



Aperam Stainless Services & Solutions Germany GmbH

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**TEST REPORT  
RELEVÉ DE CONTRÔLE  
WERKSZEUGNIS**

According to / Selon / Nachdem  
EN 10204

BL: 0024339 - 1

Date: 07/01/2021

|   |  |
|---|--|
| <b>Manufact. / Product. /Herstell.</b><br>APERAM STAINLESS S.ETS.INTERNATIONAL  | <b>Item / Article / Produkt</b><br>96-324010                     |
| <b>Supplier Lot / Lot Fourn. / Band Nr</b><br>04209732  | SHEETS WN 4404 1D WITHOUT PAPER 10,0 X 1500,0 X 3000,0 MARK OF G |
| <b>Heat N° / N° de coulée / Schmelz Nr</b><br>042097  | <b>Customer / Client / Kunde</b><br>OVAKO METALS OY AB           |
| <b>Steel Designation / Désignation Acier / Stahlbezeichnung</b><br>EN 10028-7 WNR 1.4404/1.4401<br>EN 10088-2 WNR 1.4404/1.4401<br>ASTM A 240(M) TYPE 316L/316<br>ASME SA 240 TYPE 316L/316 | <b>Order / Commande / Order</b><br>011915222 - 02                |
|   | <b>Reference / Référence / Referenz</b><br>017758                |

AD 2000 W2 -- AD 2000 W10 -- PED 2014/68/EU

**Mill Certificate / N° de Certificats / Prüfzeugnis Nr**  
20K0044491

**Chemical Analysis / Analyse Chimique / Chemische Zusammensetzung**

|  | C     | Si  | Mn   | Ni    | Cr    | Mo   | Ti | N     | S     | P     | Cu | Al |  |  |  |  |
|--|-------|-----|------|-------|-------|------|----|-------|-------|-------|----|----|--|--|--|--|
| Cast Analysis<br>Analyse Coulée<br>Analyse | 0,025 | 0,5 | 1,31 | 10,06 | 16,58 | 2,03 |    | 0,036 | 0,002 | 0,032 |    |    |  |  |  |  |

**Mechanical Properties / Propriétés Mécaniques / Mechanische Werte EN ISO 6892-1 B**



|  | Yield strength<br>Limite D'élasticité<br>Dehngrenze MPA |       | Tensile strength<br>Résistance à la traction<br>Zugfestigkeit MPA | Elongation after fracture (A)<br>Allongement après rupture<br>Bruchdehnung % |       | Hardness<br>Dureté<br>Haerte | % |
|--|---|-------|---|--|-------|------------------------------|---|
|  | Rp 0.2 %  | Rp 1% | Rm  | A5   | 50 mm | HRB                          |   |
|  | 335   |       | 582   |  | 53    | 86,3                         |   |

**Material identification / Identification Matière / Identifizierung Sachgebiet**

| Lot Nr<br>N° Lot<br>Los Nr | Weight<br>Poids<br>Gewicht | Lot Nr<br>N° Lot<br>Los Nr | Weight<br>Poids<br>Gewicht | Lot Nr<br>N° Lot<br>Los Nr | Weight<br>Poids<br>Gewicht | Lot Nr<br>N° Lot<br>Los Nr | Weight<br>Poids<br>Gewicht |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
|                            | Kg                         |                            | Kg                         |                            | Kg                         |                            | Kg                         |
| S015536                    | 1417                       |                            |                            |                            |                            |                            |                            |

Number of lots / Nombre de lots / Bunde Anzahl : 1

Total weight / Poids Total / Gesamt Gewicht [Kg] : 1417

|  |  |   |  |  |  |  |  |  |  |  |  |   |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |
|--|--|---|--|--|--|--|--|--|--|--|--|---|--|---|--|---------------------|--|-----------------------|--|-----------------------|--|---------------------|--|--------------------|--|
|    |  | <b>MILL CERTIFICATE BS EN 10204/3.1</b><br><b>CERTIFICAT DE RECEPTION NF EN 10204/3.1</b><br><b>ABNAHMEPRUEFZEUGNIS DIN EN 10204/3.1</b>  |  |  |  |  |  |  |  |  |  | <b>N-Nr-N 20K004491-01 V01</b>  |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |
|  |  | Certified acc.PED 2014/68/EU Annex I 4.3 by Certification Body 0036 of TUV SUD Industrie Service GmbH with cert.No.:314/2007/MUC.Renounced of counter signature agreed by TÜV SÜD (9/5/2007).Approved acc.AD 2000-Merkblatt W0/TRD 100 by TÜV SÜD Industrie Service GmbH.Confirmation letter from TÜVSÜD Industrie Service GmbH of 07/05/2010 about the uniformity of coils acc.AD2000 W2 4.1.1 |  |  |  |  |  |  |  |  |  |   |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |
| Correspondentieadres:<br>Aperam Genk<br>Swinnenwijerweg 5, Poort Genk 7523<br>3600 Genk, Belgium<br>Tel. +32 (0)89 30 21 11  |  | Tech.Req.:AD 2000 W2 -- AD 2000 W10 -- EN 13445-2   |  |  |  |  |  |  |  |  |  |   |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |
| <b>Manufacturer's works order number</b><br>N° de la commande usine productrice<br>Werksauftragsnummer<br><b>80634488/01-08457/Q19/01</b>  |  | <b>Surveyor's mark</b><br>Cachet de l'expert<br>Stempel des<br>Werkssachverstaendigen<br>  |  | <b>Purchaser and/or consignee</b><br>Client et/ou destinataire<br>Besteller und/oder Empfaenger<br><br><b>APERAM SS&amp;S ERKRATH</b><br>Hildener Straße 28<br><br>40699 Erkrath<br>DEUTSCHLAND  |  |  |  | <b>Purchaser's order number</b><br>N° de commande client<br>Kundenbestellnummer<br><b>010876411</b>  |  |  |  |   |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |
| <b>Product - Produit - Erzeugnis</b><br>COILS, HOT ROLLED, ANNEALED AND PICKLED<br>COILS, LAMINE A CHAUD, RECUTTS + DECAPE<br>COILS, WARMGEWALZT, GEGLUEHT UND GEBEIZT   |  |   |  | <b>Customer article number</b><br>N.article client<br>Artikelnummer des Kunden<br><b>ART297613</b>   |  |  |  |  |  |  |  |   |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |
| <b>Steel designation</b><br>Désignation de l'acier<br>Stahlbezeichnung<br><br>EN 10028-7-2016 1.4404 / 1.4401<br>EN 10088-2-2014 1.4404 / 1.4401<br>ASTM A 240-2020 TYPE 316L / 316<br>ASME SA 240-2019 TYPE 316L / 316<br>EN 10088-4-2009 1.4404 / 1.4401 |  | <b>Finish</b><br>Présentation<br>Ausfuehrung<br><br>ID<br>ID<br>NO 1<br>NO 1<br>ID  |  | <b>Steelmaking process</b><br>Mode d'elaboration de l'acier - Stahlherstellungverfahren<br>Prod.proces: Electric arc furnace - VOD/AOD - Continuous casting<br>Proc.fabric.: Four à arc - VOD/AOD - Coulée continue<br>Fertigungsablauf: Elektro-Ofen - VOD/AOD - Stranggussanlage |  |  |  | <b>Product delivery condition</b><br>Etat de livraison du produit - Lieferzustand<br><br><b>Solution Annealing</b><br>Hypertrempe <b>1050 °C</b><br>Lösungsglühen<br><br><b>Forced air-water/air forcé-eau</b><br>Geblaese Luft-Wasser |  |  |  |   |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |
| ASME-CODE SECT.2 PART A // NACE MR 0175 / ISO 15156-1 / ISO 15156-3 -- NACE MR 0103 / ISO 17945 // ASTM A480 / A480M -- ASME SA480 / SA480M // CORR.<br>TEST: ASTM A262-E: OK // CORROSION INTERGRANULAIRE SELON ISO 3651/2:OK                             |  |   |  |  |  |  |  |  |  |  |  |   |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |
| <b>Identification of the product</b><br>Identification du produit - Identifizierung des Erzeugnisses<br><b>MELTED IN BELGIUM, MADE IN BELGIUM</b>  |  | <b>Dimensions</b><br>Dimensions - Abmessungen<br><b>Thickness</b> B09<br>Epaisseur - Staerke<br>10.00 mm  |  |  |  | <b>Width</b> B10<br>Largeur - Breite<br>1500.00 mm   |  | <b>Length</b> B11<br>Longueur - Laenge   |  | <b>Number of pieces</b> B08<br>Nb de pièces - Stueckzahl<br><b>1</b>   |  | <b>Net weight</b> B13<br>Poids net - netto Gewicht<br><b>13910 KG</b> |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |
| <b>CHEMICAL ANALYSIS - ANALYSE CHIMIQUE - CHEMISCHE ZUSAMMENSETZUNG</b>  |  |   |  |  |  |  |  |  |  |  |  |   |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |
| <b>Coil n.</b><br>N.Bovine - Band Nr.<br>04209732  |  | <b>Heat n.</b><br>N.Coulée - Schmelz Nr.<br>042097  |  | <b>C</b><br>0.030  |  | <b>Si</b><br>0.75  |  | <b>Mn</b><br>2.00  |  | <b>Ni</b><br>10.00<br>13.00  |  | <b>Cr</b><br>16.50<br>18.00   |  | <b>Mo</b><br>2.00<br>2.50                           |  | <b>Ti</b><br>0.100  |  | <b>N</b><br>0.015     |  | <b>S</b><br>0.045     |  | <b>P</b><br>0.032   |  | <b>Co</b><br>0.349 |  |
| <b>Required -Exigé %mini</b><br>Anforderung. %maxi   |  | <b>Cast Analysis</b><br>Analyse coulee<br>Analyse Schmelze  |  | <b>C71</b><br>0.025  |  | <b>C72</b><br>0.50   |  | <b>C73</b><br>1.31   |  | <b>C74</b><br>10.06  |  | <b>C75</b><br>16.58   |  | <b>C76</b><br>2.03                                  |  | <b>C77</b><br>0.036 |  | <b>C78</b><br>0.002   |  | <b>C79</b><br>0.032   |  | <b>C80</b><br>0.349 |  |                    |  |
| Positive material identification carried out : OK<br>Tests de vérification de la conformité de la nuance fournie : OK<br>Verwechslungspruefung wurde durchgefuehrt : OK  |  |   |  |  |  |  |  |  |  |  |  |   |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |
| <b>Location (1)</b>  |  | <b>MECHANICAL PROPERTIES - PROPRIETES MECANIQUES - MECHANISCHE WERTE</b> EN ISO 6892-1 B / A-SA 370   |  |  |  |  |  |  |  |  |  | <b>Room temperature - Température ambiante - Raumtemperatur</b>       |  | <b>Test temperature (°C) :</b>                      |  |                     |  |                       |  |                       |  |                     |  |                    |  |
| <b>Direction (2)</b>   |  | <b>Yield or proof strength</b><br>Limite d'élasticité<br>Dehngrenze MPa   |  | <b>Tensile Strength</b><br>Résistance à la traction<br>Zugfestigkeit MPa   |  | <b>Elongation after fracture</b><br>Allongement après rupt.<br>Bruchdehnung %  |  | <b>Hardness</b><br>Dureté<br>Haerte  |  | <b>Yield or proof strength</b><br>Limite d'élasticité<br>Dehngrenze MPa  |  | <b>Tensile str.</b><br>Résist. MPa<br>Zugfestigkeit                   |  | <b>Elongation %</b><br>Allongement.<br>Bruchdehnung |  |                     |  |                       |  |                       |  |                     |  |                    |  |
| <b>Required</b><br>Exigé<br>Anforderung  |  | <b>Rp0.2%</b><br>220  |  | <b>Rp1%</b><br>260   |  | <b>Rm</b><br>530<br>680  |  | <b>A5</b><br>40  |  | <b>50mm</b><br>40  |  | <b>HRBW</b><br>95   |  | <b>Rp0.2%</b><br>335                                |  | <b>Rp1%</b><br>372  |  | <b>Rm</b><br>56<br>53 |  | <b>A5</b><br>86<br>85 |  |                     |  |                    |  |
| <b>Obtained</b><br>Obtenu<br>Ergebnisse  |  | <b>C11</b><br>335   |  | <b>C14</b><br>372  |  | <b>C12</b><br>582  |  | <b>C13</b><br>56   |  | <b>C15</b><br>53   |  | <b>C31</b><br>86  |  | <b>C16</b><br>335                                   |  | <b>C17</b><br>372   |  | <b>C18</b><br>56      |  | <b>C19</b><br>53      |  |                     |  |                    |  |
| <b>Impact strength test</b><br>Essai de résilience<br>Kerbschlagzaehigkeitstest  |  | <b>C40</b><br>t(°c)   |  | <b>C44</b><br>EN ISO 3651/2 - A:OK   |  | <b>C50</b><br>Internal cleanliness:  |  | <b>C51</b><br>A:   |  | <b>C52</b><br>B:   |  | <b>C53</b><br>C:  |  | <b>C54</b><br>D:                                    |  | <b>C55</b><br>C57   |  |                       |  |                       |  |                     |  |                    |  |
| <b>Location of the sample (1)</b><br>Emplacement de l'échantillon<br>Lage des Probenabschnittes<br>1. Front - Début - Anfang<br>2. Back - Fin - Ende<br>3. Middle - Milieu - Mitte   |  | <b>The delivery is in accordance with the order</b><br>La fourniture est conforme aux exigences de la commande<br>Die lieferung entspricht den Bestellbedingungen   |  |  |  | <b>Organisation inspection</b><br>Organisme et/ou service contrôle<br>Ueberwachungsabteilung   |  |  |  | <b>Quality Department</b><br><br>20/11/2020<br><br><b>The inspector</b><br>Le responsable<br>Der Werkssachverstaendige |  |   |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |
| <b>Direction of the test pieces (2)</b><br>Orientation des éprouvettes<br>Probenrichtung<br>T. Transverse - Travers - Quer<br>L. Longitudinal - Long - Laengs  |  | <b>Packing list</b><br>Avis d'expédition<br>Lieferscheinnummer<br><b>2020051557-102381</b>  |  |  |  | <b>Marking, inspection and measurement : without objection</b><br>Contrôle de marquage, d'aspect et de dimensions : satisfaisants<br>Pruefung der Stempelung, des Oberflaechenaspekts und der<br>Abmessungen : ohne Beanstandung |  |  |  | <b>D01</b><br>D. Raemaekers  |  |   |  |   |  |                     |  |                       |  |                       |  |                     |  |                    |  |