



ROTH Mions  
43, rue des Brosses  
69780 Mions - France  
Tél 04 72 28 15 60  
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## 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                                | Pression admissible / Allowable pressure PS (mini/maxi) :            | 0 / 420 bar     |
| Référence / reference :            | TK700020                            | Pression d'épreuve / Test pressure :                                 | 601 bar         |
| Nature du fluide / type of fluid : | Groupe 2, Art.13-1b Dir. 2014/68/UE | Température admissible / Allowable temperature :                     | -40/+80°C       |
| Tube utilisé / used tube :         | 219,1 x 8,35 mm mini                | Matière / Material :                                                 | 34CrMo4-SPEC014 |
| N° plan / drawing N° :             | RT551AD - RT593                     | Nbre cycles à $\Delta P_{max}$ / cycles number at $\Delta P_{max}$ : | 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-A

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 : 59 pièces / parts |          |                                       |                                     |                                     |                    |
| N° série<br>Serial N°         |          | N° coulée matière<br>Material heat N° | Repère coulée<br>Material heat code | Fabricant tube<br>Tube manufacturer | N° lot<br>Batch N° |
| 11388                         | to 11446 | 944552                                | TE                                  | Dalmine - Dalmine                   | EA021              |
|                               | to       |                                       |                                     |                                     |                    |
|                               | 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 : 24/03/2025

**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 : 25/03/2025

fait à Mions / signed at Mions

| Dimensions principales / Main dimensionnal characteristics              |                  |
|-------------------------------------------------------------------------|------------------|
| Diamètre extérieur / Outside Diameter                                   | 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.



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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 prodotte 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 Pression admissible / Pressione accettabile (mini/maxi): 0/ 420 bar  
Référence / Riferimento : TK700020 Pression d'épreuve / Pressione di prova : 601 bar  
Nature du fluide / Fluido : Groupe 2, Art.13-1b Dir. 2014/68/UE Temp. admissible / Temperatura ammissibile : -40/+80°C  
Tube utilisé / Tubo impiegato : 219,1 x 8,35 mm mini Matière / Materiale : 34CrMo4-SPEC014  
N° plan / No di programma : RT551AD - RT593 Nbre cycles à  $\Delta P_{max}$  / Numero di cicli a  $\Delta P_{max}$  : 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-A.

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 : 59 pièces / pezzi |    |       |                                              |                                          |                                       |                       |
|-------------------------------|----|-------|----------------------------------------------|------------------------------------------|---------------------------------------|-----------------------|
| N° série<br>Numero di serie   |    |       | N° coulée matière<br>Numero calore materiale | Repère coulée<br>Codice calore materiale | Fabricant tube<br>Produttore del tubo | N° lot<br>N° di lotto |
| 11388                         | to | 11446 | 944552                                       | TE                                       | Dalmine - Dalmine                     | EA021                 |
|                               | to |       |                                              |                                          |                                       |                       |
|                               | 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 : 24/03/2025

**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 : 25/03/2025

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 |

Toute réclamation au-delà de 3 mois après réception des pièces ne sera pas acceptée / Non si accettano reclami effettuati oltre i 3 mesi dalla ricezione di pezzi.

**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°C à +100°C                                                                                               |
| Température maxi d'application d'un revêtement                                   | 350°C                                                                                                        |
| 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     /     °C    | température d'utilisation, en degré Celcius                           |
| 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°C to +100°C                                                            |
| Maxi Temperature for applying coating                                        | 350°C                                                                      |
| 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   /   °C        | 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 insculcation 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.



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

Dalmine S.p.A. - Dalmine plant  
Piazza Caduti 6 Luglio 1944, 1  
24044 Dalmine (BG) - Italy  
+39 035 560 111 (tel)  
+39 035 560 352 (fax)



|                                                      |  |                                                                                        |  |                                                                        |  |
|------------------------------------------------------|--|----------------------------------------------------------------------------------------|--|------------------------------------------------------------------------|--|
| Customer / Cliente: <b>ROTH MIONS SAS</b>            |  | Customer's Order Item / Rifer. Ordine Cliente - Posizione Cliente: <b>10/TUBE 77 D</b> |  | Manufacturer's Works Order N° / Conferma-Posizione: <b>12105191001</b> |  |
| Manufacture Process / Processo di fabbricazione:     |  | Product Type / Tipo di prodotto: <b>24000526</b>                                       |  | Surface / Superficie: <b>BARE</b>                                      |  |
|                                                      |  | SS HOT FINISHED SEMIWORKED TUBES FOR GAS CYLINDER (WITH SPECIAL REQUIREMENTS)          |  | Ends / Estremità: <b>SQUARE CUT</b>                                    |  |
|                                                      |  | SEMILAVORATI DI ACCIAIO S.S. A CALDO PER BOMBOLE (CON RICHIESTE SUPPLEMENTAR           |  | LISCI ALLE ESTREMITA'                                                  |  |
| Standard or Specification / Norme o specifica:       |  | Steel Grade / Grado dell'Acciaio: <b>STEEL GR. 34CRMO4</b>                             |  | Nominal Weight / Peso nominale: <b>33.06 lb/ft</b>                     |  |
| ACCORDING TO ROTH SPEC 014 REV.09, TQ 20024562 V8.1, |  | ACCIAIO 34CRMO4                                                                        |  | 49.20 Kg/m                                                             |  |
| SECONDO ROTH SPEC 014 REV.09, TQ 20024562 V8.1,      |  | Quantity / Quantità: <b>27Pcs/Pz</b>                                                   |  |                                                                        |  |
| Dimensions / Dimensioni:                             |  | Length / Lunghezza: <b>967'02" ft</b>                                                  |  |                                                                        |  |
| Ø8.626" O.D. x .329" W.T.                            |  | 29.528 ft ÷ 39.370 ft                                                                  |  |                                                                        |  |
| Ø219.10mm O.D. x 8.35mm W.T.                         |  | 9000 mm ÷ 12000 mm                                                                     |  |                                                                        |  |

DELIVERY NOTES / AVVISI DI SPEDIZIONE

|                                        |  |                      |  |
|----------------------------------------|--|----------------------|--|
| Delivery Notes                         |  | Delivery Notes       |  |
| Avvisi di spedizione                   |  | Avvisi di spedizione |  |
| Job Number: 0031395062 / 000010        |  | Town: 69780 MIONS    |  |
| Shipping note: 0107022152 - 16/12/2024 |  | Country: France      |  |
| Address: 43 RUE DES BROSES BP 68       |  |                      |  |

TENSILE TEST / PROVA DI TRAZIONE

| Heat N°<br>Colata N° | Sample N°<br>Prova N° | Specimen condition<br>Condizioni della provetta |    | Specimen dimensions<br>Dimensioni della provetta |   | Test temp<br>Temp. di prova |      | Y.S.        |      | U.T.S. |        |
|----------------------|-----------------------|-------------------------------------------------|----|--------------------------------------------------|---|-----------------------------|------|-------------|------|--------|--------|
|                      |                       |                                                 |    |                                                  |   |                             |      | Offset 0.2% | Req. | Min:   | Max:   |
| 944552               | E7209/C               | B                                               | QT | Ss                                               | L | 10.03 x 9.86                | +80  | mm2         | MPa  | MPa    | 886.00 |
|                      |                       |                                                 |    |                                                  |   |                             |      |             |      |        |        |
| 944552               | E7209/C               | B                                               | QT | Ss                                               | L | 9.98 x 9.48                 | +150 | mm2         | MPa  | MPa    | 863.00 |
|                      |                       |                                                 |    |                                                  |   |                             |      |             |      |        |        |

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

Dalmine S.p.A. - Dalmine plant  
24024 Dalmine (BS) - Italy  
+39 035 560 111 fax  
+39 035 560 352 fax



|                                                                                                                                                             |  |                                                                                                                               |  |                                                                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------|--|
| Customer / Cliente: <b>ROTH MIONS SAS</b>                                                                                                                   |  | Customer's Order Item / Rifer. Ordine Cliente - Il Cliente's Reference / Posizione Cliente: <b>10/TUBE 77 D</b>               |  | Manufacturer's Works Order N° / Conferma-Posizione: <b>1210519/001</b> |  |
| Manufacture Process / Processo di fabbricazione: <b>SS HOT FINISHED SEMIWORKED TUBES FOR GAS CYLINDER (WITH SPECIAL REQUIREMENTS) BARE</b>                  |  | Product Type / Tipo di prodotto: <b>SEMILAVORATI DI ACCIAIO S.S. A CALDO PER BOMBOLE (CON RICHIESTE SUPPLEMENTARI) GREZZI</b> |  | Surface / Superficie: <b>BARE</b>                                      |  |
| Standard or Specification / Norme o specifiche: <b>ACCORDING TO ROTH SPEC 014 REV.09, TQ 20024562 V8.1, SECONDO ROTH SPEC 014 REV.09, TQ 20024562 V8.1,</b> |  | Steel Grade / Grado dell'Acciaio: <b>STEEL GR. 34CRMO4</b>                                                                    |  | Ends / Estremità: <b>SQUARE CUT</b>                                    |  |
| Dimensions / Dimensioni: <b>Ø8.626" O.D. x .329" W.T.</b>                                                                                                   |  | Quantity / Quantità: <b>27Pcs/Pz</b>                                                                                          |  | Nominal Weight / Peso nominale: <b>33.06 lb/ft</b>                     |  |
| Schedule / Scheda: <b>Ø219.10mm O.D. x 8.35mm W.T.</b>                                                                                                      |  | Length / Lunghezza: <b>29.528 ft ÷ 39.370 ft</b>                                                                              |  | Nominal Weight / Peso nominale: <b>49.20 Kg/m</b>                      |  |
| Schedule / Scheda: <b>9000 mm ÷ 12000 mm</b>                                                                                                                |  | Quantity / Quantità: <b>27Pcs/Pz</b>                                                                                          |  | Nominal Weight / Peso nominale: <b>33.06 lb/ft</b>                     |  |
| Schedule / Scheda: <b>9000 mm ÷ 12000 mm</b>                                                                                                                |  | Quantity / Quantità: <b>27Pcs/Pz</b>                                                                                          |  | Nominal Weight / Peso nominale: <b>33.06 lb/ft</b>                     |  |

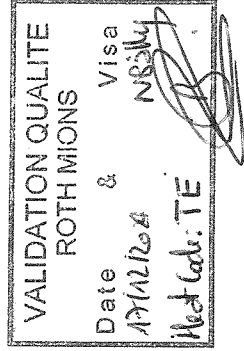
TENSILE TEST / PROVA DI TRAZIONE

| Heat N°<br>Colata N° | Sample N°<br>Prova N° | Specimen condition<br>Condizioni della provetta |    |             | Specimen dimensions<br>Dimensioni della provetta |              |        | Test<br>Temp.<br>Temp.<br>di prova | Y.S.<br><br>Offset 0.2%<br>Min: 730.00<br>Max: -- | U.T.S.<br><br>Req.<br>Min: 825.00<br>Max: 1 000.00 | Y.S./U.T.S. |                   | Elongation / Allungamento |       | Obt.  |
|----------------------|-----------------------|-------------------------------------------------|----|-------------|--------------------------------------------------|--------------|--------|------------------------------------|---------------------------------------------------|----------------------------------------------------|-------------|-------------------|---------------------------|-------|-------|
|                      |                       | Ls                                              | Sc | Ori<br>Tipo | Size<br>Area<br>Area                             | mm           | mm2    |                                    |                                                   |                                                    | °C          | Req. Max.<br>0.95 | Lo                        | %     |       |
|                      |                       |                                                 |    |             |                                                  |              |        |                                    |                                                   |                                                    |             |                   |                           |       |       |
| 944552               | E7209/C               | B                                               | QT | Ss          | L                                                | 37.93 x 9.31 | 355.10 | +20                                | 841.00                                            | 949.00                                             | 0.89        | 2"                | 50.0                      | 18.0% | 22.5% |

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

CHEMICAL COMPOSITION / COMPOSIZIONE CHIMICA

| Heat N°<br>Colata N° | Sample N°<br>Prova N° | Composition % / Composizione % |    |    |    |     |     |        |     |    |    |    |    |    |
|----------------------|-----------------------|--------------------------------|----|----|----|-----|-----|--------|-----|----|----|----|----|----|
|                      |                       | X 100                          |    |    |    |     |     | X 1000 |     |    |    |    |    |    |
| H                    | Max                   | C                              | Mn | Si | Ni | Cr  | Mo  | V      | Cu  | P  | S  | Al | 50 | 5  |
|                      |                       | 37                             | 90 | 35 | 40 | 115 | 25  | --     | --  | 15 | -- | -- |    |    |
| P                    | Max                   | 32                             | 70 | 15 | -- | 90  | 15  | --     | --  | -- | -- | -- | 5  | 5  |
|                      | Min                   | 39                             | 93 | 37 | 43 | 119 | 27  | --     | --  | 19 | 10 | 55 | -- | -- |
| H                    | Max                   | 30                             | 67 | 13 | -- | 86  | 13  | --     | --  | -- | -- | -- | -- | -- |
|                      | Min                   | 34                             | 72 | 26 | 14 | 108 | 21  | 0.3    | 13  | 10 | 1  | 18 | -- | -- |
| 944552               | E7209/C               | P                              | 34 | 72 | 26 | 13  | 109 | 21     | 0.4 | 9  | 1  | 17 | -- | -- |



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

Dalmine S.p.A. - Dalmine plant  
Piazza Caduti 6, Uboldo (VA), I  
24044 Dalmine (VA) - Italy  
t 39 033 560 111 fax  
f 39 033 560 352 fax



|                                                                                                         |  |                                                                                                                  |  |                                                                        |  |
|---------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------|--|
| Customer / Cliente: <b>ROTH MIONS SAS</b>                                                               |  | Customer's Order Item / Rifer. Ordine Cliente - Il Customer's Reference / Posizione Cliente: <b>10/TUBE 77 D</b> |  | Manufacturer's Works Order N° / Conferma-Posizione: <b>1210519/001</b> |  |
| Manufacture Process / Processo di fabbricazione:                                                        |  | Product Type / Tipo di prodotto:                                                                                 |  | Surface / Superficie:                                                  |  |
|                                                                                                         |  | SS HOT FINISHED SEMIWORKED TUBES FOR GAS CYLINDER (WITH SPECIAL REQUIREMENTS) <b>BARE</b>                        |  |                                                                        |  |
| Standard or Specification / Norme o specifica:                                                          |  | Steel Grade / Grado dell'Acciaio:                                                                                |  | Ends / Estremità:                                                      |  |
| ACCORDING TO ROTH SPEC 014 REV.09, TQ 20024562 V8.1,<br>SECONDO ROTH SPEC 014 REV.09, TQ 20024562 V8.1, |  | ACCIAIO 34CRMO4                                                                                                  |  | SQUARE CUT                                                             |  |
| Dimensions / Dimensioni:                                                                                |  | Quantity / Quantità: 27Pcs/Pz                                                                                    |  | NOMINAL WEIGHT / PESO Nominale:                                        |  |
| ø8.626" O.D. x .329" W.T.                                                                               |  | 967'02" ft                                                                                                       |  | 33.06 lb/ft                                                            |  |
| ø219.10mm O.D. x 8.35mm W.T.                                                                            |  | 294.79 mt                                                                                                        |  | 49.20 Kg/m                                                             |  |

CHEMICAL COMPOSITION / COMPOSIZIONE CHIMICA

| Composition % / Composizione % |     |    |    |    |    |     |    |     |    |    |    |  |  |  |
|--------------------------------|-----|----|----|----|----|-----|----|-----|----|----|----|--|--|--|
| X 100                          |     |    |    |    |    |     |    |     |    |    |    |  |  |  |
| X 1000                         |     |    |    |    |    |     |    |     |    |    |    |  |  |  |
|                                | C   | Mn | Si | Ni | Cr | Mo  | V  | Cu  | 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 | --  | -- | -- | -- |  |  |  |
| Heat N°                        |     |    |    |    |    |     |    |     |    |    |    |  |  |  |
| Colata N°                      |     |    |    |    |    |     |    |     |    |    |    |  |  |  |
| 944552                         | P   | 34 | 72 | 26 | 14 | 109 | 21 | 0.4 | 14 | 9  | 2  |  |  |  |
| E7210                          |     |    |    |    |    |     |    |     |    |    |    |  |  |  |

|                  |                       |                       |
|------------------|-----------------------|-----------------------|
| H: Heat / Colata | Min: Minimum / Minimo | P: Product / Prodotto |
|------------------|-----------------------|-----------------------|

IMPACT TEST / PROVA DI RESILIENZA

| Type/Type: KV2      |           | Orientation/Direzione: T |    |    | Unit / Unità: J/CM2                 |       |       |       |
|---------------------|-----------|--------------------------|----|----|-------------------------------------|-------|-------|-------|
| Position/Posizione: |           | Temp: - 40               |    |    | Ind.Min.Req: 12.0 Req.Min.Avg: 18.0 |       |       |       |
| Heat N°             | Sample N° | Zone                     | LS | Sc | Results / Risultato                 |       |       |       |
| Colata N°           | Prova N°  | Zone                     | mm |    |                                     | 1     | 2     | 3     |
| 944552              | E7209/C   | outside                  | B  | QT | 10 x 5.00                           | 124.0 | 121.0 | 151.0 |
|                     |           |                          |    |    |                                     |       |       | 132.0 |

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

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INSPECTION CERTIFICATE  
CERTIFICATO DICOLLAUDO  
(UNEN 10204 3.1 / ISO 10474 3.1)

Daimine S.p.A. - Daimine plant  
Piazza Calvi 6 Loc. 1043, I  
24044 Daimine (BG) - Italy  
+39 035 560 111 ext  
+39 035 560 352 int



|                                                                                                         |  |                                                                                    |  |                                          |  |                                                     |  |
|---------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------|--|------------------------------------------|--|-----------------------------------------------------|--|
| Customer / Cliente: ROTH MIONS SAS                                                                      |  | Customer's Order Item / Rifer. Ordine Cliente - Il                                 |  | Customer's Reference / Posizione Cliente |  | Manufacturer's Works Order N° / Conferma-Posizione: |  |
| 24000526                                                                                                |  | 10TUBE 77 D                                                                        |  | 1210519/001                              |  |                                                     |  |
| Manufacture Process / Processo di fabbricazione:                                                        |  | Product Type / Tipo di prodotto:                                                   |  | Surface / Superficie:                    |  |                                                     |  |
|                                                                                                         |  | SS HOT FINISHED SEMIWORKED TUBES FOR GAS CYLINDER (WITH SPECIAL REQUIREMENTS) BARE |  | BARE                                     |  |                                                     |  |
| Standard or Specification / Norme o specifica:                                                          |  | Steel Grade / Grado dell'Acciaio:                                                  |  | Ends / Estremità:                        |  |                                                     |  |
| ACCORDING TO ROTH SPEC 014 REV.09, TQ 20024562 V8.1,<br>SECONDO ROTH SPEC 014 REV.09, TQ 20024562 V8.1, |  | STEEL GR. 34CRMO4<br>ACCIAIO 34CRMO4                                               |  | SQUARE CUT                               |  | LISCI ALLE ESTREMITA'                               |  |
| Dimensions / Dimensioni:                                                                                |  | Quantity / Quantità: 27Pcs/Pz                                                      |  | Nominal Weight / Peso nominale:          |  |                                                     |  |
| ø8.626" O.D. x .329" W.T.                                                                               |  | 967'02" ft                                                                         |  | 32169.8 lb                               |  | 33.06 lb/ft                                         |  |
| ø219.10mm O.D. x 8.35mm W.T.                                                                            |  | 294.79 mt                                                                          |  | 14592 kg                                 |  | 49.20 Kg/m                                          |  |

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARIE

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STANDARD EDITIONS<br>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<br>Informazioni supplementari                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Steel melted and poured in ITALY<br>Continuous casting and Fully killed<br>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.                                                                                                                                                                                                                                                                                                | Acciaio fuso e colato in ITALIA<br>Colaggio continuo ed acciaio di tipo calmato<br>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.                                                                                                                                                                                                                                                                                 |
| Supplementary Information<br>Informazioni supplementari                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| AFTER INSPECTION OPERATION, THE MATERIAL HAS NOT A RESIDUAL MAGNETISM<br>GREATER THAN 020 GAUSS<br>WE HEREBY DECLARE THAT ALL PIPES HAVE BEEN SPECTROSCOPICALLY CHECKED,<br>NO DISCREPANCY HAVE BEEN FOUND<br>ALL PIPES HAVE BEEN TESTED BY ELECTROMAGNETIC TEST<br>(TRANSVERSAL INSIDE NOTCH 10,0 %)<br>(LONGITUDINAL INSIDE NOTCH 10,0 %)<br>(TRANSVERSAL OUTSIDE NOTCH 5,0 %)<br>(LONGITUDINAL OUTSIDE NOTCH 5,0 %)<br>WITH SATISFACTORY RESULT ACCORDING TO SPEC. ISO 10893-3 F2<br>THE WALL THICKNESS, CONTROLLED BY U.T., OF EACH PIPE IS WITHIN THE | DOPO LE OPERAZIONI DI CONTROLLO, IL MATERIALE NON PRESENTA UN<br>MAGNETISMO RESIDUO SUPERIORE A 020 GAUSS<br>SI DICHIARA CHE TUTTI I TUBI SONO STATI SOTTOPOSTI AL CONTROLLO<br>DELL'ACCIAIO MEDIANTE SPETTROANALIZZATORE, DALL'ESAME NON SONO EMERSE<br>MESCOLANZE DI MATERIALE<br>I TUBI SONO STATI SOTTOPOSTI AL CONTROLLO ELETTROMAGNETICO<br>(INTAGLI TRASVERSALI INTERNI 10,0 %)<br>(INTAGLI LONGITUDINALI INTERNI 10,0 %)<br>(INTAGLI TRASVERSALI ESTERNI 5,0 %)<br>(INTAGLI LONGITUDINALI ESTERNI 5,0 %)<br>CON ESITO SODDISFACENTE IN ACCORDO ALLA SPEC. ISO 10893-3 F2 |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



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

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24044 Dalmine (BG) - Italy  
+39 035 560 111 tel  
+39 035 560 352 fax



|                                                                                                         |  |                                                                                        |  |                                          |  |                                                     |  |
|---------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------|--|------------------------------------------|--|-----------------------------------------------------|--|
| Customer / Cliente: <b>ROTH MIONS SAS</b>                                                               |  | Customer's Order Item / Rifer. Ordine Cliente - Il                                     |  | Customer's Reference / Posizione Cliente |  | Manufacturer's Works Order N° / Conferma-Posizione: |  |
| Manufacture Process / Processo di fabbricazione:                                                        |  | Product Type / Tipo di prodotto:                                                       |  | 10TUBE 77 D                              |  | 1210519/001                                         |  |
| Standard or Specification / Norme o specifica:                                                          |  | SS HOT FINISHED SEMIWORKED TUBES FOR GAS CYLINDER (WITH SPECIAL REQUIREMENTS) BARE     |  | Surface / Superficie:                    |  | BARE                                                |  |
| ACCORDING TO ROTH SPEC 014 REV.09, TQ 20024562 V8.1,<br>SECONDO ROTH SPEC 014 REV.09, TQ 20024562 V8.1, |  | SEMI-LAVORATI DI ACCIAIO S.S. A CALDO PER BOMBOLE (CON RICHIESTE SUPPLEMENTARI) GREZZI |  | Ends / Estremità:                        |  | SQUARE CUT                                          |  |
| Dimensions / Dimensioni:                                                                                |  | Steel Grade / Grado dell'Acciaio:                                                      |  | LISCIALLE ESTREMITA'                     |  | LISCIALLE ESTREMITA'                                |  |
| ø8.626" O.D. x .329" W.T.                                                                               |  | ACCCIAIO 34CRMO4                                                                       |  | Quantity / Quantità: 27Pcs/Pz            |  | Nominal Weight / Peso nominale:                     |  |
| ø219.10mm O.D. x 8.35mm W.T.                                                                            |  | Length / Lunghezza:                                                                    |  | 967'02" ft                               |  | 33.06 lb/ft                                         |  |
|                                                                                                         |  | Schedule / Scheda:                                                                     |  | 294.79 mt                                |  | 49.20 Kg/m                                          |  |
|                                                                                                         |  | 9000 mm ÷ 12000 mm                                                                     |  |                                          |  |                                                     |  |

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARIE

| Supplementary Information<br>Informazioni supplementari                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REQUESTED TOLERANCE ISO 10893/12<br>ALL PIPES HAVE BEEN TESTED FOR LAMINATION DETECTION BY U.T.,<br>WITH SATISFACTORY RESULT ISO 10893/8<br>ALL PIPES HAVE BEEN TESTED BY ULTRASONIC INSPECTION FOR DEFECTS<br>TRANSVERSAL INSIDE (NOTCH 5,0 %)<br>LONGITUDINAL INSIDE (NOTCH 5,0 %)<br>TRANSVERSAL OUTSIDE (NOTCH 5,0 %)<br>LONGITUDINAL OUTSIDE (NOTCH 5,0 %)<br>WITH SATISFACTORY RESULT, ACCORDING TO SPEC. ISO 10893/10<br>UT COVERAGE 100 % (UNINSPECTED END AREAS CUT OFF)<br><br>SEAMLESS HOT FINISHED PIPES<br>VISUAL AND DIMENSIONAL CONTROL HAS BEEN CARRIED OUT WITH SATISFACTORY RESULT<br>STEEL IS FULLY KILLED AND PRODUCED BY ELECTRIC FURNACE TO A FINE GRAIN PRACTICE<br>THE PRODUCT SUPPLIED IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE ORDER.<br>MANUFACTURED BY TENARIS DALMINE<br>NO WELD REPAIR, MERCURY AND RADIATION FREE<br>AS PER STANDARD, PIPES CAN BE REPAIRED; MANUFACTURER SHOULD DECIDE TO GRIND THE<br>SURFACE OF THE PIPES WHEN, DURING FINAL VISUAL INSPECTION, SOME IMPERFECTIONS<br>ARE DETECTED. THE RESULTED SURFACE AREAS, AFTER GRINDING, HAS DIFFERENT<br>COLORATION COMPARED WITH USUAL ONE AS MANUFACTURED. THE RESIDUAL WALL THICKNESS<br>AFTER GRINDING HAS BEEN CHECKED RESULTING IN TOLERANCE WITH STANDARD.<br><br>Tenaris IT identification number for MTC: 5:14y6"R | LO SPESORE DEI TUBI, CONTROLLATO CON ULTRASUONI, E' CONFORME ALLE<br>TOLLERANZE RICHIESTE ISO 10893/12<br>I TUBI SONO STATI CONTROLLATI PER LA RICERCA DI DOPEI SPessori CON<br>ULTRASUONI, CON ESITO POSITIVO ISO 10893/8<br>TUTTI I TUBI SONO STATI CONTROLLATI CON U.S. PER LA RICERCA DI DIFETTI<br>TRASVERSALI INTERNI (TARATURA 5,0 %)<br>LONGITUDINALI INTERNI (TARATURA 5,0 %)<br>TRASVERSALI ESTERNI (TARATURA 5,0 %)<br>LONGITUDINALI ESTERNI (TARATURA 5,0 %)<br>CON ESITO SODDISFACENTE, IN ACCORDO ALLA SPEC. ISO 10893/10<br>COPERTURA U.S. 100 % (AREE ESTREMITA NON ISPEZIONATE ELIMINATE)<br>TUBI SENZA SALDATURA FINITI A CALDO<br>IL CONTROLLO VISIVO E DIMENSIONALE HA DATO ESITO SODDISFACENTE<br>L'ACCIAIO E' DI TIPO CALMATO, A GRANO FINE, PRODOTTO AL FORNO ELETTRICO<br>IL MATERIALE FORNITO E' IN ACCORDO AI REQUISITI DELL'ORDINE.<br>FABBRICATO DA TENARIS DALMINE<br>NON RIPARATO MEDIANTE SALDATURA, ESENTE DA MERCURIO E RADIAZIONI<br>COME DA PROCEDURA STANDARD, I TUBI POSSONO ESSERE RIPARATI; IL COSTRUTTORE DOVREBBE<br>PROCEDERE ALLA RETTIFICA DELLA LORO SUPERFICIE QUANDO DURANTE L'ISPEZIONE VISIVA<br>FINALE VENGONO RILEVATE DELLE IMPERFEZIONI. DOPO LA RETTIFICA, LE AREE SUPERFICIALI<br>INTERESSATE PRESENTANO UNA COLORAZIONE DIVERSA RISPETTO A QUELLA ORIGINALE. LO<br>SPESORE RESIDUO DELLE PARETI RIENTRA NELLA SOGLIA DI TOLLERANZA.<br><br>Numero identificativo Tenaris IT per MTC: 5:14y6"R |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



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

Number / Numero:  
**01-24-16904**

Page / Pagina:  
**6 / 7**

Date / Data: **December 16, 2024**

|                                                                                                                                                                |  |                                                                                                                               |  |                                                                           |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------|--|
| Customer / Cliente: <b>ROTH MIONS SAS</b>                                                                                                                      |  | Customer's Order Item / Rifer. Ordine Cliente - 10TUBE 77 D                                                                   |  | Manufacturer's Works Order N° / Conferma-Posizione:<br><b>1210519/001</b> |  |
| Manufacture Process / Processo di fabbricazione:                                                                                                               |  | Product Type / Tipo di prodotto:<br><b>SS HOT FINISHED SEMIWORKED TUBES FOR GAS CYLINDER (WITH SPECIAL REQUIREMENTS) BARE</b> |  | Surface / Superficie:<br><b>BARE</b>                                      |  |
| Standard or Specification / Norme o specifica:<br><b>ACCORDO TO ROTH SPEC 014 REV.09, TQ 20024562 V8.1,<br/>SECOND ROTH SPEC 014 REV.09, TQ 20024562 V8.1,</b> |  | Steel Grade / Grado dell'Acciaio:<br><b>STEEL GR. 34CRMO4<br/>ACCIAIO 34CRMO4</b>                                             |  | Ends / Estremità:<br><b>SQUARE CUT<br/>LISCI ALLE ESTREMITA'</b>          |  |
| Dimensions / Dimensioni:<br><b>ø8.626" O.D. x .329" W.T.</b>                                                                                                   |  | Length / Lunghezza:<br><b>29.528 ft ÷ 39.370 ft</b>                                                                           |  | Nominal Weight / Peso nominale:<br><b>33.06 lb/ft</b>                     |  |
| <b>ø219.10mm O.D. x 8.35mm W.T.</b>                                                                                                                            |  | Schedule / Scheda:<br><b>9000 mm ÷ 12000 mm</b>                                                                               |  | <b>14592 kg</b><br><b>49.20 Kg/m</b>                                      |  |

MARKING / MARCATURA

|                                                                                        |                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Marking<br>Marcatura                                                                   |                                                                          |
| STENCILING<br>_ T 219,10 X 8,35 HEAT _COLATA ROTH SPEC 014 v09 NR. _NR                 | VERNICIATURA<br>_ T 219,10 X 8,35 HEAT _COLATA ROTH SPEC 014 v09 NR. _NR |
| LEGENDA<br>_ T = TENARIS Logo<br>_ COLATA = Heat Number<br>_ NR = Pipe/Tube identifier |                                                                          |

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

Number / Numero:  
**01-24-16904**

Page / Pagina:  
**7 / 7**

Date / Data: **December 16, 2024**

|                                                                                                                |  |                                                                                           |  |                                           |  |                                                     |  |
|----------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------|--|-------------------------------------------|--|-----------------------------------------------------|--|
| Customer / Cliente: <b>ROTH MIONS SAS</b>                                                                      |  | Customer's Order Item / Rifer. Ordine Cliente - If:                                       |  | Customer's Reference / Posizione Cliente: |  | Manufacturer's Works Order N° / Conferma-Posizione: |  |
|                                                                                                                |  | <b>24000526</b>                                                                           |  | <b>10/TUBE 77 D</b>                       |  | <b>1210519/001</b>                                  |  |
| Manufacture Process / Processo di fabbricazione:                                                               |  | Product Type / Tipo di prodotto:                                                          |  | Surface / Superficie:                     |  |                                                     |  |
|                                                                                                                |  | <b>SS HOT FINISHED SEMIWORKED TUBES FOR GAS CYLINDER (WITH SPECIAL REQUIREMENTS) BARE</b> |  | <b>BARE</b>                               |  |                                                     |  |
| Standard or Specification / Norme o specifica:                                                                 |  | Steel Grade / Grado dell'Acciaio:                                                         |  | Ends / Estremità:                         |  |                                                     |  |
| <b>ACCORDING TO ROTH SPEC 014 REV.09, TQ 20024562 V8.1,<br/>SECOND ROTH SPEC 014 REV.09, TQ 20024562 V8.1,</b> |  | <b>ACCIAIO 34CRMO4</b>                                                                    |  | <b>SQUARE CUT</b>                         |  |                                                     |  |
| Dimensions / Dimensioni:                                                                                       |  | Quantity / Quantità: <b>27Pcs/Pz</b>                                                      |  | Nominal Weight / Peso nominale:           |  |                                                     |  |
| <b>ø8.626" O.D. x .329" W.T.</b>                                                                               |  | <b>967'02" ft</b>                                                                         |  | <b>32169.8 lb</b>                         |  |                                                     |  |
| <b>ø219.10mm O.D. x 8.35mm W.T.</b>                                                                            |  | <b>294.79 mt</b>                                                                          |  | <b>14592 kg</b>                           |  |                                                     |  |

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.

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 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 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 46/A and 46/B of the UK Russia (Sanctions) (EU Exit) Regulations 2019, and confirm that our company is compliant with these laws as well.

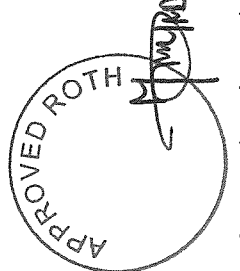
|                                             |  |                                                                                           |  |
|---------------------------------------------|--|-------------------------------------------------------------------------------------------|--|
| <b>CUSTOMER - THIRD PARTY</b>               |  | <b>TENARIS QUALITY DEPARTMENT SIGNATURE</b>                                               |  |
| INSPECTION COMPANY<br>COMPAGNIA D'ISPEZIONE |  |                                                                                           |  |
|                                             |  | CHIEF OF QUALITY CERTIFICATION DEPT.<br>RESPONSABILE DELL'UFFICIO CERTIFICAZIONE QUALITA' |  |
|                                             |  | POMPLI Barbara                                                                            |  |

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|                               |                                                                                                                              |                          |                       |                                                           |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------|-----------------------------------------------------------|
| <b>ROTH<sup>2</sup></b>       | <b>COMPTE-RENDU D'ESSAIS MECANQUES</b><br><b>REALISES PAR ROTH MIONS</b><br><i>Mechanical test report done by Roth Mions</i> | <b>EA021</b>             | N° Lot :<br>Batch N°: | <b>10 mars 2025</b>                                       |
| Produit :<br>Product          | 50LG 100% n° OF : A1710                                                                                                      | Quantité :<br>Quantity : | 60                    | Usine TTH :<br>Heat Treatment place : <b>SOMECAB/TTDV</b> |
| Tube : 219,1 x 8,35 - SPEC014 | Fourn : <b>DALMINE</b><br>Supplier :                                                                                         | Acier :<br>Material :    | <b>34CrMo4</b>        | Rep. coulée :<br>Heat code N° : <b>TE</b>                 |

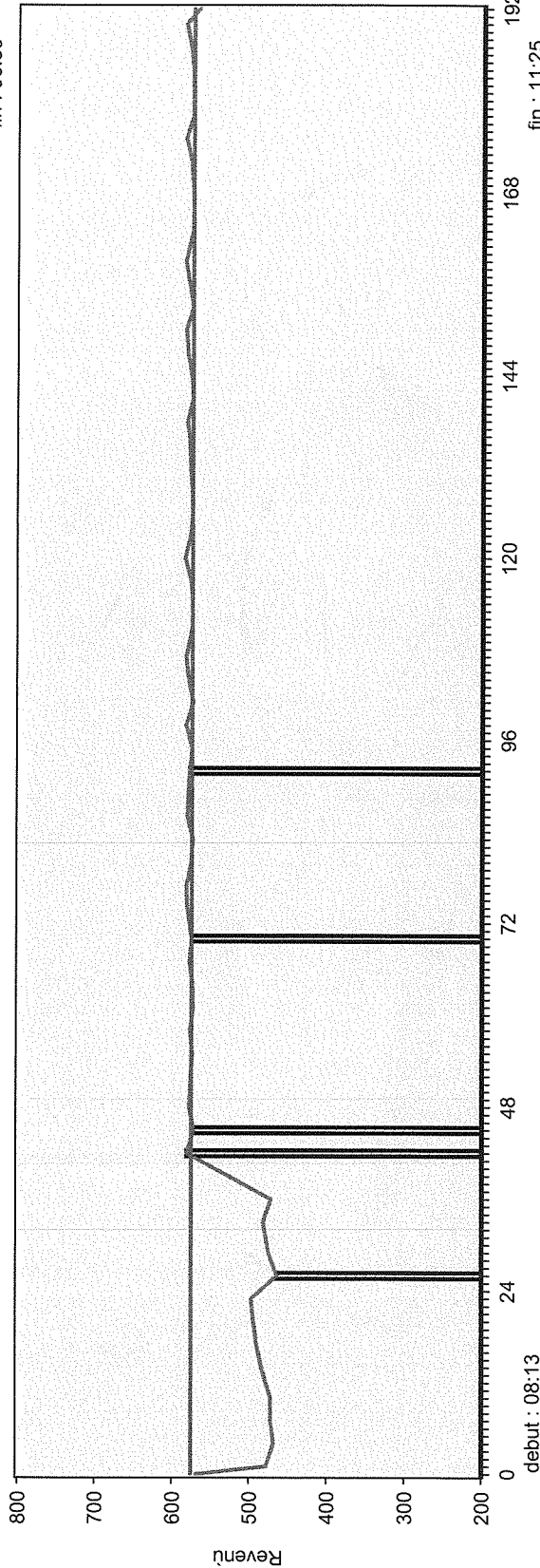
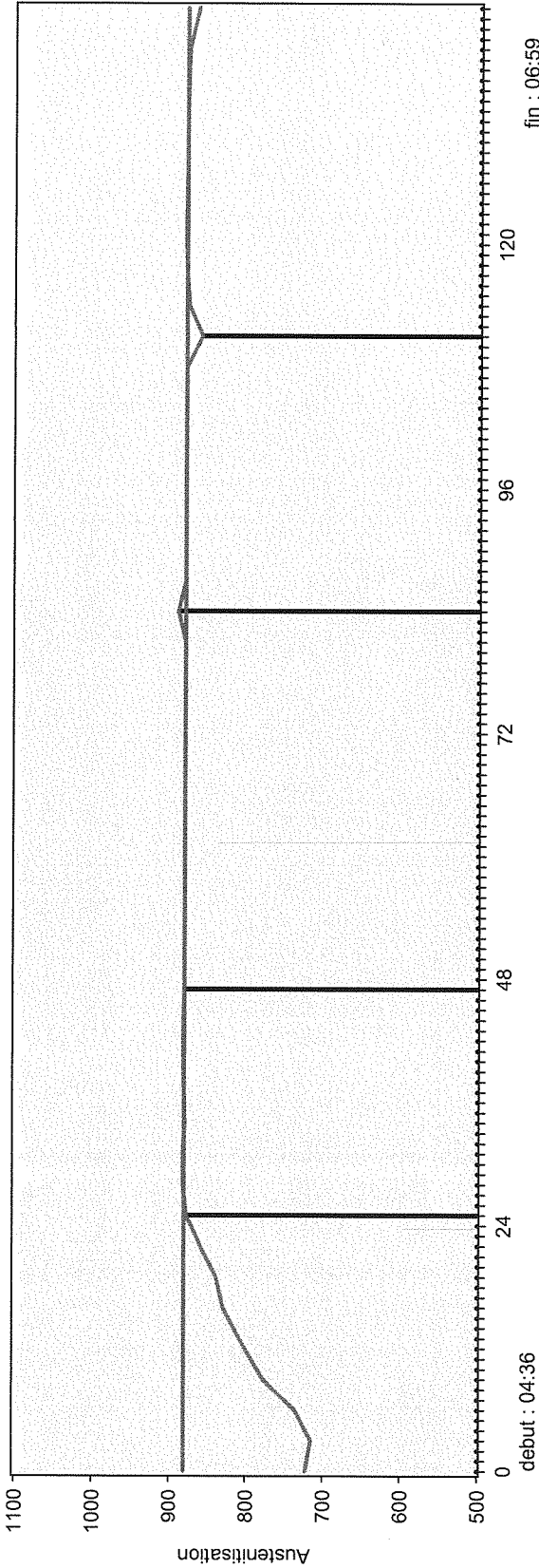
| ESSAI DE TRACTION A TEMPERATURE AMBIANTE Tensile Test at ambient temperature |                  |                                                   |                                           |                                    |                                                                             |                                                       |          |               |                                                    |                                    |     |
|------------------------------------------------------------------------------|------------------|---------------------------------------------------|-------------------------------------------|------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------|----------|---------------|----------------------------------------------------|------------------------------------|-----|
| Eq : MT01 (100kN)                                                            |                  |                                                   |                                           |                                    |                                                                             |                                                       |          |               |                                                    |                                    |     |
| SA370 Section II Part A Code ASME - NF EN ISO 6892-1 : 2019 B                |                  |                                                   |                                           |                                    | Eprouvette proportionnelle cylindrique<br>Cylindrical proportional sampling |                                                       |          |               |                                                    |                                    |     |
| n°                                                                           | dimensions<br>mm | section<br>cross section<br>So<br>mm <sup>2</sup> | Limite élastique<br>Yield strength<br>daN | Rupture<br>Tensile strength<br>daN | Rm<br>MPa                                                                   | Longueur de pointage<br>Length for elongation measure |          |               | Dureté<br>Hardness values<br>Brinell HB<br>from to | T° revenu<br>Tempering<br>T°<br>°C |     |
|                                                                              |                  |                                                   |                                           |                                    |                                                                             | L0<br>mm                                              | L1<br>mm | L1 ASME<br>mm |                                                    |                                    |     |
| R 23                                                                         | 8,73             | 59,86                                             | 5720                                      | 6240                               | 1042                                                                        | 43,8                                                  | 50,5     | 15,3          | 292                                                | 324                                | 575 |

| ESSAI DE RESILIENCE Charpy Impact Test                                             |                       |                            |                            |                     |                                                                               |                           |                                              |                 |                                    |                                        |
|------------------------------------------------------------------------------------|-----------------------|----------------------------|----------------------------|---------------------|-------------------------------------------------------------------------------|---------------------------|----------------------------------------------|-----------------|------------------------------------|----------------------------------------|
| Eq : MP01                                                                          |                       |                            |                            |                     |                                                                               |                           |                                              |                 |                                    |                                        |
| SA370 Section II Part A Code ASME - ISO 148-1:2016 - ISO148-2:2016                 |                       |                            |                            |                     | Mouton pendule E <sub>nominale</sub> 30kg.m<br>Charpy machine Enominal 30kg.m |                           |                                              |                 |                                    |                                        |
| n°                                                                                 | dimensions<br>mm x mm | section<br>mm <sup>2</sup> | lecture<br>measure<br>kg.m | Kv <sub>6</sub> (J) |                                                                               | K <sub>v8</sub> mini<br>J | Prélèvement en long<br>Longitudinal sampling |                 | Pliage Bande : N<br>Bending test : | Pliage Anneau : O<br>Flattening test : |
|                                                                                    |                       |                            |                            | indiv.              | moy.                                                                          |                           | Exp. Lat.<br>mesure                          | Exp. Lat.<br>mm |                                    |                                        |
| R23                                                                                | 7,52 x 10             | 60,160                     | 2,9                        | 28                  | 29                                                                            | 21                        |                                              |                 |                                    |                                        |
|                                                                                    | 7,52 x 10             | 60,160                     | 3,6                        | 35                  |                                                                               |                           |                                              |                 |                                    |                                        |
|                                                                                    | 7,52 x 10             | 60,160                     | 2,4                        | 24                  |                                                                               |                           |                                              |                 |                                    |                                        |
| CRITERES IMPOSES Criteria of acceptance                                            |                       |                            |                            |                     |                                                                               |                           |                                              |                 |                                    |                                        |
| TTH N° : 700                                                                       |                       |                            |                            |                     | A% mini : 14                                                                  |                           |                                              |                 |                                    |                                        |
| Re mini : 870 (MPa)                                                                |                       |                            |                            |                     | Kv8 mini : 27J (std sample) PED (2014/68/UE)                                  |                           |                                              |                 |                                    |                                        |
| Rm : 985                                                                           |                       |                            |                            |                     | 21J (reduced sample)                                                          |                           |                                              |                 |                                    |                                        |
| Observations Remarks :                                                             |                       |                            |                            |                     |                                                                               |                           |                                              |                 |                                    |                                        |
| Résultats Conforme Conformity : oui yes                                            |                       |                            |                            |                     |                                                                               |                           |                                              |                 |                                    |                                        |
| Initiales + Visa Contrôleur Operator signature :                                   |                       |                            |                            |                     |                                                                               |                           |                                              |                 |                                    |                                        |
|  |                       |                            |                            |                     |                                                                               |                           |                                              |                 |                                    |                                        |
| Impact test made on reduced samples                                                |                       |                            |                            |                     |                                                                               |                           |                                              |                 |                                    |                                        |

Carte de Temperatures 2502090-1

TTDV - Traitement Thermique Du Velay

|                             |                            |               |         |             |        |                    |                            |                           |         |                              |          |                                     |                 |
|-----------------------------|----------------------------|---------------|---------|-------------|--------|--------------------|----------------------------|---------------------------|---------|------------------------------|----------|-------------------------------------|-----------------|
| Date                        | 25-02-2025                 | N. OF         | 2502090 | Code Client | RT01   | Ref piece          | A50LG219.1TTH700/100       | Nuance Acier              | 34CRMO4 | N. Coulee                    | TE/A1710 | Nbr piece plateau                   | Temps Immersion |
| Temperature Austenitisation | 880/1 880/2 880/3 880/4 °C | Transfert F/I | 54 s    | Gamme       | TRP3 1 | Temperature Revenu | 575/1 575/2 575/3 575/4 °C | Temperature Bac de Trempe | 40 °C   | Temperature Bac apres Revenu | 30 °C    | Temperature Bac de Trempe reelie    | 784 s           |
| Temperature Revenu          | 575/1 575/2 575/3 575/4 °C |               |         |             |        |                    |                            | Tr. Revenu                | 0       |                              |          | Temperature Bac apres Revenu reelie | 31 °C           |



| Zone   | °C  | min |
|--------|-----|-----|
| Zone 1 | 722 | 25  |
| Zone 2 | 877 | 22  |
| Zone 3 | 880 | 37  |
| Zone 4 | 889 | 27  |
| Zone 5 | 859 | 32  |

Totale

143

APPROUVÉ Sce CONTRÔLE

ROTH Mions

N° LOT : EA021

BATCH N° :

| Zone   | °C  | min |
|--------|-----|-----|
| Zone 1 | 569 | 26  |
| Zone 2 | 464 | 0   |
| Zone 3 | 0   | 0   |
| Zone 4 | 0   | 16  |
| Zone 5 | 581 | 3   |
| Zone 6 | 572 | 25  |
| Zone 7 | 575 | 22  |
| Zone 8 | 578 | 100 |

Totale

192

OME CAB SAS

130, Rue ZA de Chabanou

43590/BEAUZAC

Capital 1 000 000 € - RCS 85 5 80

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26/02/2025