall not change the marking unless having ROTH authorization.
In case of additional marking (specific instructions, re-testing during inspections...), it shall be done in the reinforced hemispherical area, and it shall not be confused with the initial marking.
No writing or marking insculpation is allowed on the cylindrical area of the vessel.
The marking operation shall not cause temperature rise beyond the temperature of use.
The marking shall not generate excessive stresses on the vessel.

5. Responsibilities

The manufacturer ROTH will not be held responsible in the event that the instructions provided have not been followed.
It is the user responsibility to validate that the vessel application is well compatible with the vessel sold by the manufacturer ROTH.
It is the user responsibility to validate the continuity of use of the vessel according to the number of cycles reached by the vessel and/or by the result of different inspections and/or controls.

Vallourec Deutschland GmbH (A01) Werk Rath-Stopfen Rather Kreuzweg 106 40472 DÜSSELDORF GERMANY	vallourec	INSPECTION CERTIFICATE (A02) CERTIFICAT DE RECEPTION 3.1 EN 10204:2004 No. / N° : 07867RS18 (A03) Page/Page: 1 / 4 Date/Date: 07.02.2018

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(A01) **Vallourec Deutschland GmbH**	(A08.1) **Vallourec-Order-No.** / N° de Cde Vallourec/ 243297 (A08.2) **Suborder / Suborder** 84440183
(A06.1) Customer / Client ROTH MIONS S.A.S. 43, RUE DES BROSSES 69780 MIONS	(A07.1) Customer Order-No. / N° de Cde Client 17000306
(A06.2) **Orderer / Emetteur** /	(A07.2) **Orderer Order-No. / N° de Cde Emetteur** 17000306 **Date / Date** 17.10.2017

(B01, B02, B04) **Description of the product** **Description du produit**	Hot finished seamless hollows for pressure vessels Roth, SPEC 014, Rev. v06, November 20-2012 Vallourec comments : Roth spec 014 rev 06 dated 20-11-2012-V, Rev. 8, November 29-2016 Vallourec comments : Appendix to Vallourec technical comments on specification##Packing and loading procedure, Rev. 5 34CrMo4 Ends plain, square to tube axis Without outside rust protection Without inside rust protection Ebauches sans soudure finies à chaud pour bouteilles et réservoirs Roth, SPEC 014, Rev. v06, November 20-2012 Commentaires Vallourec : Roth spec 014 rev 06 dated 20-11-2012-V, Rev. 8, November 29-2016 Commentaires Vallourec : Appendix to Vallourec technical comments on specification##Packing and loading procedure, Rev. 5 34CrMo4 Extrémités lisses coupées d'équerre Sans protection extérieure Sans protection intérieure

The works operate a Quality Management System according to European Pressure Equipment Directive (PED) 2014/68/EU Annex I Par. 4.3 (Certificate 07-202-1410-WZ-1135/17 issued by TÜV NORD valid until July 31-2020)

Les usines appliquent un Système de Management de la Qualité conforme à la Directive Européenne Equipement Sous-Pression (PED) 2014/68/EU Annexe I Chap 4.3 (Certificat 07-202-1410-WZ-1135/17 délivré par TÜV NORD valable juqu'au July 31-2020)

(B03)

AS ROLLED

BRUT DE LAMINAGE

Vallourec Deutschland GmbH (A01) Werk Rath-Stopfen Rather Kreuzweg 106 40472 DÜSSELDORF GERMANY	vallourec	INSPECTION CERTIFICATE (A02) CERTIFICAT DE RECEPTION 3.1 EN 10204:2004 No. / N° : 07867RS18 (A03) Page/Page: 2 / 4 Date/Date: 07.02.2018

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(A13) Vallourec Item **Poste**	(A09) **Cust. Item Poste**	(B14) **Item text Texte du poste**	(B09) **Dimensions Dimensions**	(B10) **Single length Long. indiv.**
1		ARTICLE NUMBER TUBE77 ARTICLE NO. TUBE77	OD 219.1 X Min. WT 8.35 mm OD Tol ± 1 % WT Tol : - 0 + 28 % Deviation from straightness max. 3 mm/m, total deviation max. 0.2 % of the tube length DE 219.1 X EP Mini 8.35 mm Tol sur DE ± 1 % Tol sur Ep : - 0 + 28 % Flèche locale maxi 3 mm/m, flèche totale maxi 0.2 % de la longueur du tube	Random length from 9000 to 12000 mm Short Lengths : max. 10 %, not shorter than 6000 mm Longueur courante de 9000 à 12000 mm tubes courts : max. 10 % de longueur supérieure à 6000 mm

(A13) Vallourec Item **Poste**	(A09) **Cust. Item Poste**	(B08) Quantity Nombre	(B11) Total length Long. totale m	(B13) Weight Poids kg
1		42	463,61	22.924

APPROUVÉ Sce CONTROLE
Date : 08/02/2018
Visa : N. Bally

(C71)

HEAT CHEMICAL ANALYSIS / ANALYSE CHIMIQUE COULEE

(B07.1) Heat Coulée	(B15) Process Procédé	Steel plant -	C %	Si %	Mn %	P %	S %	Al %	Cu %	Cr %	Ni %
min	-	-	0.340	0.200	0.80	-	-	0.020	0.100	1.050	0.100
max	-	-	0.370	0.350	0.90	0.025	0.0250	0.040	0.250	1.150	0.250
340414	Oxygen (BOF)	HK	0.340	0.240	0.85	0.012	0.0010	0.036	0.120	1.090	0.110

JC

(B07.1) Heat Coulée	Mo %	V %	Sn %	Ti %	N %	Pb %						
min	0.200	0.020	-	0.010	-	-						
max	0.250	0.040	0.0250	0.030	0.0130	0.012						
340414	0.220	0.030	0.0020	0.017	0.0057	<0.001						

Steel plant	HK HKM, Duisburg

Heats fully killed
Acier Calmé

Vallourec Deutschland GmbH (A01) Werk Rath-Stopfen Rather Kreuzweg 106 40472 DÜSSELDORF GERMANY	vallourec	INSPECTION CERTIFICATE (A02) CERTIFICAT DE RECEPTION 3.1 EN 10204:2004 No. / N° : 07867RS18 (A03) Page/Page: 3 / 4 Date/Date: 07.02.2018

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HEAT TREATMENT GUARANTEE / GARANTIE TRAITEMENT THERMIQUE

The society Vallourec warranted that the products covered by this certificate are able to fulfill the requirements of the paragraph 14 class C, after a laboratory heat treatment on samples
La société Vallourec garantit que les produits objet du présent certificat sont aptes à satisfaire les exigences du paragraphe 14 classe C, après un traitement thermique en laboratoire sur éprouvettes

IMPACT TEST / GARANTIE IMPACT

The tubes fulfil the impact requirements specified in the standard :
27J in transverse direction (40J longitudinal if transverse is not feasible) at the temperature of 20°C
Les tubes répondent aux exigences demandées par la norme:
27 J en travers (40J en long si travers pas possible) à la température de 20°C

(D55)

OTHER TESTS ON PIPE / AUTRES ESSAIS SUR TUBE

Test Nature d'essai	Conditions Conditions	Test rate Ampleur du contrôle	Result Résultat
HEAT TREATMENT TRAITEMENT THERMIQUE	HOT ROLLED LAMINEE A CHAUD		
APPEARANCE AND DIMENSIONS (D01) ASPECT ET DIMENSIONS (D01)		EACH PIPE/ TUBE TOUTE TUBE	SATISFACTORY SATISFAISANT

FLUX LEAKAGE TEST FOR LONGITUDINAL AND TRANSVERSE DEFECTS
ACC. TO EN ISO 10893-3, TESTCLASS: F3 INSIDE 10%, F2
OUTSIDE 5%, EACH PIPE/TUBE SATISFACTORY
US-TESTING WALL THICKNESS ACC TO ISO 10893-12 FULL LENGTH
EACH PIPE/ TUBE SATISFACTORY
ULTRASONIC TESTING FOR LAMINATIONS ACC. TO
ISO 10893-8 ACCEPTANCE CLAUSE U2,
FULL LENGTH, EACH TUBE/PIPE: SATISFACTORY
ESSAI DE FLUX DE DISPERSION POUR DEFAUTS
LONGITUDINAUX ET TRANSVERSAUX SELON EN ISO 10893-3,
TESTCLASS: F3 INTERIEUR 10%, F2 EXTERIEUR 5%, TOUTE TUBE
SATISFAISANT
CONTROLE ULTRASONORE ISO 10893-12 DE L´EPAISSEUR DE PAPROI
TOUTE TUBE SATISFAISANT
DéTECTION DE LAMINATION US TO ISO 10893-8
ZULAESSIGKEITSKLASSE U2
LONGUEUR ENTIER: SATISFICANTE

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(A04, B06)

MARKING, IDENTIFICATION / MARQUAGE, IDENTIFICATION

VALLOUREC	CONTINUOUSLY PAINT STENCILED VALLOUREC LOGO VALLOUREC VAD41 TERMS OF DELIVERY SPEC014V06 219.1 8.35 MM MWT 34CRMO4 HEAT-NO. PIPE NO. (TALLY-NR.) WA 243297 VLR ITEM-NO 1 MILL REFERENCE ORDER NO. 84440183 FRONT FACE BOTH SIDES (ONE COLOUR PER HEAT)
VALLOUREC	MARQUAGE EN CONTINU (AU POCHOIR) VALLOUREC LOGO VALLOUREC VAD41 NORME D'EXECUTION/SPEC. SPEC014V06 219.1 8.35 MM MWT 34CRMO4 NO DE COULEE NO DU TUBE WA 243297 NO DE POSTE 1 NO DE COMMANDE USINE 84440183 PEINTURE SUR LA TRANCHE AUX 2 EXTREMITES 1 COULEUR PAR COULEE

(Z01)

The supplied products are in compliance with the requirements of the order

Les produits livrés sont conformes aux stipulations de la commande

(A05, Z02, Z03)

Date / Date	07.02.2018
Validated by Validé par	Inspection Representative Agent Réceptionnaire
	DOGAN
☎	+49(0)2119603852
🖷	+49(0)2119602216
@	CERTIFICATES-RS-PLUG@VALLOUREC.COM
Stamp / Cachet	

Indication in parentheses correspond to attributes according to EN 10168

Les indications entre parenthèses correspondent aux repères selon EN 10168

ROTH MIONS

COMPTE-RENDU D'ESSAIS MÉCANIQUES REALISES PAR ROTH MIONS

Mechanical test report done by Roth Mions

N° Lot : *Batch N°:* **VA137**

25 avril 2018

Produit : *Product* **50LG** n° OF : **A8891** Quantité : *Quantity :* **111** Usine TTH : *Heat Treatment place :* **SOMECAB/TTDV**

Tube : **219,1 x 8,35 - SPEC014** Fourn : *Supplier :* **VALLOUREC** Acier : *Material :* **34CrMo4** Rep. coulée : *Heat code N° :* **JC**

ESSAI DE TRACTION A TEMPERATURE AMBIANTE *Tensile Test at ambiant temperature*

SA370 Section II Part A Code ASME - NF EN ISO 6892-1 : 2016 B | **Prélèvement en long** *Longitudinal sampling* | **Eprouvette proportionnelle cylindrique** *Cylindrical proportionnal sampling*

n°	dimensions Ø mm	section *cross section* So mm2	Limite élastique *Yield strength* daN	Re MPa	Rupture *Tensile strength* daN	Rm MPa	Longueur de pointage *Length for elongation measure* L0 mm	L1 mm	L0 ASME mm	L1 ASME mm	Allong. *Elongation* A%	A% ASME	Dureté *Hardness values* Brinell HB from	to	T° revenu *Tempering T°* °C
R 136	8,76	60,27	5760	956	6300	1045	43,8	50,8			16,0		291	313	595

ESSAI DE RESILIENCE *Charpy Impact Test*

SA370 Section II Part A Code ASME - ISO 148-1:2009 - ISO148-2:2008 | **Prélèvement en long** *Longitudinal sampling* | **Mouton pendule $E_{nominale}$ 30kg.m** *Charpy machine Enominal 30kg.m* | **T° test : - 50 °C**

n°	dimensions mm x mm	section mm²	lecture *measure* kg.m	Kv_8 J/cm² indiv.	moy.	K_{v8} mini J/cm²	Exp. Lat. mesure	Exp. Lat. mm
R136	7,53 x 8	60,240	4,3	70	76	33,75		
	7,55 x 8	60,400	5,1	83				
	7,53 x 8	60,240	4,6	75				

Pliage Bande : *Bending test :* N

Pliage Anneau : *Flatening test :* O

CRITERES IMPOSES *Criteria of acceptation* **A% PED**

TTH N° : 700 **A% mini :** 14

Re mini : 870 **Exp. Lat. ≥ 0,5mm (Eval. Div.2)**

Rm : 985 - **Kv_8 mini :** 33,75 (2014/68/UE)

Observations *Remarks* **:**

Résultats Conforme *Conformity :* oui *yes*

Initiales + Visa Contrôleur *Operator signature* :

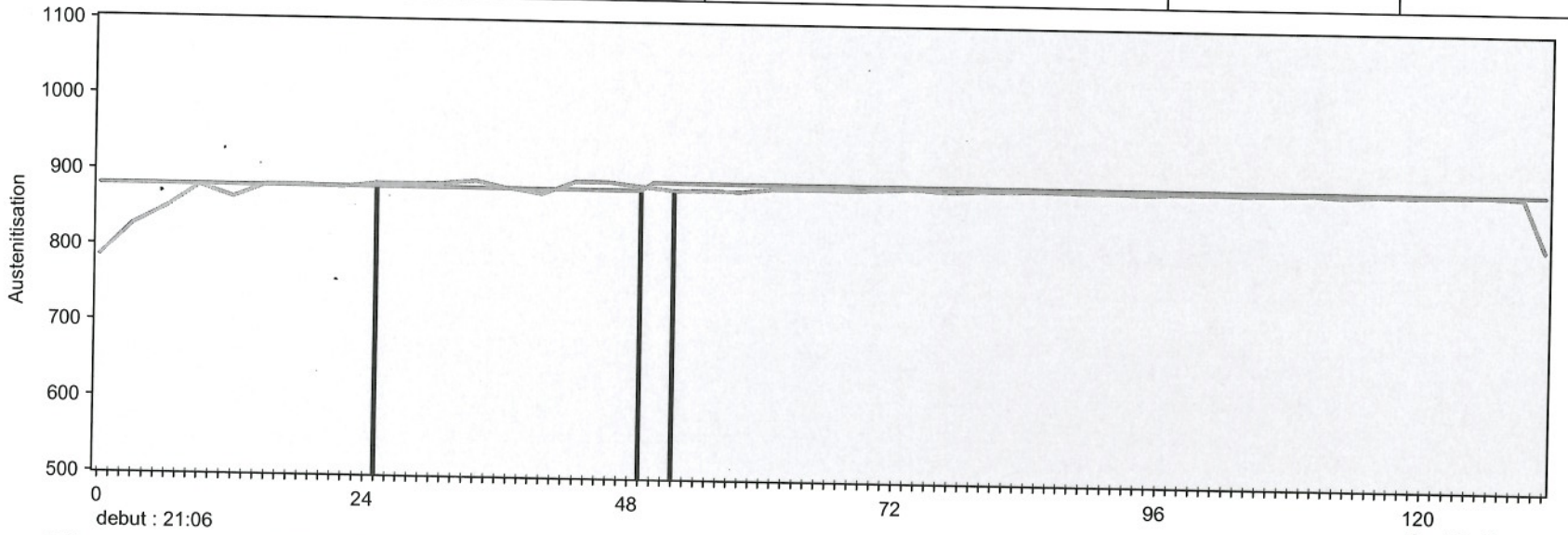
Carte de Temperatures 1804042-2

TTDV - Traitement Thermique Du Velay

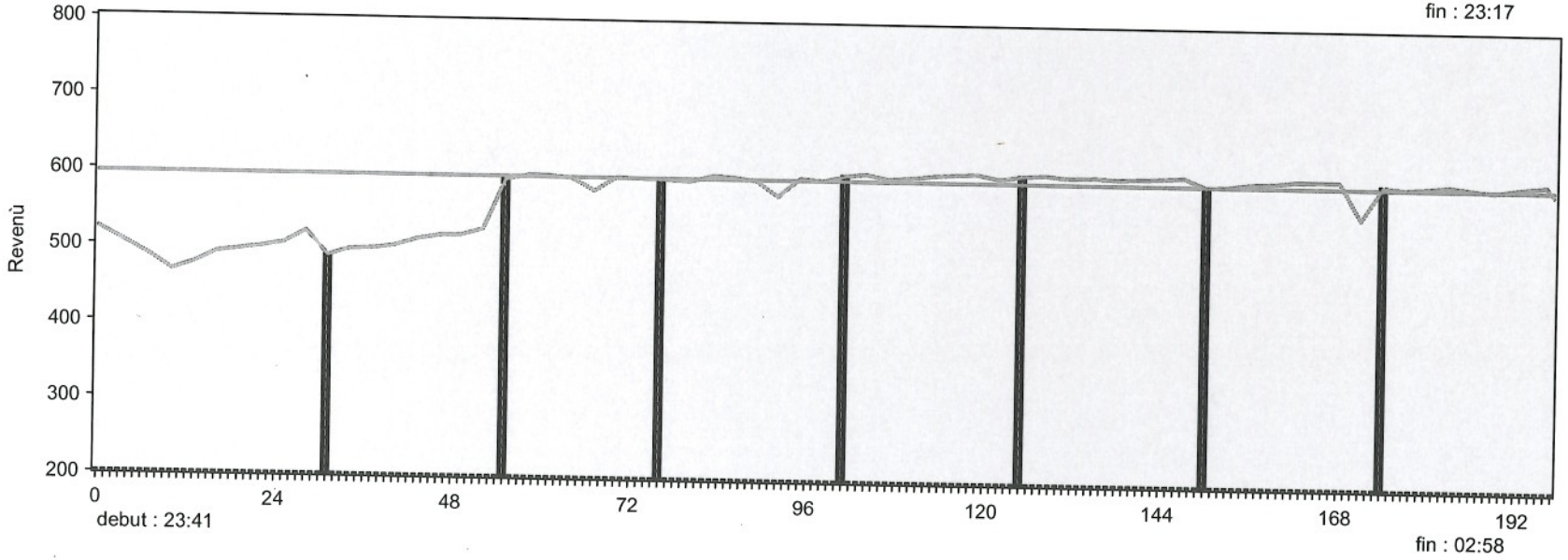
Date	N. OF	Code Client	Ref piece	Nuance Acier	N. Coulee	Nbr piece plateau	Temps Immersion
18-04-2018	1804042	RT01	A50LG219.1TTH700/10	34CRMO4	JC/A8891		785 s

Temperature Austenitisation	Transfert	Temperature Bac de Trempe	Bac	Temperature Bac de Trempe reelle
880/1 880/2 880/3 890/4 °C	19 s	40 °C	G	34 °C

Temperature Revenu	Gamme	Temperature Bac apres Revenu	Tr. Revenu	Temperature Bac apres Revenu reelle
595/1 595/2 595/3 595/4 °C	TRP2 875	30 °C	0	12 °C



	°C	min
Zone 1	785	25
Zone 2	884	0
Zone 3	0	24
Zone 4	885	3
Zone 5	880	79
Totale		131



	°C	min
Zone 1	522	31
Zone 2	488	24
Zone 3	591	21
Zone 4	594	25
Zone 5	602	24
Zone 6	605	25
Zone 7	595	24
Zone 8	599	23
Totale		197

SOMECAB SAS
Le Suc de Chabanou
43590 BEAUZAC
Capital 896 000 € - RCS 85 B 80
APE 2562B - SIREN 333 428 829
Tél : 04 71 61 49 93
Fax : 04 71 61 51 31
mail : somecab@somecab.fr

20/04/18
VA137

Vallourec Deutschland GmbH (A01) Werk Rath-Stopfen Rather Kreuzweg 106 40472 DÜSSELDORF GERMANY	vallourec	INSPECTION CERTIFICATE (A02) CERTIFICAT DE RECEPTION 3.1 EN 10204:2004 No. / N° : 19372RS19 (A03) Page/Page: 1 / 5 Date/Date: 21.05.2019

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(A01) **Vallourec Deutschland GmbH**	(A08.1) **Vallourec-Order-No.** / N° de Cde Vallourec/ 253644 (A08.2) **Suborder / Suborder** 81728860
(A06.1) **Consignee / Destinataire** ROTH MIONS S.A.S. 43, RUE DES BROSSES 69780 MIONS	(A07.1) **Orderer Order-No. / No de commande de l'emetteur** 18000991 18.02.2019 **Project name / Nom du project** **Project ref. / Ref. du projet**

(B01, B02, B04) **Description of the product** **Description du produit**	Hot finished seamless hollows for pressure vessels Roth, SPEC 014, Rev. v06, November 20-2012 Vallourec comments : Roth spec 014 rev 06 dated 20-11-2012-V, Rev. 8, November 29-2016 Vallourec comments : Appendix to Vallourec technical comments on specification##Packing and loading procedure, Rev. 5 34CrMo4 Ends plain, square to tube axis Without outside rust protection Without inside rust protection Ebauches sans soudure finies à chaud pour bouteilles et réservoirs Roth, SPEC 014, Rev. v06, November 20-2012 Commentaires Vallourec : Roth spec 014 rev 06 dated 20-11-2012-V, Rev. 8, November 29-2016 Commentaires Vallourec : Appendix to Vallourec technical comments on specification##Packing and loading procedure, Rev. 5 34CrMo4 Extrémités lisses coupées d'équerre Sans protection extérieure Sans protection intérieure

The works operate a Quality Management System according to European Pressure Equipment Directive (PED) 2014/68/EU Annex I Par. 4.3 (Certificate 07-202-1410-WZ-1135/17 issued by TÜV NORD valid until July 31-2020)

Les usines appliquent un Système de Management de la Qualité conforme à la Directive Européenne Equipement Sous-Pression (PED) 2014/68/EU Annexe I Chap 4.3 (Certificat 07-202-1410-WZ-1135/17 délivré par TÜV NORD valable juqu'au July 31-2020)

(B03)
AS ROLLED
BRUT DE LAMINAGE

(A13) Vallourec Item **Poste**	(A09) **Orderer Item** **Poste**	(B14) **Item text** **Texte du poste**	(B09) **Dimensions** **Dimensions**	(B10) **Single length** **Long. indiv.**
1		ARTICLE NUMBER TUBE77 ARTICLE NO.	OD 219.1 X Min. WT 8.35 mm OD Tol ± 1 % WT Tol : - 0 + 28 %	Random length from 9000 to 12000 mm Short Lengths : max. 10 %, not shorter than 6000 mm

Vallourec Deutschland GmbH (A01) Werk Rath-Stopfen Rather Kreuzweg 106 40472 DÜSSELDORF GERMANY	vallourec	INSPECTION CERTIFICATE (A02) CERTIFICAT DE RECEPTION 3.1 EN 10204:2004 No. / N° : 19372RS19 (A03) Page/Page: 2 / 5 Date/Date: 21.05.2019

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(A13) Vallourec Item **Poste**	(A09) **Orderer Item** **Poste**	(B14) **Item text** **Texte du poste**	(B09) **Dimensions** **Dimensions**	(B10) **Single length** **Long. indiv.**
		TUBE77	Deviation from straightness max. 3 mm/m, total deviation max. 0.2 % of the tube length DE 219.1 X EP Mini 8.35 mm Tol sur DE ± 1 % Tol sur Ep : - 0 + 28 % Flèche locale maxi 3 mm/m, flèche totale maxi 0.2 % de la longueur du tube	Longueur courante de 9000 à 12000 mm tubes courts : max. 10 % de longueur supérieure à 6000 mm

(A13) Vallourec Item **Poste**	(A09) **Orderer Item** **Poste**	(B08) Quantity Nombre P	(B11) Total length Long. totale m	(B13) Weight Poids kg
1		18	197.50	9 756

APPROUVÉ Sce CONTROLE
Date : 22/05/2019
Visa : N. Bailly
Rep : JZ

(C71)

HEAT CHEMICAL ANALYSIS / ANALYSE CHIMIQUE COULEE

(B07.1) Heat Coulée	(B15) Process Procédé	Steel plant -	C %	Si %	Mn %	P %	S %	Al %	Cu %	Cr %	Ni %
min	-	-	0.340	0.200	0.80	-	-	0.020	0.100	1.050	0.100
max	-	-	0.370	0.350	0.90	0.025	0.0250	0.040	0.250	1.150	0.250
319376	Oxygen (BOF)	HK	0.360	0.250	0.83	0.014	0.0020	0.030	0.110	1.080	0.110

JZ

(B07.1) Heat Coulée	Mo %	V %	Sn %	Ti %	N %	Pb %						
min	0.200	0.020	-	0.010	-	-						
max	0.250	0.040	0.0250	0.030	0.0130	0.012						
319376	0.220	0.026	0.0020	0.014	0.0077	0.001						

Steel plant	HK HKM, Duisburg

Heats fully killed
Acier Calmé

HEAT TREATMENT GUARANTEE / GARANTIE TRAITEMENT THERMIQUE

The society Vallourec warranted that the products covered by this

Vallourec Deutschland GmbH (A01)
Werk Rath-Stopfen
Rather Kreuzweg 106
40472 DÜSSELDORF
GERMANY

vallourec

INSPECTION CERTIFICATE (A02)
CERTIFICAT DE RECEPTION
3.1 EN 10204:2004

No. / N° : 19372RS19 (A03)

Date/Date: 21.05.2019

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HEAT TREATMENT GUARANTEE / GARANTIE TRAITEMENT THERMIQUE

certificate are able to fulfill the requirements of the paragraph 14
class C, after a laboratory heat treatment on samples
La société Vallourec garantit que les produits objet du présent
certificat sont aptes à satisfaire les exigences du paragraphe 14 classe
C, après un traitement thermique en laboratoire sur éprouvettes

IMPACT TEST / GARANTIE IMPACT

The tubes fulfil the impact requirements specified in the standard :
27J in transverse direction (40J longitudinal if transverse is not
feasible) at the temperature of 20°C
Les tubes répondent aux exigences demandées par la norme:
27 J en travers (40J en long si travers pas possible) à la température
de 20°C

(D55)

OTHER TESTS ON PIPE / AUTRES ESSAIS SUR TUBE

Test Nature d'essai	Conditions Conditions	Test rate Ampleur du contrôle	Result Résultat
HEAT TREATMENT TRAITEMENT THERMIQUE	HOT ROLLED LAMINEE A CHAUD		
APPEARANCE AND DIMENSIONS (D01) ASPECT ET DIMENSIONS (D01)		EACH PIPE/ TUBE TOUTE TUBE	SATISFACTORY SATISFAISANT

ULTRASONIC TEST FOR LAMINATION, ACCORDING TO ISO 10893-8,
ACCEPTANCE LEVEL U2, EACH PIPE, FULL LENGTH: SATISFACTORY.
.
ULTRASONIC TEST FOR WALL THICKNESS, ACCORDING TO ISO
10893-12, EACH PIPE, FULL LENGTH: SATISFACTORY.
.
FLUX LEAKAGE TEST FOR LONGITUDINAL AND TRANSVERSE DEFECTS,
OUTSIDE, ACCORDING TO ISO 10893-3, ACCEPTANCE LEVEL F2,
RECTANGULAR REFERENCE NOTCH, DEPTH 5 %, MIN. 0.3 MM, MAX.
1.5 MM, EACH PIPE, FULL LENGTH: SATISFACTORY.
.
FLUX LEAKAGE TEST FOR LONGITUDINAL AND TRANSVERSE DEFECTS,
INSIDE, ACCORDING TO ISO 10893-3, ACCEPTANCE LEVEL F3,
RECTANGULAR REFERENCE NOTCH, DEPTH 10 %, MIN. 0.3 MM, MAX.
1.5 MM, EACH PIPE, FULL LENGTH: SATISFACTORY.
.
CONTROLE PAR ULTRASONS DE DEDOUBLURES, SELON ISO 10893-8,
NIVEAU D´ACCEPTATION U2, CHAQUE TUBE, SUR TOUTE LA LONGUEUR
: SATISFAISANT.
.

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(D55)

OTHER TESTS ON PIPE / AUTRES ESSAIS SUR TUBE

CONTROLE PAR ULTRASONS D´EPAISSEUR DE PAROI, SELON ISO 10893-12, CHAQUE TUBE, SUR TOUTE LA LONGUEUR : SATISFAISANT.

.

CONTROLE PAR FLUX DE FUITE DE DEFAUTS LONGITUDINAUX ET TRANSVERSAUX, EXTERIEUR, SELON ISO 10893-3, NIVEAU D´ACCEPTATION F2, ENTAILLE DE REFERENCE RECTANGULAIRE, PROFONDEUR 5 %, MIN. 0,3 MM, MAX. 1,5 MM, CHAQUE TUBE, SUR TOUTE LA LONGUEUR : SATISFAISANT.

.

CONTROLE PAR FLUX DE FUITE DE DEFAUTS LONGITUDINAUX ET TRANSVERSAUX, INTERIEUR, SELON ISO 10893-3, NIVEAU D´ACCEPTATION F3, ENTAILLE DE REFERENCE RECTANGULAIRE, PROFONDEUR 10 %, MIN. 0,3 MM, MAX. 1,5 MM, CHAQUE TUBE, SUR TOUTE LA LONGUEUR : SATISFAISANT.

(A04, B06)

MARKING, IDENTIFICATION / MARQUAGE, IDENTIFICATION

VALLOUREC	CONTINUOUSLY PAINT STENCILED VALLOUREC LOGO VALLOUREC VAD41 TERMS OF DELIVERY SPEC014V06 219.1 8.35 MM MWT 34CRMO4 HEAT-NO. PIPE NO. (TALLY-NR.) WA 253644 VLR ITEM-NO 1 MILL REFERENCE ORDER NO. 81728860 FRONT FACE BOTH SIDES (ONE COLOUR PER HEAT)
VALLOUREC	MARQUAGE EN CONTINU (AU POCHOIR) VALLOUREC LOGO VALLOUREC VAD41 NORME D´EXECUTION/SPEC. SPEC014V06 219.1 8.35 MM MWT 34CRMO4 NO DE COULEE NO DU TUBE WA 253644 NO DE POSTE 1 NO DE COMMANDE USINE 81728860 PEINTURE SUR LA TRANCHE AUX 2 EXTREMITES 1 COULEUR PAR COULEE

(Z01)

The supplied products are in compliance with the requirements of the order

Les produits livrés sont conformes aux stipulations de la commande

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(A05, Z02, Z03)

Date / Date	21.05.2019
Validated by Validé par	Inspection Representative Agent Réceptionnaire
	DOGAN
☎	+49(0)2119603852
🖷	+49(0)2119602114
@	CERTIFICATES-RS-PLUG@VALLOUREC.COM
Stamp / Cachet	

Indication in parentheses correspond to attributes according to EN 10168

Les indications entre parenthèses correspondent aux repères selon EN 10168

ROTH MIONS

COMPTE-RENDU D'ESSAIS MÉCANIQUES REALISES PAR ROTH MIONS

Mechanical test report done by Roth Mions

N° Lot : *Batch N°:* **WA262**

4 octobre 2019

Produit : *Product* **50LG 100%** n° OF : **A9354/A** Quantité : *Quantity :* **64** Usine TTH : *Heat Treatment place :* **SOMECAB/TTDV**

Tube : **219,1 x 8,35 - SPEC014** Fourn : *Supplier :* **VALLOUREC** Acier : *Material :* **34CrMo4** Rep. coulée : *Heat code N° :* **JZ**

ESSAI DE TRACTION A TEMPERATURE AMBIANTE *Tensile Test at ambiant temperature*

SA370 Section II Part A Code ASME - NF EN ISO 6892-1 : 2016 B — **Prélèvement en long** *Longitudinal sampling* — **Eprouvette proportionnelle cylindrique** *Cylindrical proportionnal sampling*

n°	dimensions Ø mm	section *cross section* So mm2	Limite élastique *Yield strength* daN	Re MPa	Rupture *Tensile strength* daN	Rm MPa	Longueur de pointage *Length for elongation measure* L0 mm	L1 mm	L0 ASME mm	L1 ASME mm	Allong. *Elongation* A%	A% ASME	Dureté *Hardness values* Brinell HB from	to	T° revenu *Tempering T°* °C
R 277	8,75	60,13	5860	975	6400	1064	43,8	51,2			16,9		294	329	595

ESSAI DE RESILIENCE *Charpy Impact Test*

SA370 Section II Part A Code ASME - ISO 148-1:2009 - ISO148-2:2008 — **Prélèvement en long** *Longitudinal sampling* — **Mouton pendule $E_{nominale}$ 30kg.m** *Charpy machine Enominal 30kg.m* — **T° test : - 54 °C**

n°	dimensions mm x mm	section mm²	lecture *measure* kg.m	Kv_8 J/cm² indiv.	moy.	K_{v8} mini J/cm²	Exp. Lat. mesure	Exp. Lat. mm
R277	7,53 x 8	60,240	4,2	68	70	33,75		
	7,54 x 8	60,320	4,2	68				
	7,54 x 8	60,320	4,5	73				

Pliage Bande : *Bending test :* N — Pliage Anneau : *Flatening test :* O

CRITERES IMPOSES ***Criteria of acceptation*** **A% PED**

TTH N° : 700 — **A% mini : 14**

Re mini : 870 (MPa) — **Exp. Lat. ≥ 0,5mm (Eval. Div.2)**

Rm : 985 - — **Kv_8 mini : 33,75J/cm²** (2014/68/UE)

Observations ***Remarks :***

Résultats Conforme *Conformity :* oui *yes*

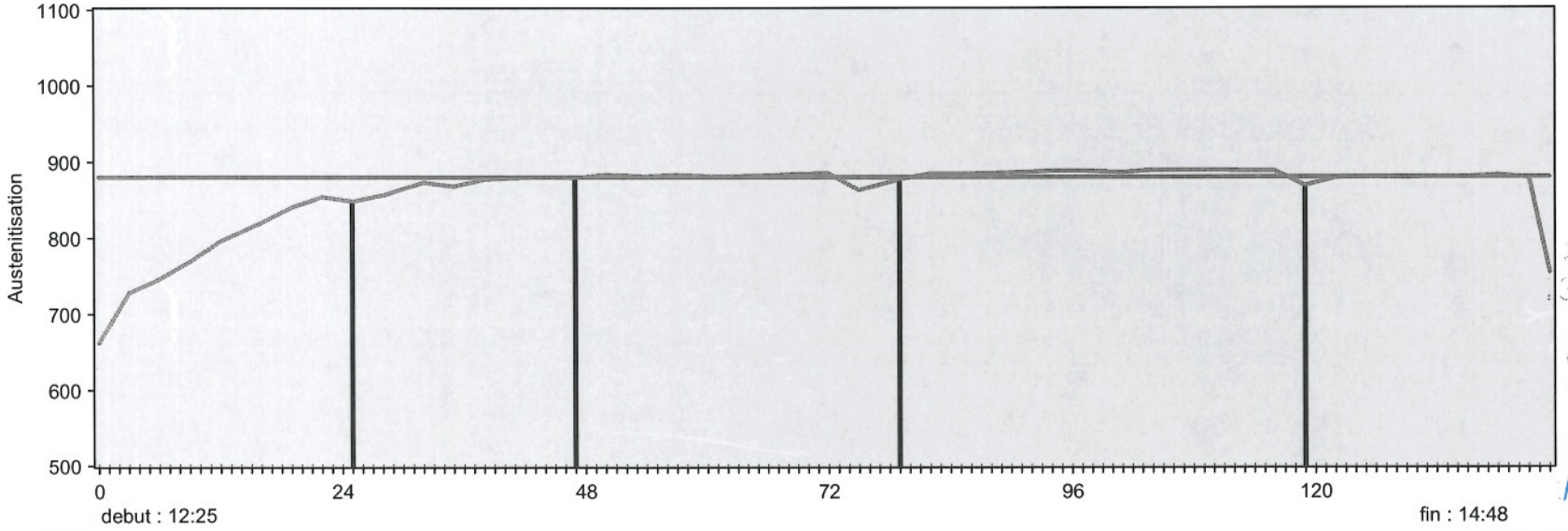
Initiales + Visa Contrôleur *Operator signature :*

Carte de Temperatures 1909020-1

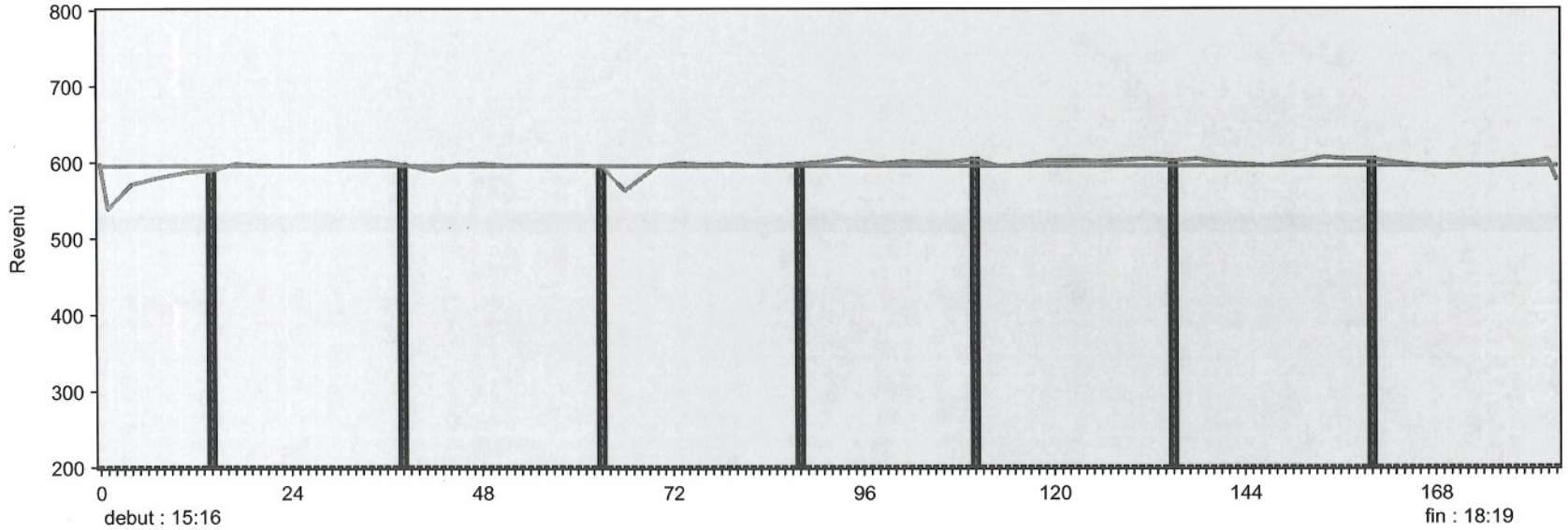
TTDV - Traitement Thermique Du Velay

Date	N. OF	Code Client	Ref piece	Nuance Acier	N. Coulee	Nbr piece plateau	Temps Immersion
26-09-2019	1909020	RT01	A50LG219.1TTH700/100	34CRMO4	JZ/A9354/A		901 s

Temperature Austenitisation 880/1 880/2 880/3 880/4 °C	Transfert 30 s	Temperature Bac de Trempe 40 °C	Bac E	Temperature Bac de Trempe reelle 40 °C
Temperature Revenu 595/1 595/2 595/3 595/4 °C	Gamme TRP2 1	Temperature Bac apres Revenu 30 °C	Tr. Revenu 0	Temperature Bac apres Revenu reelle 22 °C



	°C	min
Zone 1	662	25
Zone 2	848	22
Zone 3	879	32
Zone 4	877	40
Zone 5	869	24
Totale		143



	°C	min
Zone 1	597	14
Zone 2	589	24
Zone 3	597	25
Zone 4	595	25
Zone 5	598	22
Zone 6	604	25
Zone 7	602	25
Zone 8	604	23
Totale		183

APPROUVÉ Sce CONTRÔLE
ROTH Mions
N° LOT : WA262
BATCH N° :