ROTH Mions
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, 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 Veritas Services SAS, 4 place des Saisons, 92400 Courbevoie, France, organisme notifié n° 0062.

The undersigned ROTH Mions 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 Veritas Services SAS, 4 place des Saisons, 92400 Courbevoie, France, notified body n° 0062.

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

Capacité / *capacity* : 50 L
Référence / *reference* : TK700020
Nature du fluide / *type of fluid* Groupe 2, Art.13-1b Dir. 2014/68/UE
Tube utilisé / *used tube* : 219,1 x 8,35 mm mini
N° plan / *drawing N°* : RT551AD - RT593

Pression admissible / *Allowable pressure* PS (mini/maxi) 0/ 420 bar
Pression d'épreuve / *Test pressure :* 601 bar
Température admissible / *Allowable temperature* -40/+80°C
Matière / *Material* : 34CrMo4-SPEC014
Nbre cycles à ΔPmax / *cycles number at ΔPmax* 2369

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 001-24-FRA-rev-B
Module B "Examen CE/UE de type" / *EC/EU type examination* : CE-0062-PED-B3.1-RTM 004-23-FRA revA type : A010.800/AD/CrMo

Qté / *Qty* : 43 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°*
12334	to	12375	25T101675	TT	TPCO - Tianjin	FA044
12376	to	12376	956134	TW	Dalmine - Dalmine	FA016
	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 dimensionnel / *dimensionnal control* : Conforme / *conform*
Contrôle visuel / *visual control* : Conforme / *conform*
Contrôle propreté interne, finition / *internal cleaning, finishing control* : Conforme / *conform*

Date d'épreuve / *hydrostatic test date* 27/04/2026

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* : 27/04/2026

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

Acceptation de réclamation après date de livraison : sujet transport 5 jours ; autres sujets 3 mois / *Acceptance of claim after delivery date : transport matter 5 days ; other 3 months.*

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Déclaration UE de conformité (Directive 2014/68/EU)
Dichiarazione UE di conformità (Direttiva 2014/68/UE)

Le fabricant ROTH Mions, 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 Veritas Services SAS, 4 place des Saisons, 92400 Courbevoie, France, organisme notifié n° 0062.

Il sottoscritto produttore ROTH Mions, certifica, sotto la sua esclusiva responsabilità, che le attrezzature riportate di seguito soddisfano i requisiti della direttiva 2014/68/UE. Le attrezzature e i componenti indicate di seguito sono state prodotti secondo le indicazioni tecniche riportate qui sotto, e la valutazione di conformità alla direttiva è stata effettuata da Bureau Veritas Services SAS, 4 place des Saisons, 92400 Courbevoie, Francia, un'entità registrata con il numero 0062.

Equipement / *Attrezzature* : Récipient sous pression / *Recipiente sotto pressione*

Capacité / *Capacità* : 50 L
Référence / *Riferimento* : TK700020
Nature du fluide / *Fluido* : Groupe 2, Art.13-1b Dir. 2014/68/UE
Tube utilisé / *Tubo impegato* : 219,1 x 8,35 mm mini
N° plan / *No di programma* : RT551AD - RT593

Pression admissible / *Pressione accettabile* (mini/maxi): 0/ 420 bar
Pression d'épreuve / *Pressione di prova :* 601 bar
Temp. admissible / *Temperatura ammissibile* : -40/+80°C
Matière / *Materiale* : 34CrMo4-SPEC014
Nbre cycles à ΔPmax / *Numero di cicli a ΔPmax* 2369

Calcul basé sur norme / *Calcolo effettuato in base alla regola* : AD2000-Merkblatt B0, B1, B3, B9, B10, S1
Normes harmonisées applicables / *Regole armonizzate da applicare:* Néant / *Nessuna*
Autre directive applicable / *Altre direttive applicabili* : Néant / *Nessuna*

Module D "Assurance Qualité Production" / *"Controllo qualità della produzione"* : CE-0062-PED-D-RTM 001-24-FRA-rev-B.
Module B "Examen CE/UE de type" / *Modulo B "Esame CE/UE di tipo"* : CE-0062-PED-B3.1-RTM 004-23-FRA revA type : A010.800/AD/CrMo

Qté / *Qtà* : 43 pièces / *pezzi*

N° série / *Numero di serie*			N° coulée matière / *Numero calore materiale*	Repère coulée / *Codice calore materiale*	Fabricant tube / *Produttore del tubo*	N° lot / *N° di lotto*
12334	to	12375	25T101675	TT	TPCO - Tianjin	FA044
12376	to	12376	956134	TW	Dalmine - Dalmine	FA016
	to					
	to					

Contrôle réception matière / *Controllo ricezione materiale* : Conforme / *Conforme*
Traitement thermique réalisé / *Trattamento termico realizzato* : Conforme / *Conforme*
Résultats d'essais mécaniques / *Risultati delle prove meccaniche* : Conforme / *Conforme*
Test hydrostatique réalisé / *Test idrostatico realizzato* : 100% Conforme / *Conforme*
Contrôle marquage / *Controllo della segnalazione* : Conforme / *Conforme*
Contrôle dimensionnel / *Controllo dimensionale* : Conforme / *Conforme*
Contrôle visuel / *Controllo visivo* : Conforme / *Conforme*
Contrôle propreté interne, finition / *Pulizia interna, controllo di finitura* : Conforme / *Conforme*

Date d'épreuve / *Data della prova idrostatica* : 27/04/2026

Les équipements sont déclarés CONFORMES / *Le attrezzature sono state dichiarate CONFORMI*

Signature au nom du fabricant / *Firmato per conto del produttore* :

Nom / *Nome* : N. Bailly
Resp. Technique & Qualité / *Responsabile tecnico e controllo qualità.*
Date / *Data* : 27/04/2026

fait à Mions / *Firmato a Mions*

Dimensions principales / Dimensioni principali	
Diamètre extérieur / *Diametro esterno*	219,1 mm
Epaisseur mini partie cylindrique / *Mini-spessore della parte cilindrica*	8,35 mm
Longueur hors tout / *Lunghezza massima*	1825 mm
Ouverture 1 : diam maxi x épaisseur / *Apertura 1: diametro massimo x spessore*	26,725 x 13,5 mm
Ouverture 2 : diam maxi x épaisseur / *Apertura 2: diametro massimo x spessore*	26,725 x 13,5 mm

Acceptation de réclamation après date de livraison : sujet transport 5 jours ; autres sujets 3 mois.
Accettazione del reclamo dopo la data di consegna: questioni di trasporto 5 giorni; altre 3 mesi.

Attention ce récipient est un appareil à pression. Le non-respect des instructions peut entraîner un danger pour la sécurité des biens et des personnes.

Pour préserver la qualité de votre produit depuis la livraison et tout au long de son utilisation dans les meilleures conditions de sécurité, nous vous recommandons de lire attentivement cette notice et de suivre rigoureusement les instructions qu'elle contient.

1. Description

Utilisation :

Le récipient a pour fonction le stockage de fluides sous pression.
Le récipient tout seul ne peut pas contenir de fluides sous pression. Il doit pour cela être équipé de pièces de raccordement adaptées qui sont définies par le fabricant desdites pièces de raccordement.
Le récipient peut contenir différents fluides en fonction de son application :

- de l'huile hydraulique et de l'azote pour les accumulateurs hydrauliques (fluides de groupe 2)
- de l'hydrogène gazeux pour des applications de ce type. La fragilisation de l'acier par l'hydrogène rend ce gaz spécifique. (fluide de groupe 1)
  La Déclaration de Conformité indique « Hydrogène » et le marquage sur le corps indique « H2 ».
- de l'air comprimé, de l'eau. (fluides de groupe 2)
- pour les autres applications ou fluides particuliers, le fabricant ROTH devra être informé au préalable, par l'installateur, avant remplissage du récipient.

Le récipient ne peut pas contenir de fluides corrosifs.
Le récipient n'est pas prévu pour le transport de gaz.
Le récipient n'est pas prévu pour être soumis à la flamme.

Réglementation :

Le récipient est conforme à la directive européenne 2014/68/UE concernant les équipements sous pression (PED).
C'est un récipient homologué en catégorie IV et donc réceptionné selon la procédure d'évaluation de la conformité module B+D ; cette procédure d'évaluation de la conformité permet au récipient d'être homologué pour les catégories inférieures.
Le récipient peut contenir des fluides du groupe 1 et/ou du groupe 2 selon l'article 13 de la Directive PED et selon les restrictions ci-dessus (voir information du groupe de fluide sur la Déclaration de Conformité).

Fabrication :

Le récipient est réalisé en acier à partir de tube sans soudure, formé aux extrémités.

2. Caractéristiques techniques

Des caractéristiques techniques du produit sont reportées sur la Déclaration de Conformité du produit ou peuvent être marquées sur le corps (voir §4).

Température de stockage (récipient sans pression)	-60℃ à +100℃
Température maxi d'application d'un revêtement	350℃
Masse suivant modèle	4 kg à 200 kg environ
Etat de livraison standard (sauf demande spécifique client) - Protection interne	Sachets anti humidité ou projection d'huile dans le récipient ou rien et bouchons obturateurs aux extrémités

Etat de livraison standard (sauf demande spécifique client) - Protection externe	Peinture d'apprêt et/ou de finition et/ou protection anticorrosion ou sans protection externe.
Calcul en fatigue théorique suivant un code de calcul reconnu. Le nombre de cycles varie en fonction de l'étendue de la plage de pressions de travail (voir le nombre de cycles à deltaPmaxi sur la Déclaration de Conformité. Le nombre de cycles pour d'autres deltaP peut être fourni à la demande).	

3. Instructions

Ces instructions sont à prendre en compte durant toute la durée de vie du produit, c'est à dire pour le récipient seul, pour le récipient une fois équipé des pièces de raccordement, avant utilisation et pendant l'utilisation, ainsi qu'à la fin de vie du produit. Cela concerne la manutention, le stockage, l'installation, la fixation, la mise en service, l'utilisation, la maintenance, le démontage, l'élimination ou le recyclage.

3.1 Manutention, stockage, installation

Manutention :

Le récipient doit être manipulé avec précaution pour ne pas le soumettre à des chocs ou contraintes pouvant le déformer, le rayer, le fissurer ou créer des arrachements de métal. Une fois installé, prévoir si nécessaire des protections autour du récipient.
Pour les pièces lourdes, un aimant, une sangle ou un autre moyen approprié peuvent être utilisé pour la manutention.
Lors du transport, les pièces doivent être conditionnées dans un emballage adapté : carton, caisse, gaine plastique, pièces fixées sur palette… Le conditionnement doit être fait avec un nombre limité de niveaux en fonction de la taille des pièces.
Lors des manutentions, faire attention au poids du récipient suivant le modèle.

Stockage :

Le stockage doit être réalisé à l'abri des intempéries, de l'humidité, du ruissellement, de la condensation. Température de stockage : voir §2. Le récipient est protégé comme lors de sa livraison : voir §2.

Protection :

Le récipient doit être protégé contre toute agression d'agent susceptible de provoquer une action corrosive, que ce soit à l'intérieur ou à l'extérieur.
En fonction des conditions d'utilisation et d'implantation le récipient peut être revêtu d'une protection de type peinture ou autre revêtement. Vérifier la compatibilité du revêtement et procédé avec l'acier du récipient. Attention à la température d'application du revêtement (voir §2).

Installation :

Lors de l'installation et avant la première mise sous pression, vérifier visuellement que le récipient n'a pas subi de dommage.
Si le fabricant ROTH n'a pas prévu dans le marquage initial du récipient, l'indication du groupe du fluide et éventuellement sa nature si nécessaire, celui-ci est un fluide de groupe 2 non corrosif vis-à-vis des parois.
Le récipient doit être équipé aux extrémités, de pièces de raccordement conçues et réalisées en adaptation avec la géométrie définie sur le plan du récipient.
Il est conseillé de fixer le récipient au moyen de colliers de serrage adaptés au diamètre du récipient, et de « chaises » d'appui sur la partie hémisphérique.
Il est interdit de réaliser une réparation par soudage, perçage, rivetage ou une opération créant un enlèvement de matière, ou une élévation de température.
Vérifier la compatibilité des fluides avec l'acier et le cas échéant avec les éléments de protection internes et externes.
Prévoir un système de limitation de pression sur l'équipement ou l'installation pour que la pression ne dépasse pas la pression maximale admissible. De plus, vérifier que le fluide introduit à l'intérieur

du récipient ne développera pas, en température d'utilisation, une pression supérieure à celle définie.
Lors de l'installation respecter les exigences réglementaires en vigueur dans le pays d'installation.

Contraintes externes :
Le récipient ne doit pas être soumis à l'action de la flamme ou d'étincelles.
Lors de l'installation ou en cours d'utilisation, faire attention aux effets des champs électriques ou champs magnétiques environnants qui pourraient créer des échauffements ou étincelles. Protéger le récipient contre les effets de la foudre.
Le récipient ne doit pas être installé et utilisé en tant que pièce de structure et ne doit pas servir de support à d'autres composants ou ensembles. Il ne doit pas être soumis à des charges externes.

3.2 Utilisation

Phénomènes de températures et de pressions :
Lors de l'utilisation, une augmentation de la température crée une augmentation de la pression ; de même une variation de la pression génère une variation de la température (une augmentation de la pression génère une augmentation de la température, et une détente de la pression génère une diminution de la température). L'utilisateur doit veiller à ces comportements pour ne pas dépasser les limites d'utilisation du récipient.

Inspection et suivi périodique :
Procéder aux inspections et contrôles périodiques suivant les exigences réglementaires en vigueur dans le pays d'installation (pour la France : Arrêté du 20/11/2017).
En complément et en fonction de l'utilisation ou de l'application, vérifier régulièrement à l'extérieur et à l'intérieur (partie cylindrique, ogive, filetage le cas échéant) que le récipient ne présente pas de signe de dégradation tel que corrosion, déformation, choc, fuite, fissure…

Phénomènes d'usure et de fatigue :
En fonction des conditions d'utilisation, des phénomènes de fatigue peuvent intervenir.
Effectuer des vérifications régulières de l'état général du récipient.
Dans le cas d'utilisation avec un fluide abrasif, prévoir un filtre sur l'installation, et / ou réaliser des inspections internes périodiquement.

3.3 Maintenance, démontage, destruction, recyclage

Avant toute opération de maintenance ou démontage sur le récipient équipé des pièces de raccordement, effectuer la purge des circuits sous pression, et s'assurer de l'absence de pression résiduelle à l'intérieur du récipient.
Avant destruction ou recyclage, effectuer la purge des circuits sous pression, et s'assurer de l'absence de pression résiduelle à l'intérieur du récipient. Le cas échéant, chasser les restes de gaz inflammables ou détonants à l'aide d'un gaz neutre.

3.4 Pour les situations autres que ci-dessus, il est nécessaire de faire une demande auprès du fabricant ROTH.

4. Marquage

Le récipient comporte les informations non exhaustives de marquage suivantes, réalisées dans une zone renforcée afin de ne pas fragiliser la pièce.

ROTH	nom et/ou logo du fabricant et du site de fabrication
ZZZZ	nom ou logo du client, le cas échéant
AAAA	année de fabrication
XXXX	n° de série du récipient
PS ____ BAR	pression maximale admissible, en bar
TS __/__℃	température d'utilisation, en degré Celsius
V XX L	appellation de la capacité, en litre
XXXX	usage prévu (ACCU par exemple)
PT ___ BAR	pression d'épreuve hydraulique, en bar
AAAA/MM ou MM/AAAA	date d'épreuve hydraulique, année / mois ou mois / année
CE XXXX	marquage CE suivi du N° de l'organisme notifié
XXXX	groupe (précédé de G ou GROUP) et/ou nature du fluide, le cas échéant
XXXX	possible identification du filetage, le cas échéant
XXXXKG/L	taux maxi de chargement, le cas échéant
CH XX KG	charge en gaz, le cas échéant
XXXX KG	masse du récipient vide (et son accessoire), le cas échéant

L'utilisateur ne doit pas modifier le marquage réalisé, sauf autorisation du fabricant ROTH.
En cas de marquage complémentaire (indications particulières, ré-épreuve lors des inspections…) celui-ci doit être réalisé dans la zone renforcée hémisphérique, et il ne doit pas porter à confusion avec le marquage initial.
Aucun marquage par gravage ou insculpation n'est autorisé sur la zone cylindrique du récipient.
L'opération de marquage ne doit pas créer d'élévation de température au-delà de la température d'utilisation. Le marquage ne doit pas générer de contraintes excessives sur le récipient.

5. Responsabilités

Le fabricant ROTH ne sera pas tenu responsable dans le cas où les instructions fournies n'ont pas été suivies.
Il appartient à l'utilisateur de valider que l'application de destination du récipient est bien compatible avec le récipient vendu par le fabricant ROTH.
Il appartient à l'utilisateur de valider la continuité d'utilisation du récipient en fonction du nombre de cycles atteint par le récipient et/ou par le résultat des différent(e)s inspections et/ou contrôles.

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

To preserve the quality of your product from delivery and throughout its use in the best conditions of safety, 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).
  EU Declaration of conformity mentions “Hydrogen” and marking indicates “H2”.
- Compressed air, water (fluids of group 2).
- 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 EU Declaration of conformity).

Fabrication :

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

2. Technical features

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

Storing Temperature (vessel without pressure)	-60℃ to +100℃
Maxi Temperature for applying coating	350℃
Weight depending on model	About 4 kg to 200 kg
Standard delivery conditions (except specific request) – Internal protection	Dessicant bag or oil spread inside the vessel or nothing. Cap at each end.

Standard delivery conditions (except specific request) – External protection	Primary coating and/or finishing paint and/or anticorrosive protection or without.
Fatigue calculation is done following recognized Code. Cycles number is depending on the vessel range of pressure of use (see cycles number at deltaPmaxi mentioned on EU Declaration of Conformity. Cycles number for other deltaP can be provided on demand).	

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 a suitable way : 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 in the country of installation 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 the country of installation.
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.
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 __/__℃	Mini/Maxi allowable temperature, in degree Celsius
V XX L	Capacity, in litre
XXXX	Use (ACCU for example)
PT ___ BAR	Test pressure, in bar
AAAA/MM or MM/AAAA	Date of test pressure, year/month or month/year
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	Possible thread information, if any
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.

TIANJIN PIPE CORPORATION

https://www.tpco.com.cn/

MILL TEST CERTIFICATE
EN 10204 3.1

No.396 Jin Tang Road,Dongli
District Tianjin P.R.China
Tel:+86 022-24801336

OC9429001081-001

FM-11-8.6-40-5

PURCHASER	DRONE VOLT	GPO NO.	OTFRA25009DRO/01-001	CERT NO.	C20251204-139
CONSIGNEE	DRONE VOLT	SO NO.	TPCOEQ2510EE0050/001	LENGTH	10-11.8 m
SPECIFICATION	BS EN 10297-1:2003 SPEC014rev9 34CrMo4 PE	MAKING METHOD	HOT ROLLING SMLS	SIZE	219.10mm x 8.35mm
		PRODUCT	Seamless Steel Gas Cylinder Tube		
		DELIVERY CONDITION	R(As Rolled)		

BUSINESS INFOMATION

CUSTOMER ORDER NUMBER	DRONE VOLT Purchase Order No. 25000347, ROTH MIONS Purchase Order No. 25000380
REMARKS	EN 10204 3.1 Deviation and Clarification List rev.2 dated 09 Feb 2024 Meet specification SPEC014rev9 OD 219.1mm +/-1% Thickness 8.35mm mini Ovalization less 1% Longitudinal distorsion less 2mm per metre

VALIDATION QUALITE
ROTH MIONS
Date & Visa
08/12/2025 N. Bailly
Heat Code: TT

SUPPLY INFORMATION

NO.	HEAT NO.	LOT NO.	PIECES	WEIGHT	LENGTHS	BUNDLES	L.RANGE	MANUFACTURER INFOR.
1	25T101675	P251280101	141	74.117 t	1533.676 m	-	10.163-10.95 m	-
TOTAL			141	74.117 t	1533.676 m	-		
NOTES								

HEAT ANALYSIS (%)

NO.	HEAT NO.	*10⁻X	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	V	Nb	Pb	Sn	As	Sb	Bi
		x	2	2	2	3	3	2	2	2	2	3	3	3	4	4	4	4	4
		MAX	37	35	90	15	5	30	115	25	35	50	-	-	-	-	-	-	-
		MIN	32	15	70	-	-	-	90	15	-	5	-	-	-	-	-	-	-
TT 1	25T101675	H	33	27	76	10	2	6	106	21	4	29	10	10	9	39	37	17	9
NOTES	H: HEAT ANALYSIS																		

PRODUCT ANALYSIS (%)

NO.	HEAT NO.	*10⁻X	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al	V	Nb	Pb	Sn	As	Sb	Bi
		x	2	2	2	3	3	2	2	2	2	3	3	3	4	4	4	4	4
		MAX	37	35	90	15	5	30	115	25	35	50	-	-	-	-	-	-	-
		MIN	32	15	70	-	-	-	90	15	-	5	-	-	-	-	-	-	-
1	25T101675	Z251100059A	32	28	77	8	1	5	104	21	4	30	10	10	10	23	56	20	10
2	25T101675	Z251100062B	32	28	76	9	1	5	105	20	4	29	10	10	10	29	57	20	10
NOTES																			

TENSILE TEST

NO.	HEAT NO.	LOT NO.	SPECIMEN	*1	*2	*3 °C	*4	*5	*6	*7	Y.S. MPa
1	25T101675	P251280101	Z251100059A	B	A	150	L	C	00	2F	735
2	25T101675	P251280101	Z251100060A	B	A	80	L	C	00	2F	814
3	25T101675	P251280101	Z251100062B	B	A	150	L	C	00	2F	726
4	25T101675	P251280101	Z251100063B	B	A	80	L	C	00	2F	753
NOTES	*1Test Type(B:Sample Test); *2Location(A:Pipe); *3Test Temperature; *4Specimens Orientation(L:Longitudinal); *5Specimens Type(C:Small Size Round Specimen); *6Specimens Size(00:do=6.25mm Lo=25mm); *7Test Conditions(2F:880℃*45MIN Q(Water) +660℃*60MIN Tempered Air cooling) Y.S.: Yield Strength										

ROOM TEMPERATURE TENSILE TEST

NO.	HEAT NO.	LOT NO.	SPECIMEN	*1	*2	*3 °C	*4	*5	*6	*7	Y.S. MPa	T.S. MPa	El. %
1	25T101675	P251280101	Z251100061A	B	A	20	L	A	02	2F	815	920	24
2	25T101675	P251280101	Z251100064B	B	A	20	L	A	02	2F	810	915	24
NOTES	*1Test Type(B:Sample Test); *2Location(A:Pipe); *3Test Temperature; *4Specimens Orientation(L:Longitudinal); *5Specimens Type(A:Strip-Shaped Arc Specimen); *6Specimens Size(02:bo=38.1mm Lo=50mm); *7Test Conditions(2F:880℃*45MIN Q(Water) +660℃*60MIN Tempered Air cooling) Y.S.: Yield Strength; T.S.: Tensile Strength; El.: Elongation											

CHARPY PENDULUM IMPACT TEST-V

NO.	HEAT NO.	LOT NO.	SPECIMEN	*1	*2	*3 °C	*4	*5	*6	*7	IMPACT TOUGHNESS(J/cm2) 1	2	3	AVG	*9	REQ	SHEAR AREA(%) 1	2	3	AVG	REQ	LATERAL EXPANSION VALUE(mm) 1	2	3	AVG
1	25T101675	P251280101	Z251100059A	B	A	-40	L	G	03	2F	202	188	182	191		*12									
2	25T101675	P251280101	Z251100062B	B	A	-40	L	G	03	2F	192	195	175	187		*12									
NOTES	*1Test Type(B:Sample Test); *2Location(A:Pipe); *3Test Temperature; *4Specimens Orientation(L:Longitudinal); *5Specimens Type(G:Small Size Impact Specimen); *6Specimens Size(03:10mm×5mm); *7Test Conditions(2F:880℃*45MIN Q(Water) +660℃*60MIN Tempered Air cooling); *9Statistical Impact *12:REQ≥50J/cm2. When the average complies with the REQ, only one single value is permitted to be below the REQ, and not less than40J/cm2																								

INCLUSION

NO.	HEAT NO.	LOT NO.	SPECIMEN	*1	*2	*4	*8	A T	A H	B T	B H	C T	C H	D T	D H	DS	J24	J25
1	25T101675	P251280101	Z251100059A	A	A	L	I	0	0	0	0.5	0	0	0	0.5	0	NO	1.0	0.0
2	25T101675	P251280101	Z251100062B	A	A	L	I	0	0	0	0.5	0	0	0	0.5	0	NO	1.0	0.0
NOTES	*1Test Type(A:Product); *2Location(A:Pipe)*4Specimens Orientation(L:Longitudinal)*8Quadrant(I:1Quadrant)																	

TPCO A04 QUALITY CERTIFICATE

PAGE	1/2	DATE	2025-12-04	PRINTER	杨哲	QA MANAGER	车凤华

TIANJIN PIPE CORPORATION

https://www.tpco.com.cn/

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MILL TEST CERTIFICATE

OC9429001081-001

FM-11-8.6-40-5

		J11: Oversized Non-Metallic Inclusions; J24: Thin A & Thin B & Thin C & Thin D; J25: Heavy A & Heavy B & Heavy C & Heavy D

EMI- DEFECT

LOCATION	STANDARD	LEVEL/REFERENCE						COVERAGE	FREQUENCY	RESULT
		L-ID	L-OD	T-ID	T-OD	O-ID	O-OD			
C-PIPE	ISO 10893-3	F2:N.5%	F2:N.5%	F2:N.5%	F2:N.5%			100 %	100%	Accepted

UT- DEFECT

LOCATION	STANDARD	LEVEL/REFERENCE						COVERAGE	FREQUENCY	RESULT
		L-ID	L-OD	T-ID	T-OD	O-ID	O-OD			
F-PIPE	ISO 10893-10	U2:N.5%	U2:N.5%	U2:N.5%	U2:N.5%			100 %	100%	Accepted
H-End(250mm)	ISO 10893-10	U2:N.5%	U2:N.5%	U2:N.5%	U2:N.5%			100 %	100%	Accepted

PROCESS INSPECTION

ITEM	INSPECTION DESCRIPTION	RESULT	REMARKS
VISUAL	-	Accepted	-
DIMENSIONS	-	Accepted	-
WALL THICKNESS VERIFICATION	UT, ISO 10893-12, PIPE, 8.35mm-10.43mm, 100%, UT, ISO 10893-12, End(250mm), 8.35mm-10.43mm, 100%	Accepted	-

REMARKS	
DECLARE	We hereby state that all pipes are manufactured sampled,tested and inspected in accordance with all above standards, and has been found to meet the requirements. If this certificate contains data in imperial units, all imperial unit data is converted from metric data and is provided for reference only.

INSPECTION REPRESENTATIVE 1	INSPECTION REPRESENTATIVE 2	INSPECTION REPRESENTATIVE 3	TPCO*
			车凤华

质量证明书专用章 TPCO A04 QUALITY CERTIFICATE

ROTH2

COMPTE-RENDU D'ESSAIS MECANIQUES REALISES PAR ROTH MIONS

Mechanical test report done by Roth Mions

N° Lot : *Batch N°:* **FA044**

8 avril 2026

Produit : *Product* **50LG 100%** n° OF : **A1913** Quantité : *Quantity :* **44** Usine TTH : *Heat Treatment place :* **SOMECAB/TTDV**

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

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

Eq : MT01 (100kN)

SA370 Section II Part A Code ASME - NF EN ISO 6892-1 : 2019 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	$R_{p0,2}$ MPa	Rupture *Tensile strength* daN	R_m 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* ID piece Mini/Maxi HB		T° revenu *Tempering T°* °C
R 49	8,73	59,86	5560	929	6080	1016	43,8	51,6			17,8		3 - 43		565
													290	322	

ESSAI DE RESILIENCE *Charpy Impact Test*

Eq : MP01

SA370 Section II Part A Code ASME - ISO 148-1:2016 - ISO148-2:2016 | **Prélèvement en long** *Longitudinal sampling* | **Mouton pendule $E_{nominale}$ 30kg.m** *Charpy machine Enominal 30kg.m* **MP01** | **T° test : - 54 °C**

n°	dimensions mm x mm	section mm²	lecture *measure* kg.m	Kv_8 (J) indiv.	moy.	K_{v8} mini J	Exp. Lat. mesure	Exp. Lat. mm
R49	7,51 x 10	60,080	5,8	57	48	21		
	7,51 x 10	60,080	4,3	42				
	7,51 x 10	60,080	4,7	46				

Pliage Bande : *Bending test :* N

Pliage Anneau : *Flatening test :* O

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

TTH N° : 700 **A% min :** 14

$R_{p0,2}$ min : 870 **(MPa)**

R_m : 985 -

K_{v8} min : 27J (std sample) 21J (reduced sample) PED (2014/68/UE)

Observations ***Remarks :***

Résultats Conforme *Conformity :* oui *yes*

Initiales + Visa Contrôleur *Operator signature :*

APPROVED ROTH

Impact test made on reduced samples

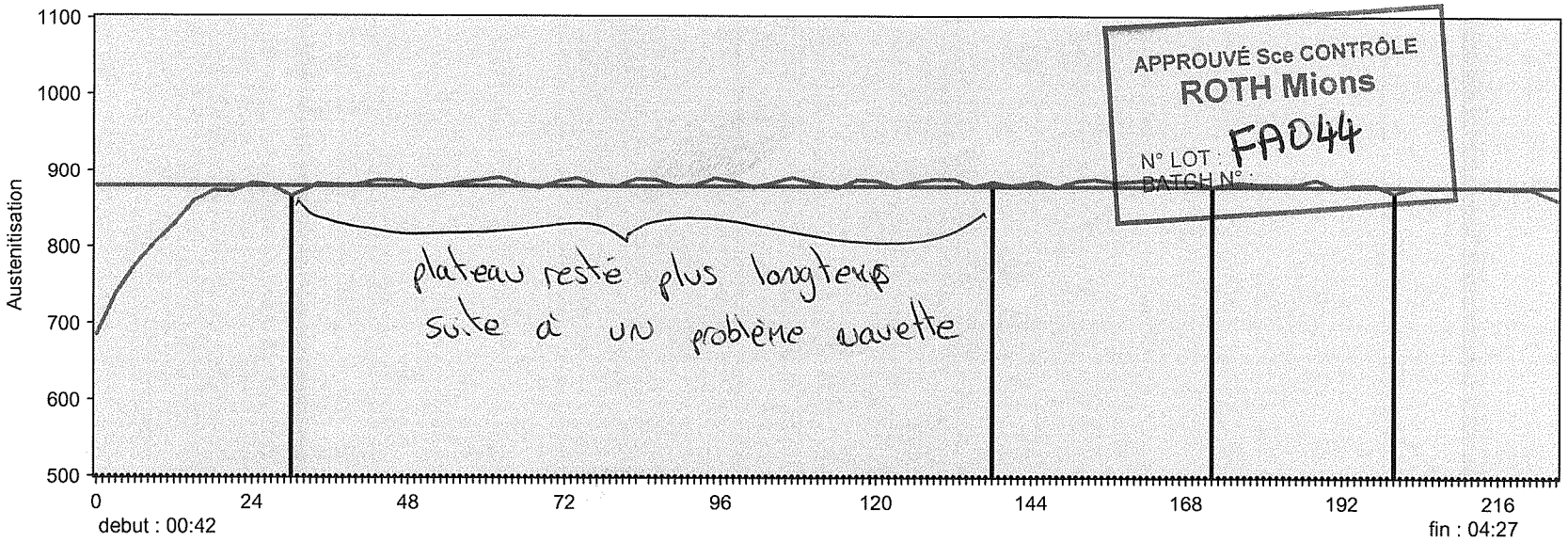
Carte de Temperatures 2603092-2

TTDV - Traitement Thermique Du Velay

Date	N. OF	Code Client	Ref piece	Nuance Acier	N. Coulee	Nbr piece plateau	Temps Immersion
26-03-2026	2603092	RT01	A50LG219.1TTH700/100	34CRMO4	TT/A1913		785 s

Temperature Austenitisation	Transfert F/I	Temperature Bac de Trempe	Bac	Temperature Bac de Trempe reelle
880/1 880/2 880/3 880/4 °C	43 s	40 °C	G	40 °C

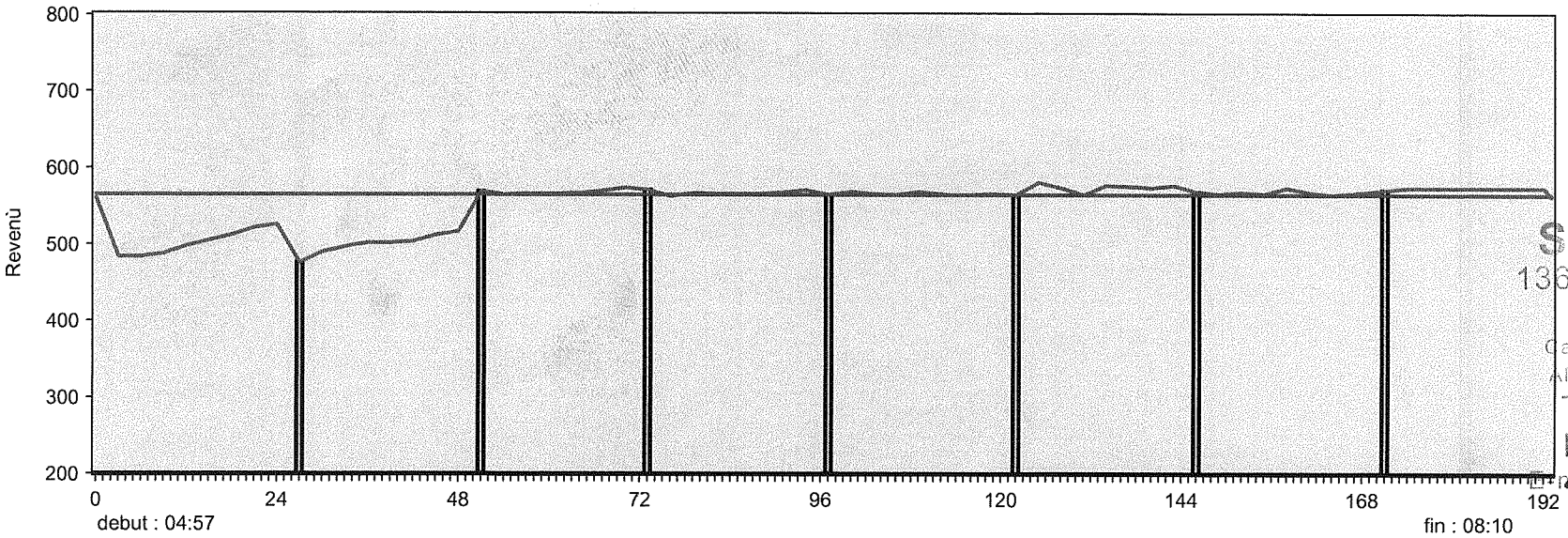
Temperature Revenu	Gamme	Temperature Bac apres Revenu	Tr. Revenu	Temperature Bac apres Revenu reelle
565/1 565/2 565/3 565/4 °C	TRP3 1	30 °C	0	29 °C



APPROUVÉ Sce CONTRÔLE
ROTH Mions
N° LOT : FA044
BATCH N° :

	°C	min
Zone 1	685	30
Zone 2	867	108
Zone 3	885	34
Zone 4	880	28
Zone 5	872	25
Totale		225

26/03/26



	°C	min
Zone 1	561	27
Zone 2	476	24
Zone 3	569	22
Zone 4	571	24
Zone 5	565	25
Zone 6	565	24
Zone 7	569	25
Zone 8	571	22
Totale		193

SOMECAB SAS
136, Rue ZA de Chabanou
43590 BEAUZAC
Capital 1 000 000 € - RCS 83 B 59
APE 2562 B - SIREN 338 428 829
Tél. 04 71 61 48 03
Fax 04 71 61 51 31
E-mail : somecab@somecab.fr

01.04.2026

Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-25-17253	1 / 7
Date / Data: **December 12, 2025**	

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: **DRONE VOLT SA**	Customer´s Order Item / Rifer. Ordine Cliente - I **25000337**	Customer´s Reference / Posizione Cliente: **1/TUBE 77D**	Manufacturer´s Works Order N° / Conferma-Posizione: **1210889/001**
Manufacture Process / Processo di fabbricazione: .	Product Type / Tipo di prodotto: **SS HOT FINISHED SEMIWORKED TUBES FOR GAS CYLINDER SEMILAVORATI DI ACCIAIO S.S. A CALDO PER BOMBOLE**		Surface / Superficie: **BARE GREZZI**
Standard or Specification / Norme o specifica: **ACCORDING TO ROTH SPEC 014 REV.09, TQ 20024562 V9.3, SECONDO ROTH SPEC 014 REV.09, TQ 20024562 V9.3,**		Steel Grade / Grado dell'Acciaio: **STEEL GR. 34CRMO4 ACCIAIO 34CRMO4**	Ends / Estremità: **SQUARE CUT LISCI ALLE ESTREMITA'**

Dimensions / Dimensioni:	Schedule / Schedula:	Length / Lunghezza:	Quantity / Quantità: **43Pcs/Pz**		Nominal Weight / Peso nominale:
ø8.626" O.D. x .329" W.T.	.	**29.528 ft ÷ 39.370 ft**	**1576'08" ft**	**52110,6 lb**	**33.06 lb/ft**
ø219.10mm O.D. x 8.35mm W.T.	.	**9000 mm ÷ 12000 mm**	**480.57 mt**	**23637 kg**	**49.20 Kg/m**

DELIVERY NOTES / AVVISI DI SPEDIZIONE

Delivery Notes / Avvisi di spedizione	
Job Number:	0031421104 / 000010
Shipping note:	0108138906 - 10/12/2025
Address:	14 rue de la Perdrix, Lot

Delivery Notes / Avvisi di spedizione	
Town:	93420 VILLEPINTE
Country:	France

TENSILE TEST / PROVA DI TRAZIONE

Heat N° / Colata N°	Sample N° / Prova N°	Specimen condition / Condizioni della provetta: Ls	Sc	Type / Tipo	Ori	Specimen dimensions / Dimensioni della provetta: Size / Dimensioni	Area / Area	Test temp / Temp. di prova	Y.S. OffSet 0.2% Min: 1.00 Max: --	U.T.S. Req. Min: -- Max: --
						mm	mm2	°C	MPa	MPa
956134	P9507	B	QT	Ss	L	10.04 x 9.63	96.70	+80	787.00	892.00
956134	P9507	B	QT	Ss	L	9.72 x 9.60	93.30	+150	749.00	874.00

B: Body / Corpo	Max: Maximum / Massimo	QT: Quenched and tempered / Bonificato	Ss: Strip specimen / Rettangolare
L: Longitudinal / Longitudinale	Min: Minimum / Minimo	Req: Required / Richiesto	U.T.S: Ultimate Tensile Strength / Rottura
Ls: Location of sample / Ubicazione provetta	Ori: Orientation / Orientamento	Sc: Specimen condition / Condizioni Provetta	Y.S: Yield Strength / Snervamento

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to the law.

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Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero: **01-25-17253**

Date / Data: **December 12, 2025**

Dalmine S.p.A. – Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) – Italy
+39 035 560 111 tel
+39 035 560 3827 fax

Customer / Cliente: **DRONE VOLT SA**	Customer´s Order Item / Rifer. Ordine Cliente - I: **25000337**	Customer´s Reference / Posizione Cliente: **1/TUBE 77D**	Manufacturer´s Works Order N° / Conferma-Posizione: **1210889/001**
Manufacture Process / Processo di fabbricazione: .	Product Type / Tipo di prodotto: **SS HOT FINISHED SEMIWORKED TUBES FOR GAS CYLINDER SEMILAVORATI DI ACCIAIO S.S. A CALDO PER BOMBOLE**		Surface / Superficie: **BARE GREZZI**
Standard or Specification / Norme o specifica: **ACCORDING TO ROTH SPEC 014 REV.09, TQ 20024562 V9.3, SECONDO ROTH SPEC 014 REV.09, TQ 20024562 V9.3,**		Steel Grade / Grado dell'Acciaio: **STEEL GR. 34CRMO4 ACCIAIO 34CRMO4**	Ends / Estremità: **SQUARE CUT LISCI ALLE ESTREMITA'**
Dimensions / Dimensioni: **ø8.626" O.D. x .329" W.T. ø219.10mm O.D. x 8.35mm W.T.**	Schedule / Schedula: . .	Length / Lunghezza: **29.528 ft ÷ 39.370 ft 9000 mm ÷ 12000 mm**	Quantity / Quantità: **43Pcs/Pz** **1576'08" ft 52110,6 lb 480.57 mt 23637 kg**	Nominal Weight / Peso nominale: **33.06 lb/ft 49.20 Kg/m**

TENSILE TEST / PROVA DI TRAZIONE

Heat N° Colata N°	Sample N° Prova N°	Specimen condition Condizioni della provetta Ls	Sc	Type Tipo	Ori	Specimen dimensions Dimensioni della provetta Size Dimensioni	Area Area	Test temp Temp. di prova	Y.S. OffSet 0.2% Min: 730.00 Max: --	U.T.S. Req. Min: 825.00 Max: 1 000.00	Y.S./U.T.S Req. Max. 0.95	Elongation / Allungamento Lo	Min.	Min.	Obt.
						mm	mm2	°C	MPa	MPa		cal.	mm	%	%
956134	P9507	B	QT	Ss	L	37.75 x 9.27	351.90	+20	812.00	917.00	0.89	2"	50.0	18.0%	22.5%

VALIDATION QUALITE ROTH MIONS
Date & Visa
15/12/2025 NBailly
Heat Code: TW

B: Body / Corpo
L: Longitudinal / Longitudinale
Lo: Initial length / Lunghezza iniziale
Ls: Location of sample / Ubicazione provetta
Max: Maximum / Massimo
Min: Minimum / Minimo
Obt: Obtained / Ottenuto
Ori: Orientation / Orientamento
QT: Quenched and tempered / Bonificato
Req. Max: Required maximum / Massimo richiesto
Req: Required / Richiesto
Sc: Specimen condition / Condizioni Provetta
Ss: Strip specimen / Rettangolare
U.T.S: Ultimate Tensile Strength / Rottura
Y.S: Yield Strength / Snervamento

CHEMICAL COMPOSITION / COMPOSIZIONE CHIMICA

Heat N° Colata N°	Sample N° Prova N°		Composition % / Composizione % X 100 C	Mn	Si	Ni	Cr	Mo	V	Cu	X 1000 P	S	Al
		H Max	37	90	35	40	115	25	--	--	15	5	50
		Min	32	70	15	--	90	15	--	--	--	--	5
		P Max	39	93	37	43	119	27	--	--	19	10	55
		Min	30	67	13	--	86	13	--	--	--	--	--
TW 956134		H	34	74	25	15	105	19	0,5	18	12	2	19
956134	P9507	P	33	72	23	16	106	19	0,4	18	10	1	18

Heat N° Colata N°	Sample N° Prova N°		Composition % / Composizione % X 100 C	Mn	Si	Ni	Cr	Mo	V	Cu	X 1000 P	S	Al
		H Max	37	90	35	40	115	25	--	--	15	5	50
		Min	32	70	15	--	90	15	--	--	--	--	5
		P Max	39	93	37	43	119	27	--	--	19	10	55
		Min	30	67	13	--	86	13	--	--	--	--	--
956134	P9508/C	P	32	73	24	16	109	19	0,5	17	10	1	17

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Tenaris

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(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-25-17253	3 / 7
Date / Data: **December 12, 2025**	

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+39 035 560 3827 fax

Customer / Cliente: **DRONE VOLT SA**	Customer´s Order Item / Rifer Ordine Cliente - I **25000337**	Customer´s Reference / Posizione Cliente: **1/TUBE 77D**	Manufacturer´s Works Order N° / Conferma-Posizione: **1210889/001**
Manufacture Process / Processo di fabbricazione: .	Product Type / Tipo di prodotto: **SS HOT FINISHED SEMIWORKED TUBES FOR GAS CYLINDER SEMILAVORATI DI ACCIAIO S.S. A CALDC PER BOMBOLE**		Surface / Superficie: **BARE GREZZI**
Standard or Specification / Norme o specifica: **ACCORDING TO ROTH SPEC 014 REV.09, TQ 20024562 V9.3, SECONDO ROTH SPEC 014 REV.09, TQ 20024562 V9.3,**		Steel Grade / Grado dell'Acciaio: **STEEL GR. 34CRMO4 ACCIAIO 34CRMO4**	Ends / Estremità: **SQUARE CUT LISCI ALLE ESTREMITA'**
Dimensions / Dimensioni: **ø8.626" O.D. x .329" W.T. ø219.10mm O.D. x 8.35mm W.T.**	Schedule / Schedula: . .	Length / Lunghezza: **29.528 ft ÷ 39.370 ft 9000 mm ÷ 12000 mm**	Quantity / Quantità: **43Pcs/Pz** **1575'08" ft 52110,6 lb 480.57 mt 23637 kg**	Nominal Weight / Peso nominale: **33.06 lb/ft 49.20 Kg/m**

CHEMICAL COMPOSITION / COMPOSIZIONE CHIMICA

H: Heat / Colata | Max: Maximum / Massimo | Min: Minimum / Minimo | P: Product / Prodotto

IMPACT TEST / PROVA DI RESILIENZA

Type/Tipo: **KV2**			Orientation/Direzione: **T**			Unit / Unità: **J/CM2**			
Position/Posizione:			Temp: **- 40**		Unit/Unità: **°C**	Ind.Min.Req: **25.0**		Req.Min.Avg: **35.0**	
Heat N° Colata N°	Sample N° Prova N°	Zone Zona	Ls	Sc	Size / Dimensioni **mm**	Results / Risultato 1	2	3	Avg.
956134	P9507	outside	B	QT	10 x 2.50	108.0	106.0	106.0	107.0

Avg: Average / Media
B: Body / Corpo
Ind. Min. Req: Individual Minimum Required / Minimo singolo richiesto
Ls: Location of sample / Ubicazione provetta
QT: Quenched and tempered / Bonificato
Req. Min. Avg: Required minimum average / Minima media richiesta
Sc: Specimen condition / Condizioni Provetta
T: Transversal / Trasversale
Temp: Temperature / Temperatura

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Tenaris

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CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
01-25-17253	4 / 7
Date / Data: **December 12, 2025**	

Dalmine S.p.A. - Dalmine plant
Piazza Caduti 6 Luglio 1944, 1
24044 Dalmine (BG) - Italy
+39 035 560 111 tel
+39 035 560 3827 fax

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Manufacture Process / Processo di fabbricazione: .	Product Type / Tipo di prodotto: **SS HOT FINISHED SEMIWORKED TUBES FOR GAS CYLINDER SEMILAVORATI DI ACCIAIO S.S. A CALDO PER BOMBOLE**		Surface / Superficie: **BARE GREZZI**
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Dimensions / Dimensioni:	Schedule / Schedula:	Length / Lunghezza:	Quantity / Quantità: **43Pcs/Pz**		Nominal Weight / Peso nominale:
ø8.626" O.D. x .329" W.T.	.	**29.528 ft ÷ 39.370 ft**	**1576'08" ft**	**52110,6 lb**	**33.06 lb/ft**
ø219.10mm O.D. x 8.35mm W.T.	.	**9000 mm ÷ 12000 mm**	**480.57 mt**	**23637 kg**	**49.20 Kg/m**

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARIE

STANDARD EDITIONS
EDIZIONI NORME

Standard:ROTH SPEC 014 REV.09 Year:2022	Norma:ROTH SPEC 014 REV.09 Anno:2022
Standard:PED 2014/68/EU ANNEX I PAR. 4.3 AND 7.5	Norma:PED 2014/68/EU ANNEX I PAR. 4.3 AND 7.5

Supplementary Information
Informazioni supplementari

Steel melted, poured and manufactured in ITALY Continuous casting and Fully killed The coupon sampling zone is defined by the suffix of the sample N°, following the legend: no suffix or /01 /02 /03 for head, /C (including /C1 /C2 /C3) for tail, /M for center, if applicable.	Acciaio fuso, colato e prodottto ITALIA Colaggio continuo ed acciaio di tipo calmato La zona di prelievo del provino è definita dal suffisso del numero di prova, secondo questa legenda: nessun suffisso o /01/02/03 per la testa, /C (inclusi /C1/C2/C3) per la coda, /M per il centro del tubo, se applicabile.

Supplementary Information
Informazioni supplementari

AFTER INSPECTION OPERATION, THE MATERIAL HAS NOT A RESIDUAL MAGNETISM GREATER THAN 020 GAUSS ALL PIPES HAVE BEEN TESTED BY ELECTROMAGNETIC TEST (TRANSVERSAL INSIDE NOTCH 10,0 %) (LONGITUDINAL INSIDE NOTCH 10,0 %) (TRANSVERSAL OUTSIDE NOTCH 5,0 %) (LONGITUDINAL OUTSIDE NOTCH 5,0 %) WITH SATISFACTORY RESULT ACCORDING TO SPEC. ISO 10893-3 F2 THE WALL THICKNESS, CONTROLLED BY U.T., OF EACH PIPE IS WITHIN THE REQUESTED TOLERANCE ISO 10893/12	DOPO LE OPERAZIONI DI CONTROLLO, IL MATERIALE NON PRESENTA UN MAGNETISMO RESIDUO SUPERIORE A 020 GAUSS I TUBI SONO STATI SOTTOPOSTI AL CONTROLLO ELETTROMAGNETICO (INTAGLI TRASVERSALI INTERNI 10,0 %) (INTAGLI LONGITUDINALI INTERNI 10,0 %) (INTAGLI TRASVERSALI ESTERNI 5,0 %) (INTAGLI LONGITUDINALI ESTERNI 5,0 %) CON ESITO SODDISFACENTE IN ACCORDO ALLA SPEC. ISO 10893-3 F2 LO SPESSORE DEI TUBI, CONTROLLATO CON ULTRASUONI, E' CONFORME ALLE TOLLERANZE RICHIESTE ISO 10893/12

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Customer / Cliente: **DRONE VOLT SA**	Customer´s Order Item / Rifer. Ordine Cliente - It: **25000337**	Customer´s Reference / Posizione Cliente: **1/TUBE 77D**	Manufacturer´s Works Order N° / Conferma-Posizione: **1210889/001**
Manufacture Process / Processo di fabbricazione: .	Product Type / Tipo di prodotto: **SS HOT FINISHED SEMIWORKED TUBES FOR GAS CYLINDER SEMILAVORATI DI ACCIAIO S.S. A CALDO PER BOMBOLE**		Surface / Superficie: **BARE GREZZI**
Standard or Specification / Norme o specifica: **ACCORDING TO ROTH SPEC 014 REV.09, TQ 20024562 V9.3, SECONDO ROTH SPEC 014 REV.09, TQ 20024562 V9.3;**		Steel Grade / Grado dell'Acciaio: **STEEL GR. 34CRMO4 ACCIAIO 34CRMO4**	Ends / Estremità: **SQUARE CUT LISCI ALLE ESTREMITA'**

Dimensions / Dimensioni:	Schedule / Schedula:	Length / Lunghezza:	Quantity / Quantità: **43Pcs/Pz**		Nominal Weight / Peso nominale:
ø8.626" O.D. x .329" W.T.	.	**29.528 ft ÷ 39.370 ft**	**1576'08" ft**	**52110,6 lb**	**33.06 lb/ft**
ø219.10mm O.D. x 8.35mm W.T.	.	**9000 mm ÷ 12000 mm**	**480.57 mt**	**23637 kg**	**49.20 Kg/m**

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARIE

Supplementary Information
Informazioni supplementari

ALL PIPES HAVE BEEN TESTED FOR LAMINATION DETECTION BY U.T.,
WITH SATISFACTORY RESULT ISO 10893/8
ALL PIPES HAVE BEEN TESTED BY ULTRASONIC INSPECTION FOR DEFECTS
TRANSVERSAL INSIDE (NOTCH 5,0 %)
LONGITUDINAL INSIDE (NOTCH 5,0 %)
TRANSVERSAL OUTSIDE (NOTCH 5,0 %)
LONGITUDINAL OUTSIDE (NOTCH 5,0 %)
WITH SATISFACTORY RESULT, ACCORDING TO SPEC. ISO 10893/10
UT COVERAGE 100 % (UNINSPECTED END AREAS CUT OFF)
SUPLEMENTARY INFORMATION FROM ROTH MIONS
ORDER N° 25000333
SEAMLESS HOT FINISHED PIPES
VISUAL AND DIMENSIONAL CONTROL HAS BEEN CARRIED OUT WITH SATISFACTORY RESULT
STEEL IS FULLY KILLED AND PRODUCED BY ELECTRIC FURNACE TO A FINE GRAIN PRACTICE
THE PRODUCT SUPPLIED IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE ORDER.
Manufactured by Tenaris Dalmine - Italy
NO WELD REPAIR, MERCURY AND RADIATION FREE
THIS CERTIFICATE SUPERSEDES AND REPLACES THE PREVIOUS SAME NUMBER ISSUED ON 2025-12-10

AS PER STANDARD, PIPES CAN BE REPAIRED; MANUFACTURER SHOULD DECIDE TO GRIND THE SURFACE OF THE PIPES WHEN, DURING FINAL VISUAL INSPECTION, SOME IMPERFECTIONS ARE DETECTED. THE RESULTED SURFACE AREAS, AFTER GRINDING, HAS DIFFERENT COLORATION COMPARED WITH USUAL ONE AS MANUFACTURED.`THE RESIDUAL WALL THICKNESS

I TUBI SONO STATI CONTROLLATI PER LA RICERCA DI DOPPI SPESSORI CON
ULTRASUONI, CON ESITO POSITIVO ISO 10893/8
TUTTI I TUBI SONO STATI CONTROLLATI CON U.S. PER LA RICERCA DI DIFETTI
TRASVERSALI INTERNI (TARATURA 5,0 %)
LONGITUDINALI INTERNI (TARATURA 5,0 %)
TRASVERSALI ESTERNI (TARATURA 5,0 %)
LONGITUDINALI ESTERNI (TARATURA 5,0 %)
CON ESITO SODDISFACENTE, IN ACCORDO ALLA SPEC. ISO 10893/10
COPERTURA U.S. 100 % (AREE ESTREMITA NON ISPEZIONATE ELIMINATE)
SUPLEMENTARY INFORMATION FROM ROTH MIONS
ORDER N° 25000333
TUBI SENZA SALDATURA FINITI A CALDO
IL CONTROLLO VISIVO E DIMENSIONALE HA DATO ESITO SODDISFACENTE
L'ACCIAIO E' DI TIPO CALMATO, A GRANO FINE, PRODOTTO AL FORNO ELETTRICO
IL MATERIALE FORNITO E' IN ACCORDO AI REQUISITI DELL'ORDINE.
Fabbricato da Tenaris Dalmine - Italia
NON RIPARATO MEDIANTE SALDATURA, ESENTE DA MERCURIO E RADIAZIONI
IL PRESENTE CERTIFICATO ANNULLA E SOSTITUISCE IL PRECEDENTE PARI NUMERO EMESSO IN DATA 2025-12-10
COME DA PROCEDURA STANDARD, I TUBI POSSONO ESSERE RIPARATI; IL COSTRUTTORE DOVREBBE PROCEDERE ALLA RETTIFICA DELLA LORO SUPERFICIE QUANDO DURANTE L'ISPEZIONE VISIVA FINALE VENGONO RILEVATE DELLE IMPERFEZIONI. DOPO LA RETTIFICA, LE AREE SUPERFICIALI INTERESSATE PRESENTANO UNA COLORAZIONE DIVERSA RISPETTO A QUELLA ORIGINALE. LO

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SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARIE

Supplementary Information / Informazioni supplementari	
AFTER GRINDING HAS BEEN CHECKED RESULTING IN TOLERANCE WITH STANDARD. Tenaris IT identification number for MTC: 5:@HM,9>	SPESSORE RESIDUO DELLE PARETI RIENTRA NELLA SOGLIA DI TOLLERANZA. Numero Identificativo Tenaris IT per MTC: 5:@HM,9>

MARKING / MARCATURA

Marking / Marcatura	
STENCILING _T 219,10 X 8,35 HEAT _COLATA ROTH SPEC 014 v09 NR. _NR 1210889/001 MADE IN ITALY LEGEND _T = TENARIS Logo _COLATA = Heat Number _NR = Pipe/Tube identifier	VERNICIATURA _T 219,10 X 8,35 HEAT _COLATA ROTH SPEC 014 v09 NR. _NR 1210889/001 MADE IN ITALY . LEGENDA _T = Logo TENARIS _COLATA = Numero di colata _NR = Identificativo numerico del tubo

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The product certified herein has been manufactured, sampled, tested and inspected in accordance with the stated specifications and has been found to meet the requirements.
This certificate is not a declaration of origin nor may it be used as a declaration of origin.

Il prodotto qui certificato è stato fabbricato, provato, testato e controllato in conformità alle specifiche indicate ed è risultato conforme ai requisiti. Questo certificato non è una dichiarazione d'origine e non può essere utilizzato come tale

We, Tenaris, hereby acknowledge the restrictions as per article 3g(1) of Council Regulation (EU) No 833/2014, as amended, and confirm that our company is compliant with this legislation.
Consequently, we: Tenaris, hereby represent and warrant that the steel products covered by this certificate, as listed in Annex XVII of Council Regulation (EU) No 833/2014 of 31 July 2014 and its subsequent amendments, do not originate from Russia.
Furthermore, we confirm that the steel products covered by this certificate, as listed in Annex XVII of Council Regulation (EU) No 833/2014 of 31 July 2014 and its subsequent amendments, as required under article 3g(1)(d) (as amended) and related guidelines do not incorporate any steel or iron products as listed in the same Annex XVII originating in Russia when having been processed in a third country.
We also acknowledge the equivalent restrictions as per Clause 17e of Norway's Russia Regulations of 15 August 2014 No. 1076 (FOR-2014-08-15-1076) and Regulations 46IA and 46IB of the UK Russia (Sanctions) (EU Exit) Regulations 2019, and confirm that our company is compliant with these laws as well.

	CUSTOMER / THIRD PARTY	TENARIS QUALITY DEPARTMENT SIGNATURE	
	INSPECTION COMPANY COMPAGNIA D'ISPEZIONE	QUALITY CERTIFICATION DEPT. UFFICIO CERTIFICAZIONE QUALITA' TUNICE Alessandro	CHIEF OF QUALITY CERTIFICATION DEPT. RESPONSABILE DELL'UFFICIO CERTIFICAZIONE QUALITA' COLOMBARI Graziano

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ROTH 2

COMPTE-RENDU D'ESSAIS MECANIQUES REALISES PAR ROTH MIONS

Mechanical test report done by Roth Mions

N° Lot : *Batch N°:* **FA016**

13 février 2026

Produit : *Product* **50LG 100%** n° OF : **A1879** Quantité : *Quantity :* **52** Usine TTH : *Heat Treatment place :* **SOMECAB/TTDV**

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

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

Eq : MT01 (100kN)

SA370 Section II Part A Code ASME - NF EN ISO 6892-1 : 2019 B | **Prélèvement en long** *Longitudinal sampling* | **Eprouvette proportionnelle cylindrique** *Cylindrical proportionnal sampling*

n°	dimensions Ø mm	section So mm2	Limite élastique *Yield strength* daN	$R_{p0,2}$ MPa	Rupture *Tensile strength* daN	R_m 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* ID piece Mini/Maxi HB		T° revenu *Tempering T°* °C
R 17	8,75	60,13	5540	921	6100	1014	43,8	51,0			16,5		8 - 1		585
													292	314	

ESSAI DE RESILIENCE *Charpy Impact Test*

Eq : MP01

SA370 Section II Part A Code ASME - ISO 148-1:2016 - ISO148-2:2016 | **Prélèvement en long** *Longitudinal sampling* | **Mouton pendule $E_{nominale}$ 30kg.m** *Charpy machine Enominal 30kg.m* **MP01** | **T° test : - 54 °C**

n°	dimensions mm x mm	section mm²	lecture *measure* kg.m	Kv_8 (J) indiv.	moy.	K_{v8} mini J	Exp. Lat. mesure	Exp. Lat. mm
R17	7,51 x 10	60,080	3,9	38	31	21		
	7,5 x 10	60,000	2,8	27				
	7,5 x 10	60,000	2,7	26				

Pliage Bande : *Bending test :* N

Pliage Anneau : *Flatening test :* O

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

TTH N° : 700 **A% min :** 14

$R_{p0,2}$ min : 870 **(MPa)**

R_m : 985 -

K_{v8} min : 27J (std sample) 21J (reduced sample) PED (2014/68/UE)

Observations ***Remarks :***

Résultats Conforme *Conformity :* oui *yes*

Initiales + Visa Contrôleur *Operator signature :*

APPROVED ROTH

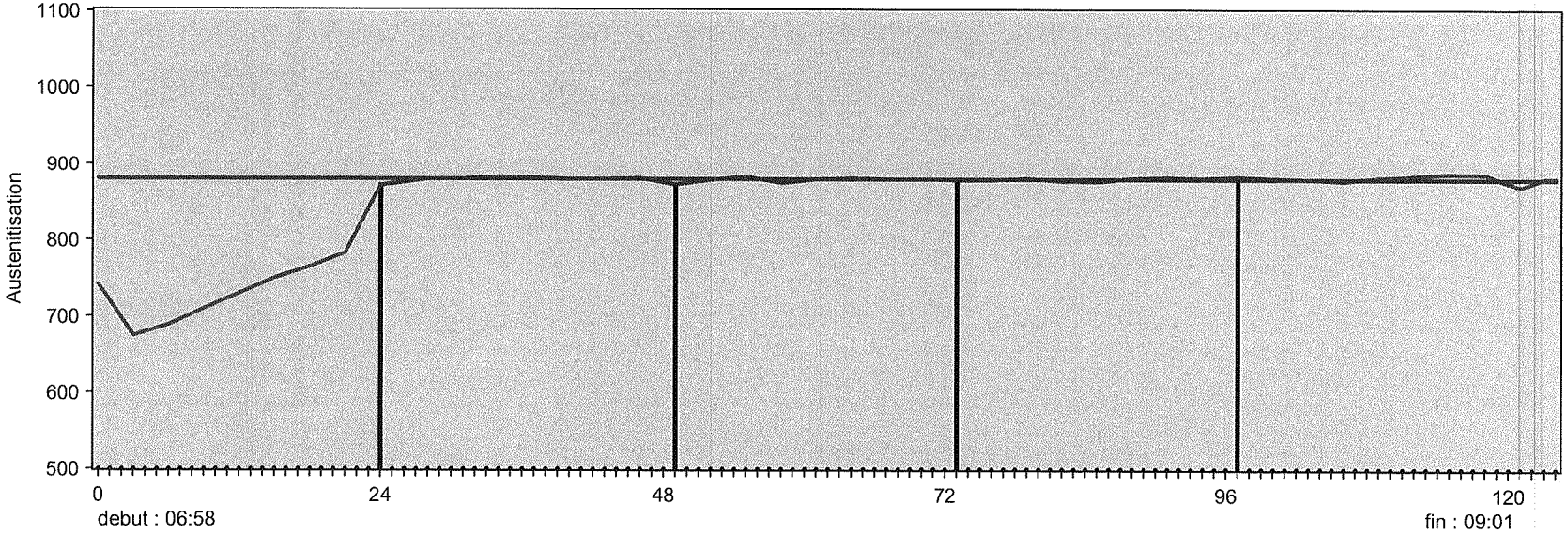
Impact test made on reduced samples

Carte de Temperatures 2602007-1

TTDV - Traitement Thermique Du Velay

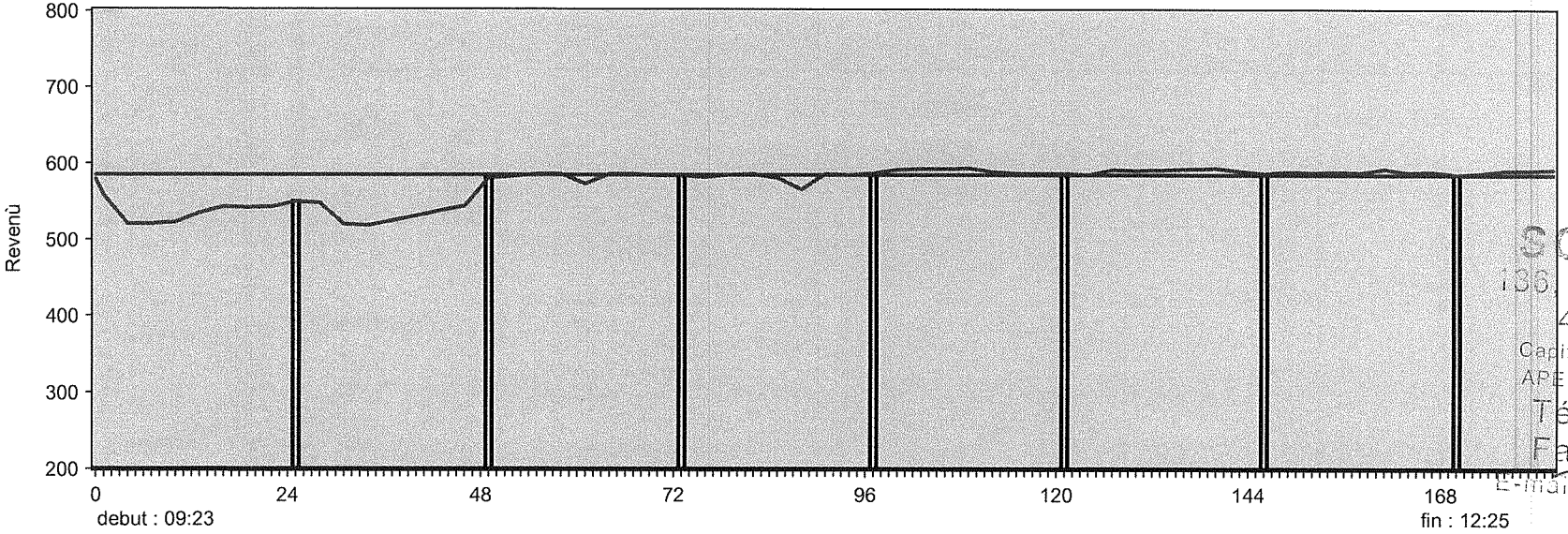
Date	N. OF	Code Client	Ref piece	Nuance Acier	N. Coulee	Nbr piece plateau	Temps Immersion
05-02-2026	2602007	RT01	A50LG219.´TTH700/100	34CRMO4	TW/A1879		784 s

Temperature Austenitisation 880/1 880/2 880/3 880/4 °C	Transfert F/I 44 s	Temperature Bac de Trempe 40 °C	Bac G	Temperature Bac de Trempe reelle 43 °C
Temperature Revenu 585/1 585/2 585/3 585/4 °C	Gamme TRP3 1	Temperature Bac apres Revenu 30 °C	Tr. Revenu 0	Temperature Bac apres Revenu reelle 34 °C



	°C	min
Zone 1	742	24
Zone 2	872	25
Zone 3	873	24
Zone 4	879	24
Zone 5	883	26
Totale		123

APPROUVÉ Sce CONTRÔLE
ROTH Mions
N° LOT : FA016
BATCH N° :



	°C	min
Zone 1	579	25
Zone 2	550	24
Zone 3	581	24
Zone 4	584	24
Zone 5	587	24
Zone 6	587	25
Zone 7	587	24
Zone 8	585	32
Totale		182

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9/02/26