

0339765	Project: Oseberg project_OGP			Client: AIBEL AS		
Order no.	Item no.	Client Art. code	LOT No	Heat code	QTY	Description
4500326210	00010	Q-STB0003U03L350		565527-52221 568692-60191	50,00	BOLT-STUD C/W 2 NUTS M42 350.0MM /ASTM A1082 UNS S32760-A



SFC (Europe) Limited

Unit 15, Dunstall Hill Industrial Estate
Gorsebrook Road, Wolverhampton
West Midlands WV6 0PJ
U.K
Telephone: +44 1902 420287
email: certs@sfc-europe.com

INSPECTION CERTIFICATE - BS EN 10204/3.1

REPORT No.	101463-01	CUSTOMER NAME	DATE	24/01/2024
CUSTOMER ORDER No.	558995	Scandinavian Fittings & Flanges AS	OUR REF	101463

LINE	SPECIFICATION AND GRADE		MFG ID	GRADE ID	HEAT CODE	PRODUCT DESCRIPTION	QUANTITY	FINISH
1	ASTM A1082	UNS S32760-A	SFC	760 527	565527-52221	M42 X 350MM ASTM A1082 UNS S32760-A STUDBOLT	50	Self Colour
2	ISO 4032	UNS S32760A	SFC	760 692	568692-60191	M42 ISO 4032 S32760A NUTS	100	Self Colour

CHEMICAL ANALYSIS

LINE	C	MN	Si	S	P	B	Cr	Ni	Mo	V	Al	Ti	Cu	N	Additional Chemicals
1	0.017	0.570	0.380	<0.0005	0.023	-	25.230	6.780	3.800	-	0.014	-	0.570	0.263	W:0.59 FE:BALANCE PREN:41.9780
2	0.011	0.560	0.350	<0.0005	0.021	-	25.270	6.820	3.780	-	0.016	-	0.580	0.268	W:0.61 FE:BALANCE PREN:42.0320

LINE	Temp Result	Temp UOM	YIELD STRENGTH RESULT	YIELD UOM	TENSILE STRENGTH RESULT	TENSILE UOM	ELONGATION	REDUCTN OF AREA	STRESS RUPTURE	PROOF LOAD RESULT	PROOF LOAD UOM	HEAT TREATMENT	
1	-	-	600	N/MM2	813	N/MM2	40.0%	72%	-	-	-	-	SOLUTION TREATED WATER QUENCHING 1100°C 0.50 HRS
2	-	-	581	N/MM2	822	N/MM2	41.0%	74%	-	-	-	-	SOLUTION TREATED WATER QUENCHING 1100°C 0.50 HRS

LINE	CHARPY IMPACT TEST OBTAINED VALUES					MACROETCH			HARDNESS RESULT	24 HOUR HARDNESS	Mill Country of Origin
1	-46°C	J	196	151	131	-	-	-	256 BHN	-	
2	-46°C	J	311	303	313	-	-	-	245 BHN	-	

LINE	COMMENTS
1	
2	
COMMENTS	PED DIRECTIVE 2014/68/EC ANNEX 1 SECTION 4.3 - DIMS TO DIN 976, ISO 4032 - MDS VN606 - PROJECT: OSEBERG PROJECT_OGP - CLIENT ART CODE: Q-STB0003U03L350 - PRODUCT NO: 339765 - CUSTOMER LINE ITEM 00010

We hereby certify that all products covered by this certificate have been manufactured, sampled, tested and inspected in accordance with the requirements of the individual product specification, stipulated on the contract or purchase order.

Product supplied from SFC does not contain any iron/steel originating from Russia/Belarus

QUALITY ASSURANCE	
SIGNED	Beth Rich



ALLOY 32760

Customer Details	S0069	Order Details
SFC Europe Ltd Unit 13 Dunstall Trading Est Gorsebrook Road Wolverhampton UK WV6 0PJ		Date 11/12/2023 Lot No Z16381 Cast / Heat No 565527 Form S-DUPLEX 32760 1.5/8" Dia Machined Bar

Conforming Specifications	UNS S32760, ASTM A182-21 S32760 F55, ASTM A276-17 S32760, ASTM A479-21 S32760, BS EN 10088-3:2014 1.4501, NACE MR 0175/ ISO 15156-3:2015, NORSOK M-650 Qualified Mill, NORSOK MDS D57 Rev 5
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Works Order No. S0192913	Cust Order No. P067191
Item 2 4 Piece(s)	LA0000632962 248.87 Kgs

Enclosures

Mill Certificate

The following results are actual values taken from tests carried out on a sample from this Lot

Chemical Analysis (WT%)

Element:	C	Si	P	S	Cr	Ni
Specification:	0.000 - 0.030	0.00 - 1.00	0.000 - 0.030	0.0000 - 0.0100	24.00 - 26.00	6.00 - 8.00
Actual:	0.017	0.38	0.023	<0.0005	25.23	6.78
Element:	Mo	W	Cu	N	Mn	Sn
Specification:	3.00 - 4.00	0.50 - 1.00	0.50 - 1.00	0.200 - 0.300	0.00 - 1.00	
Actual:	3.80	0.59	0.57	0.263	0.57	
Element:	Al	Pb	Fe			
Specification:						
Actual:	0.014		Balance			

MELTED & MANUFACTURED BY AN ISO:9001 APPROVED BODY WITHIN WESTERN EUROPE
MELTING IS CARRIED OUT BY ELECTRIC ARC FURNACE
THIS MATERIAL HAS BEEN REFINED BY ARGON-OXYGEN DECARBURIZATION
THIS MATERIAL HAS BEEN REFINED BY LADLE REFINERY FURNACE
HOT ROLLED PEELED BAR, NO WELD REPAIR, NO MERCURY CONTAMINATION
THE MATERIAL SUPPLIED IS FREE FROM RADIOACTIVE CONTAMINATION

CHKD 11

Certified that the whole of the supplies hereon has been inspected, tested and unless otherwise stated above conforms in all respects with their requirements of the contract or order. The quality control arrangements adopted in respect of these supplies have accorded with the conditions of our BS EN ISO 9001 approval.

This test certificate is issued in accordance with EN 10204:2004 3.1.

Signed



Date

11/12/2023

Gary Wilson- Quality Manager

Certificate not valid without QA stamp



Mechanical Results

Diameter / Thickness	mm	41.27	R of A (Z)	%	72.0
Pitting Resistance Equiv No.		42.0	Brinell Hardness	BHN	256
PREN-W		43.0	Rockwell C	HRC	25.3
0.2% Proof Stress	N/mm ²	600.0	Charpy Imp. < = -46°C Long	Joules	196, 151, 131
Tensile Strength Long	N/mm ²	813.0		Average	159
Elongation 4D% (A4)	%	40.0			

HEAT TREATMENT

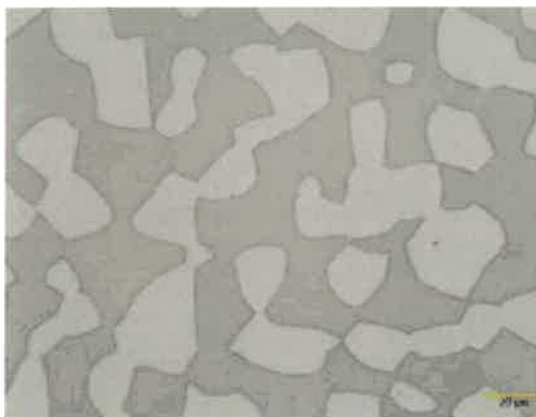
Solution Treated followed by Water Quenching 1,100 °C 0.50 Hrs

ANCILLIARY TESTING

Ferrite Count ASTM E562	Ferrite content according to ASTM E562 50.50 %
Microstructure	Microstructure is free from grain boundary carbides, sigma, chi and Laves phases according to ASTM A923 Method A. Magnification: x 500
G48A Surf-CTR Cor Test @ 50°C	Surface to CTR Corrosion test carried out at 50°C for 24h, samples pickled or passivated Result: No evidence of pitting corrosion (x20 magnification) and weight loss 0.1400 g/m ²

CONDITION OF SUPPLY

NORSOK Qualification M-650	A Norsok M650 approved mill has manufactured this material which has been tested to & complies with all the mechanical & physical requirements of its relevant Norsok M630 Material Data Sheet.
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PHOTOMICROGRAPH

Etched Photomicrograph
Magnification: X 500

Certified that the whole of the supplies hereon has been inspected, tested and unless otherwise stated above conforms in all respects with their requirements of the contract or order. The quality control arrangements adopted in respect of these supplies have accorded with the conditions of our BS EN ISO 9001 approval.

This test certificate is issued in accordance with EN 10204:2004 3.1.

Signed

Date

11/12/2023

Gary Wilson- Quality Manager

Certificate not valid without QA stamp



A02/Z03

INSPECTION CERTIFICATE acc to
EN 10204 3.1

A06

LANGLEY ALLOYS LIMITED
THE WHARF
504-506 LOWFIELD DRIVE
ST5 0UU NEWCASTLE UNDER LYME
UNITED KINGDOM

INSPECTION STAMP
SVQ

Customer References PO 258042 32760 V 180-00991 LANGLE CON	Alleima References Order No. Sub No. Dispatch note 584241 709346 38401/53 Suppl. No C.Code 284-56911 03
Material description HOT WORKED BAR STEEL ROLLED ANNEALED & STRAIGHTENED PEEL TURNED Metallurgical process E+AOD+LRF	Steel/material Designations Alleima UNS SAF 32760+ S32760 EN no 1.4501

Technical requirements LANGLEY SPEC PS_SD3276_B REV 10 OR LATER + ALLEIMA DDR (LATEST REV.), EN10222-5:-2017*, PED 2014/68/EU, ISO 17781:2017:QL1, IOGP S-563:2018 NACE MR0175/ISO 15156-3:-2015, NACE MR0103/ISO 17945-1:-2015 ASTM A-276-17, ASME SA-276-ED-21 SECT II PART A, EN 10088-3:-2014, ASTM A-479-21, ASME SA-479-ED-21 SECT II PART A, EN10272:-2016*, ASTM A-484-22, ASTM A-182-22*, ASTM A-1049-18*, ASTM A-314-19*, NORSOK M-630:2020, NORSOK MDS D57 REV. 6*, EN10060:2003, *For detailed information, please see the appendix, EN 10221:1996

EXTENT OF DELIVERY It Product designation Heat Lot Pieces Kg 09 XMBR-SAF32760-15/8 565527 52221 48 2840.0 SD3276D041.275MCD Total 48 2840.0 Heat 565527 Continuous casting TEST RESULTS Reduction ratio (times) Lot 52221 63.6 Chemical composition (weight%) PRE: CR+(3,3xMO)+16xN PRE2: CR+(3,3xMO)+(1.65xW)+16xN Heat PRE PRE2 + W 565527 42.0 43.0

Quality assurance - Erik Jansson/QA-manager Primary Products
MTC Service / Certificates

A05/Z02



Heat	C	Si	Mn	P	S	Cr	Ni	Mo
565527	0.017	0.38	0.57	0.023	<0.0005	25.23	6.78	3.80
	W	Co	V	Ti	Cu	Al	Nb	B
565527	0.59	0.089	0.060	0.003	0.57	0.014	0.01	0.0024
	O	N						
565527	0.0046	0.263						

Tensile test at room temperature acc. to ASTM A370/ISO 6892-1

Longitudinal

Location radius

Lot	Yield strength		Tensile strength		Elongation	
	Mpa	MPa	Mpa		%	%
	Rp0.2	Rp1.0	Rm		A	2"
52221	600	674	813		40	40
	Red.of Area					
	%					
	Z					
	72					

Hardness test acc. to ASTM E-10

Location radius

Lot	HRC		
52221	26	25	25
Near Surface			
Lot	HRC		
52221	27	27	26

Impact test, J, Longitudinal acc. to ASTM A-370/ISO 148-1

Location radius

Lot	Single values			Avg. Temperature	
	Joule			Joule	°C
52221	196	151	131	159	-50
	272	270	276	273	20

Lateral expansion

Lot				Temperature
	mm			°C
52221	1.28	1.20	1.08	-50

Corrosion test according to ASTM G-48A, 50°C for 24 hours.

In delivery condition. No pitting corrosion found at 20x enlargement.

Test location acc to NORSOK MDS D57

Specimen weight loss	
Lot	g/m2
52221	0.14

Ferrite acc to ASTM E-562

Tested at surface, half radius and center.

30 Points and 16 Fields

Lot	%
52221	49.5
	50.5
	52.6

Following controls/tests have been satisfactorily performed:

- Positive Material Identification (PMI)
- Ultrasonic testing (*)



- Visual inspection and dimensional control.

HEAT TREATMENT:

Up to 74.9 mm: Batch furnace. Material soaking 1100°C, min. 30 minutes. Quenched in water. Water temp. pre-quench max 38°C, after quench max 49°C.

Transfer time furnace to quenching <150 seconds.

75 - 180mm: Continuous heat treatment furnace. Material soaking 1100°C, min. 30 minutes. Alleima is using a continuous water spray quenching process. Water temp pre-quench max 38°C, after quench max 49°C. Transfer time furnace to quenching <60 seconds.

>180 - 250mm: Batch furnace. Material soaking 1100°C, min. 60 minutes. water. Water temp pre-quench max 38°C, after quench max 49°C. Transfer time furnace to quenching <150 seconds

The raw material is free from radioactive contamination.

Microscopic Examination X 500 acc. to ASTM A 923 Method A/NORSOK M630
Free from grain boundary carbides and intermetallic phases.

Material free from mercury contamination.

No welding or weld repair.

NORSOK M-650 QTR NO: 25 Cr Duplex SS UNS S32760

Certified acc. Pressure Equipment Directive (2014/68/EU Annex 1 para 4.3) TUEV CERT-Certification body for pressure equipment of the TUEV NORD GRUPPE; notified body, reg.-no. 0045.

The delivered products comply with the specifications and requirements of the order.

The material is manufactured according to a Quality system, approved and registered to ISO 9001:2015.

No unauthorized alterations. The contents of this Inspection Certificate may not be modified or revised in any way without the prior written approval of Alleima.

Unauthorized alterations to the Inspection Certificate, including introduction of false, fictitious or fraudulent statements or entries, may be punishable by fines, imprisonment, or both. This Inspection Certificate may be copied only in the manner and for the purposes specified in Section 6 of EN 10204:2004. Contravention of this notice will be prosecuted to the fullest extent of applicable law.

The certificate is produced with EDP and valid without signature.



APPENDIX**Lab accreditation**

Our lab is accredited under SWEDAC Accreditation number 1636 for testing as per ISO/IEC 17025

Applicable only to specific dimensions

12,5mm - 160mm: EN 10088-5 EN (Only valid for CE marked products together with Alleima Declaration of Performance certificate).

12,5mm - 160mm: PED 2014/68/EU EN 10272 (Stainless steel bars for pressure purposes)

12,5mm - 250mm: EN 10222-5 (Chemical composition only)

12,5mm - 180mm: NORSOK M-630 - NORSOK MDS D57 (for length max 7500 mm)

Suitable for manufacturing of components in acc, with ASTM A-182 (F55), ASTM A-1049 & ASTM A-314.

Test location**Mechanical, ferrite testing:**

Bar dim < 50 mm - Longitudinal test pieces in center of the bar.

Bar dim > 50mm & < 100 mm - Longitudinal test pieces, 1/4 T and minimum 100 mm from any second surface.

Bar dim > 100 mm & < 250 mm - Longitudinal test pieces, 1/4 T and minimum 100 mm from any second surface. Transversal test pieces, 1/4 T and minimum 100 mm from any second surface.

One set of test samples per heat treatment lot.

Maximum lot size 15 ton.

Micro: To ensure a sound, and unaffected structure all through the material three samples are taken, one close to surface, half radius, and in the center of the bar.

Furnace calibration every third month according to API 6A

Thermocouples of S-type (+/- 5°C tolerance) are used to monitor the furnace temperature.

Ultrasonic test

Dim 29 - 74 mm: EN 10308 quality class 3

Dim 75 mm - : EN 10228-4, Tab 3 Scan coverage 1a 100%, Tab 5
Quality Class 3, ASTM A-388, API 6A PSL3/3G.

Alleima, formerly Sandvik Materials Technology. During a brand transition period, both Sandvik and Alleima marking on products may exist.



Söderfors Steel AB

Heat Treatment Report

Furnace: 3
Heat treating number: 3191

Production no: Internal grade:

254407

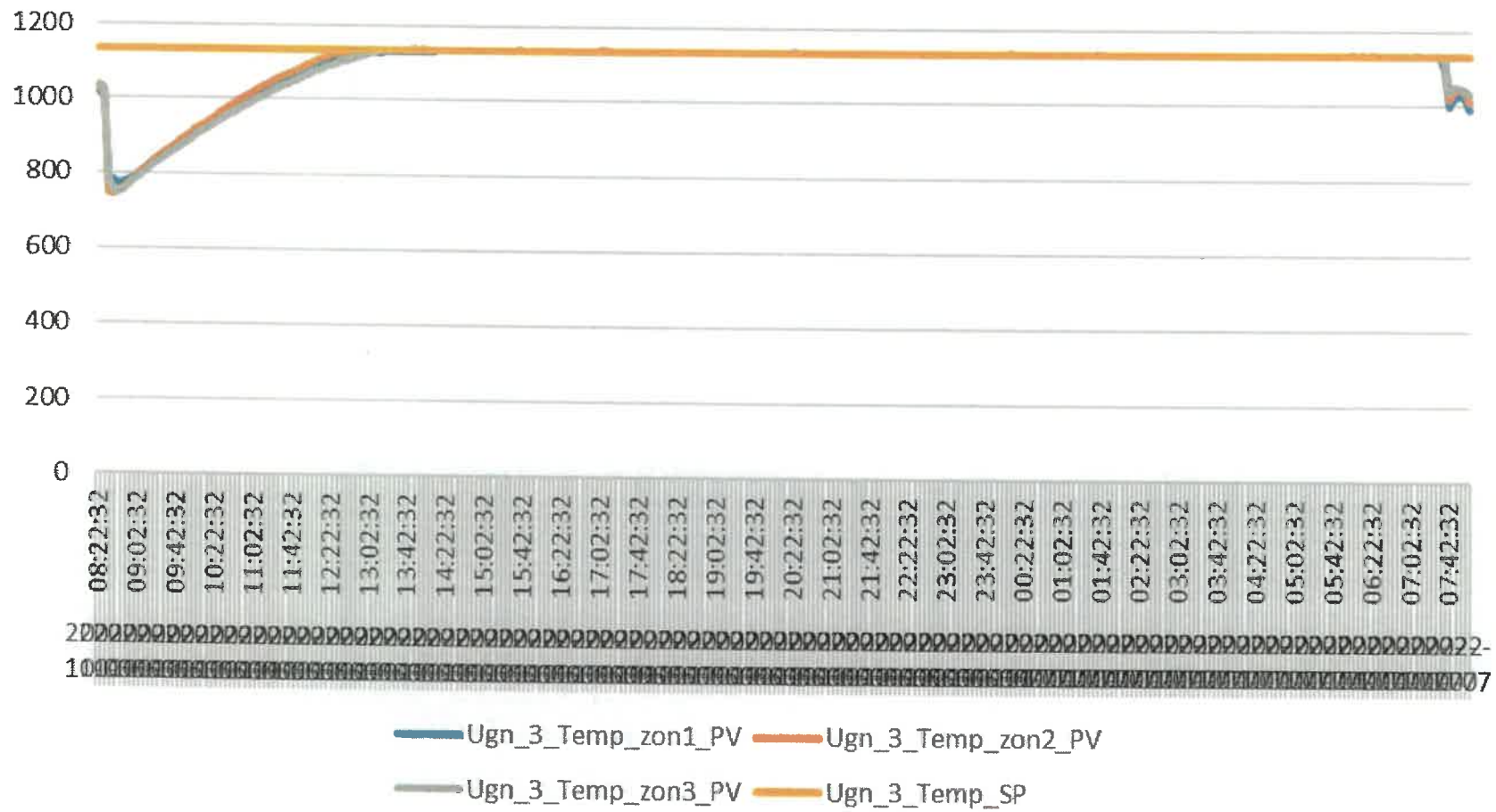
985,2

Dimension (mm x mm): 45,0 x 0,0
Weight: 3394
Internal heat treatment recipe: 61135
Protective gas: Manual
Customer lot no: 52221
Heat lot no: 565527
Quenching in water(transfer time): 106 s
Water temperature(start/stop of quenching):
19,2 / 32,0 °C

Comments:
SANDVIK TOTALTID 11H
10 KVÄVE

Starttime: 2022-10-06 08:26
Calculated stoptime: 22-10-06 19:30
Actual stoptime: 2022-10-07 08:02

3191



Microstructure Examination Report

Page 1 of 1

Material Information

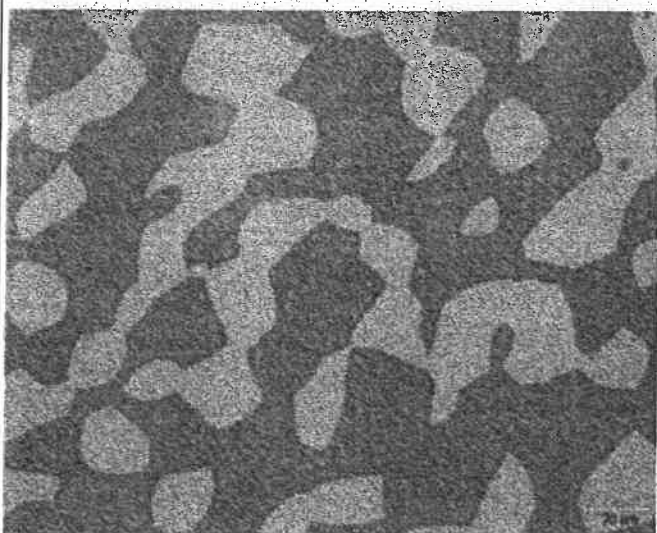
Grade SAF32760
Heat 565527
Lot 52221
Dim 41,27X

Technical Information

Certificate No. A/22-132841
Test Date 2022-10-31
Etchant NAOH
Test Result OK

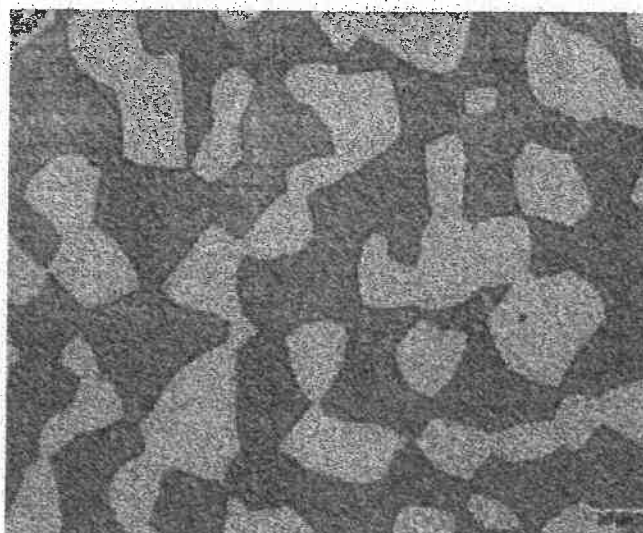
Test No: 87782 O

Magnification: 500x



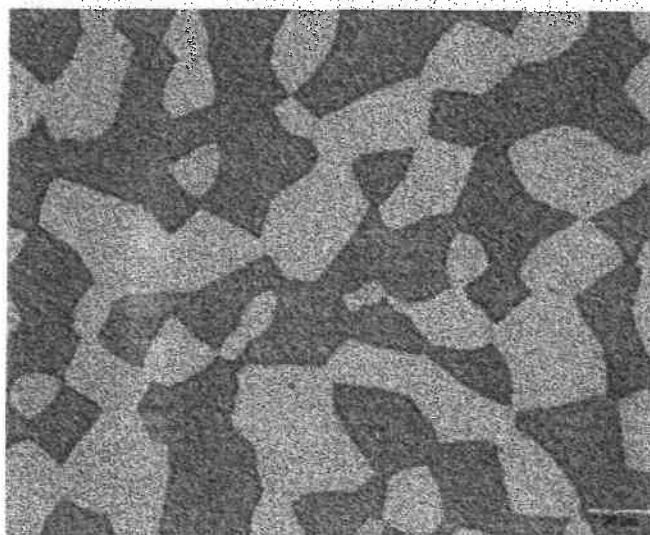
Test No: 87783 R

Magnification: 500x



Test No: 87784 C

Magnification: 500x



EXAMINATION REPORT

Method of Test	Fluorescent Water Washable – Dry Development 100% Of The Surface
Specification	ASTM E1417-21e1 (ASTM A962-23a S56)
Acceptance Criteria	ASTM A962-23a S57
Procedure and Technique	PT-PR-ASTME1417-01 Revision: 03

CUSTOMER DETAILS

Customer:	SFC (Europe) LTD
Address:	Unit 12 Dunstall Hill Trading Estate, Gorsebrook Road, Wolverhampton, WV6 0PJ
Tel:	01902 420287
Contact:	Leon Bradshaw
Email:	Leonb@sfc-europe@com
Customer Code:	SF002

Date Tested:	19/01/2024		
Customer Order:	P067874		
Tested Quantity:	5	Representing Quantity:	50
Fluoro-Tech Job Number:	27729-P067874		
Test Report Number:	27729-P067874		
Issue No:	001		

COMPONENTS UNDER EXAMINATION

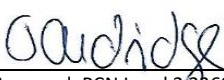
Product Description	M42 x 350mm Stud		
Part Number	Not Advised		
Drawing Number	Not Advised		
Material Specification	ASTM A1082 UNS S32760-A		
Internal Cast Number	Not Advised	Cast Number	565527
Batch Number	Not Advised		
Manufacturing Stage	Fully Machined	Surface Condition	No Contamination
Limitations	Zero Limitations		
Job Number	101463		

EQUIPMENT USED & METHOD

Dye Penetrant Inspection	Water-Washable System Fluorescent		
Consumable Manufacturer	Sherwin Babbco	Consumable Batch Numbers	N-120 Cleaner - Cleaner PL220200613-1 HM-3A Penetrant - Penetrant 18933 D-90-g Developer - Developer 117-G92
Penetrant Sensitivity Level	AMS 2644 Level 2	Sensitivity Recorded	3 Indications on TAM Panel
Method Description	Immersion, Water-Washable, Circulating Air Drying, Dry Development		
Component Temperature	25°c		
Penetrant Dwell Time	20 mins		
Penetrant Temperature	27°c		
Wash Temp & Pressure	28°c at 12psi		
Drying Parameters	68°c for 4 mins		
Temp at Development	21°c	Developer Dwell Time	15 Mins
Inspection Time	≤ 1 Minute Following Development		
UV-A Light Intensity Min	LED Source - 1200µw/cm2 Minimum & 10 Lux Maximum at Inspection Surface – LED Serial Number 002		
Pre Test Calibration	In accordance with ID-PTCP-01		
Equipment Calibration Date	≤ 6 Months Serial Numbers – 600200-37 & 522133/20		

RESULTS AND COMMENTS

PASS Quantity	5	FAILED Quantity	0
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Comments	Passed – No indications evident during examination. Samples selected using internal procedure ID-CRSP-01		
Test Technician:	Report Approved By:	(Third Party Approval) Approved By:	
Darren Nelson  PCN DARREN NELSON PCN No. 347119 www.bindt.org/PCN	James Aldridge  PCN JAMES ALDRIDGE PCN No. 326019 www.bindt.org/PCN		
Approval: PCN Level 2 347119	Approval: PCN Level 2 326019		

All results are subject to uncertainty of measurement budgets, details available on request. The outcome of the above result falls within the bounds of the laboratories flexible scope of accreditation. The laboratory has procedures in place to satisfy the requirements within UKAS Document GEN 4 Edition 1 to ensure the test and the result meets the acceptable requirements within the standard at the revision status on this report. This certificate shall not be reproduced. Any act of tampering, modification, alteration, counterfeiting and/or any actions which modifies the contents of this certificate may constitute a violation of applicable UK civil and criminal law.

Fluoro-Tech Limited | Unit 3 Webnor Industrial Estate | Wolverhampton | WV2 2LD | Tel: 01902 219899 | Email: sales@fluoro-tech.co.uk

Company ID: 09882097 | VAT: 232294718

Certificate Number: (DN)26072023-25072024

Non-Destructive Testing (NDT) Vision Test Certificate

Company No – 09882097
Email – sales@fluoro-tech.co.uk

Name: Darren Nelson
PCN Number: Not Applicable
Address: Fluoro-Tech Limited, Unit 3 Webnor Industrial Estate, Ettingshall Road, WV2 2LD

Vision Test Statement

This statement details the mandatory eyesight requirements for Non-Destructive Testing personnel involved with inspection and assessment that are to be as followed, aided or unaided vision; in at least one eye unless binocular aids are used when both eyes should comply. Colour vision to be normal in the colour of the process used (green).
Eye tests are to be conducted at least annually by trained competent practitioners authorised by the company level 3.



Procedure: ID-VATP-01 Revision: 01

Visual acuity at a distance of 400mm +/-25mm (From ISO 18490) using both eyes together and normal eyewear used for inspection.

White Light Illumination at the time of test - **600 Lux**
Requirements 500-700 Lux

Vision Aids Used (if necessary)

Results

None	Blank Safety Glasses	Prescription Glasses	Prescription Safety Glasses	Contact Lenses
☐	☒	☒	☒	☒

Results of Near Vision (compulsory)

Times Roman N:	Result 4.5	Jaeger Number:	Result 1	Tumbling E:	Result ALL	PASSED
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Results of Far Vision

The ability to distinguish letters at a distance of 6 metres Left Eye and Right Eye Independently and Together.	Result 20/20	PASSED
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Ishihara Colour Vision Test (compulsory)

Number of Plates Confirmed
First 17 minimum for PCN

Result 24/0	PASSED
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Grey Scale Test

Dr Kobl One/TUV/BV Eye Examination
20 Minimum of 25

Result 25	PASSED
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Date of Examination: 26/07/2023

Re-Examination Date: 25/07/2024
(No greater than 12 months)

Name of Tester:

Signature:

Ian Evans

ISO 9712 Level 2
& Level 3 329424 MInstNDT Responsible
for Laboratory Activities.
Occupational Vision Acuity Trained



Company Stamp:





PART 1 - HOLDER'S DETAILS

PCN NUMBER:

347119

ISSUE DATE:

11/10/2023

ISSUE NUMBER:

1

NAME & ADDRESS:

Darren Nelson

48 Jennie Lee Avenue
Wednesfield
WV11 3LZ
United Kingdom

NORMAL

SIGNATURE:

RECORD OF PCN CERTIFICATION

Further information on the scope of certification available may be obtained from The Certification Services Department, British Institute of NDT, Midsummer House, Riverside Way, Bedford Road, Northampton NN1 5NX, United Kingdom.
E-mail: pcn@bindt.org.
Tel: +44 01604 438300. Fax: +44 01604 438301.

Valid only when signed on behalf of BINDT and impressed with the PCN cold seal:

This document may be withdrawn or revoked in part or in total at any time.

PART 2 - CERTIFICATION HELD (All certificates comply with EN ISO:9712 unless otherwise stated) D = Distinction (80% or above average)

CERTIFICATE NUMBER	ISSUE	LEVEL	SECTOR	METHOD	SCOPE OF CERTIFICATE (see over for key to codes)	ISSUE DATE	EXPIRY DATE
F023S22224506	1	2	2	22	Dye penetrants, Fluorescent Penetrants, NDT Instruction Writing	21/08/2023	20/08/2028

This part may be used by the employer to signify that the certificate holder is authorised to carry out NDT on behalf of the employing company.

COMPANY STAMP



Fluoro-Tech
Non-Destructive Testing
IAN EVANS

SIGNATURE & NAME
OF PERSON AUTHORISING

DATE

17/10/2023

PRESSURE EQUIPMENT DIRECTIVE (PED)

Certification for the weldments and pre and in-service inspection sectors is issued in association with WQ-iC Limited, an RTPQ accredited by INAB under ISO 17024:2012, INAB reference 7003. The certificate confirms compliance with the requirements of PED 2014/68/EU Annex 1 section 3.1.3.

By signing this certificate, the holder agrees to comply with the rules detailed in the WQ-iC QF 7.7.1 – NDT 15589 – Route B Certification Scheme.

Confirmation of the approval can be verified by visiting:

wqic-eu.com



Signed for and on behalf of WQ-iC Limited

FOR NOTIFICATION OF PERMANENT CHANGE OF HOLDER'S ADDRESS PLEASE REFER TO FORM PSL18 AVAILABLE TO DOWNLOAD AT BINDT.ORG/CERTIFICATION



PART 3 - IMPORTANT INFORMATION ABOUT PCN CERTIFICATION

PCN certification is issued by the British Institute of NDT (BINDT), a limited company (Reg No. 969051) and a Charity (Reg No. 260222), accredited by the United Kingdom Accreditation Service (UKAS). UKAS is signatory to recognition agreements with other national accreditation bodies. All PCN certification held by the individual named in Part 1 over leaf is listed in Part 3, together with a date of expiry.

This document, which is re-issued upon each occasion when there is a change in the holder's certification details or home address, is valid only when presented with a laminated PCN wallet card bearing a photograph of the holder. Both documents must bear the usual signature of the holder and the same unique six digit number, and are impressed with the PCN cold seal. Photocopies are unauthorised and should not be accepted. There are severe penalties for attempted forgery of certification.

BINDT is accredited by UKAS as complying with European standard EN ISO:17024 (General criteria for certification bodies operating certification of personnel), and issues certificates satisfying the criteria of EN ISO:9712 (Non-destructive testing - Qualification and certification of personnel).

The Pressure Equipment (Safety) Regulations 2016 implemented Directive 2014/68/EU on pressure equipment and assemblies. The British Institute of Non-Destructive Testing is a Recognised Third-Party Organisation accredited by UKAS, under Pressure Equipment (Safety) Regulations 2016: Guidance (GB) which implement the provisions of Directive 2014/68/EU concerning pressure equipment. The scope of the appointment is for the approval of personnel to carry out Non-Destructive tests on permanent joints for pressure equipment in categories III and IV in accordance with section 22 of Schedule 2 to the Regulations. All PCN certification valid for the welding and pre & in-service inspection sectors satisfies the Pressure Equipment (Safety) Regulations 2016: Guidance (GB).

The qualification requirements of the PCN Scheme (eyesight, periods of training and experience, and examination) also satisfy the provisions of a number of other widely accepted national and international standards and guidelines. Employers may find it convenient to utilise the PCN examinations within their internal NDT personnel certification programmes. Further guidance on any aspect of personnel or quality system certification may be obtained from the certification Services Department of BINDT.

BINDT is a signatory to and registered under a European Federation for Non-destructive Testing (EFNDT) Multilateral Mutual Recognition Agreement (MRA). PCN certificates are recognised by all EFNDT MRA signatory bodies. Specific details of the MRA may be obtained from BINDT.

The following Levels of Competence are covered by the PCN scheme:

Level 1. An individual certificated to level 1 is qualified to carry out NDT operations according to a written instructions and under the supervision of level 2 or level 3 personnel. PCN level 1 certificated personnel have demonstrated competence to set up equipment, carry out the test, record and classify the results in terms of written criteria, and to report the results. Level 1 Personnel have not demonstrated competence in the choice of test method or technique to be used, nor for the assessment, characterisation or interpretation of test results.

Level 1D. As above: distinction level.

Level 2. This level is qualified to perform and direct NDT according to established or recognised procedures and have demonstrated competence to: choose the technique for the test method used; set up and calibrate equipment; perform and supervise the test; interpret and evaluate results according to applicable standards, codes or specifications; define the limitations of application of testing method for which they are qualified; understand and transform NDT standards and specifications into practical testing instructions adapted to the actual working conditions; prepare written test instructions; carry out and supervise all level 1 duties; organise and report the results of non-destructive tests.

Level 2D. As above: distinction level.

Level 3. Personnel holding this, the highest level, are qualified to direct any NDT operation for which they are certificated and: assume full responsibility for a test facility and staff. Specifically, they are competent to: establish and/or validate NDT instructions or procedures; interpret codes, standards, specifications and procedures; designate the particular test methods, technique and procedures to be used. Level 3 personnel have demonstrated: a competence to interpret and evaluate test results in terms of existing codes, standards and specifications; the possession of the required level of knowledge in applicable materials, fabrication and product technology sufficient to enable the selection of methods and techniques, and to assist in the establishment of test criteria where none are otherwise available; a general familiarity with other NDT methods; the ability to guide personnel below level 3. Where level 3 duties regularly require the individual to apply routine NDT by method or methods, PCN strongly recommends that this person should hold and maintain level 2 certification in those methods.

Level 3D. As above: distinction level.

Certificates, which are issued following success in thoroughly searching examination conducted at authorised independent test centres, are valid for five years. PCN document CP16 details the requirement for level 1 and 2 renewal and certification, while CP17 and CP17A details requirements for level 3 renewal and recertification. These documents are subject to periodic revision, and certificate holders are urged to ensure that they have the current version before applying for renewal or recertification.

Regrettably, attempts to forge PCN Certificates occasionally occur. Verification of certification on-line at www.bindt.org/PCN is strongly encouraged.

PART 4 - KEY TO CODES USED TO DEFINE SCOPE OF CERTIFICATION

Code	Sectors (Industry)
1	Aerospace
2	Pre and in-service inspection
3	Railway maintenance
8	Radiation

Code	Sectors (product)
4	Castings
5	Forgings and wrought products
6	Weldments
7	Tubes and pipe
16	In-Service Inspection

Code	NDT Methods & Techniques
20	Eddy Current
21	Magnetic Particle Testing
22	Liquid Penetrant Testing
23	Visual testing
24	Ultrasonic Testing
25	Radiography
26	ACFM
27	TOFD
28	Phased Array
29	Computer Radiographic Testing
30	Digital Radiographic Testing
31	Guided Wave
32	Weld Inspection
33	Radiography (welds) Aero
34	Radiographic Interpreter
35	Computer Radiographic Interpreter
36	Digital Radiographic Interpreter
37	Phased Array Interpretation
38	Basic Radiation Safety
39	Radiation protection
40	Railway Axles
41	Rail (NR/055)
42	Rail UT Weld
48	Thickness measurement & corrosion monitoring
49	Advanced Radiation Safety

Scopes of Competence
X-rays
Gamma rays
Dye penetrants
Fluorescent penetrants
Fixed installations
Portable equipment
Composite materials
Materials and components
Structures
Light metals
Dense metals
Plate
Bars and billets
General Forgings
Condenser Tubes
NDT instruction writing
Critical defect sizing
Single frequency
Multiple frequency
Butt welds in plate
Butt welds in pipe
'T' joint welds
Nozzle welds
Node welds
Wavemaker
Teletest
MSS
ISO 20807 Inspection of Wrought Plate
Steel components
Profile Tangential
Weld inspection 'complies with PCN WI 01'

Scan the QR code to verify online



Certificate Number: 326019(JA)06022023-06022024

Non-Destructive Testing (NDT) Vision Test Certificate

Name: James Aldridge

PCN Number: 326019

Address: Fluoro-Tech Limited, Unit 3 Webnor Industrial Estate, Ettingshall Road, WV2 2LD

Vision Test Statement

This statement details the mandatory eyesight requirements for Non-Destructive Testing personnel involved with inspection and assessment that are to be as followed, aided or unaided vision; in at least one eye unless binocular aids are used when both eyes should comply. Colour vision to be normal in the colour of the process used (green). Eye tests are to be conducted at least annually by trained competent practitioners authorised by the company level 3.



Procedure: ID-VATP-01 Revision: 01

Visual acuity at a distance of 400mm +/-25mm (From ISO 18490) using both eyes together and normal eyewear used for inspection.

White Light Illumination at the time of test - **600 Lux**

Requirements 500-700 Lux

Vision Aids Used (if necessary)

Results

None

☐

Blank Safety Glasses

☐

Prescription Glasses

☒

Prescription Safety Glasses

☐

Contact Lenses

☐

Results of Near Vision (compulsory)

Times Roman N:	Result 4.5	or Jaeger Number:	Result 1	or Tumbling E:	Result PASSED	PASSED
----------------	-----------------------------	-------------------	---------------------------	----------------	--------------------------------	---------------

Results of Far Vision

The ability to distinguish letters at a distance of 6 metres
Left Eye and Right Eye Independently and Together.

Result

20/20

PASSED

Ishihara Colour Vision Test (compulsory)

Number of Plates Confirmed
First 17 minimum for PCN

Result

24/0

PASSED

Grey Scale Test

Dr Kohl One/TUV/BV Eye Examination
20 Minimum of 25

Result

25

PASSED

Date of Examination: 06/02/2023

Comments

Re-Examination Date: 06/02/2024

(No greater than 12 months)

Name of Tester:

Ian Evans

Signature:




Company Stamp:



ISO 9712 Level 2

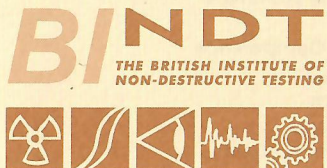
& Level 3 329424 MinInstNDT Responsible
for Laboratory Activities.

Occupational Vision Acuity Trained

Document Code: Vision Test Certificate

Revision: 001

Date Issued: 22/02/2020



PART 1 - HOLDER'S DETAILS

PCN NUMBER:

326019

ISSUE DATE:

06/07/2020

ISSUE NUMBER:

3

RECORD OF PCN CERTIFICATION

Further information on the scope of certification available may be obtained from The Certification Services Division, British Institute of NDT, Midsummer House, Riverside Way, Bedford Road, Northampton NN1 5NX, United Kingdom.
E-mail: pcn@bindt.org.
Tel: +44 01604 438300. Fax: +44 01604 438301.

Valid only when signed on behalf of BINDT and impressed with the PCN cold seal:

This document may be withdrawn or revoked in part or in total at any time.

NAME & ADDRESS:

James Victor Aldridge

Removed for GDPR

NORMAL
SIGNATURE:

PART 2 - CERTIFICATION HELD (All certificates comply with EN ISO:9712 unless otherwise stated) D = Distinction (80% or above average)

CERTIFICATE NUMBER	ISSUE	LEVEL	SECTOR	METHOD	SCOPE OF CERTIFICATE (see over for key to codes)	ISSUE DATE	EXPIRY DATE
F014S22129124	2	2D	2	21	Fixed installations, Portable equipment, NDT instruction writing	12/08/2020	11/08/2025
F014S22229125	2	2D	2	22	Dye penetrants, Fluorescent penetrants, NDT instruction writing	12/08/2020	11/08/2025

This part may be used by the employer to signify that the certificate holder is authorised to carry out NDT on behalf of the employing company.

COMPANY STAMP

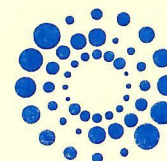
SIGNATURE & NAME
OF PERSON AUTHORISING

DATE

IAN EVANS



15/07/2020



Fluoro-Tech
Non-Destructive Testing

FOR NOTIFICATION OF PERMANENT CHANGE OF HOLDER'S ADDRESS PLEASE REFER TO FORM PSL18 AVAILABLE TO DOWNLOAD AT BINDT.ORG/CERTIFICATION

WARNING. This document is valid only when presented on original cream paper, and when supported by a laminated wallet card bearing the signature. Verification of current certification status is strongly encouraged and is available at www.bindt.org/PCN or by post, telephone, fax or e-mail quoting



Issue No: 1 Expiry: 13-11-2024

PCN No: 326019

Name: JAMES ALDRIDGE



Aldridge
(Holder's usual signature)

This card, which is **NOT** a certificate of competence, remains the property of The British Institute of NDT, and must be surrendered on demand (see further information on reverse).



PART 3 - IMPORTANT INFORMATION ABOUT PCN CERTIFICATION

PCN certification is issued by the British Institute of NDT (BINDT), a limited company (Reg No. 969051) and a Charity (Reg No. 260222), accredited by the United Kingdom Accreditation Service (UKAS). UKAS is signatory to recognition agreements with other national accreditation bodies. All PCN certification held by the individual named in Part 1 over leaf is listed in Part 3, together with a date of expiry.

This document, which is re-issued upon each occasion when there is a change in the holder's certification details or home address, is valid only when presented with a laminated PCN wallet card bearing a photograph of the holder. Both documents must bear the usual signature of the holder and the same unique six digit number, and are impressed with the PCN cold seal. Photocopies are unauthorised and should not be accepted. There are severe penalties for attempted forgery of certification.

BINDT is accredited by UKAS as complying with European standard EN ISO:17024 (General criteria for certification bodies operating certification of personnel), and issues certificates satisfying the criteria of EN ISO:9712 (Non-destructive testing - Qualification and certification of personnel).

The European **Pressure Equipment Directive** (PED), The British Institute of Non-Destructive Testing is a Recognised Third-Party Organisation under regulation 20 of the European Pressure Equipment Regulations 1999 which implement the provisions of Directive 2014/68/EU of the European Parliament and of the Council concerning pressure equipment. The scope of the appointment is for the approval of personnel to carry out non-destructive tests on permanent joints for pressure equipment in categories III and IV in accordance with section 3.1.3 of Schedule 2 to the Regulations. All PCN certification valid for the welding and pre & in-service inspection sectors satisfies the PED. The British Institute of Non-Destructive Testing also offers approval of NDT personnel qualified through 'in-house' or 'second party' NDT personnel qualification systems for companies seeking to satisfy the provisions of the PED. Contact pcn@bindt.org for further information.

The qualification requirements of the PCN Scheme (eyesight, periods of training and experience, and examination) also satisfy the provisions of a number of other widely accepted national and international standards and guidelines. Employers may find it convenient to utilise the PCN examinations within their internal NDT personnel certification programmes. Further guidance on any aspect of personnel or quality system certification may be obtained from the certification Services Division of BINDT.

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Level 1D. As above: distinction level.

Level 2. This level is qualified to perform and direct NDT according to established or recognised procedures and have demonstrated competence to: choose the technique for the test method used; set up and calibrate equipment; perform and supervise the test; interpret and evaluate results according to applicable standards, codes or specifications; define the limitations of application of testing method for which they are qualified; understand and transform NDT standards and specifications into practical testing instructions adapted to the actual working conditions; prepare written test instructions; carry out and supervise all level 1 duties; organise and report the results of non-destructive tests.

Level 2D. As above: distinction level.

Level 3. Personnel holding this, the highest level, are qualified to direct any NDT operation for which they are certificated and: assume full responsibility for a test facility and staff. Specifically, they are competent to; establish and/or validate NDT instructions or procedures; interpret codes, standards, specifications and procedures; designate the particular test methods, technique and procedures to be used. Level 3 personnel have demonstrated: a competence to interpret and evaluate test results in terms of existing codes, standards and specifications; the possession of the required level of knowledge in applicable materials, fabrication and product technology sufficient to enable the selection of methods and techniques, and to assist in the establishment of test criteria where none are otherwise available; a general familiarity with other NDT methods; the ability to guide personnel below level 3. Where level 3 duties regularly require the individual to apply routine NDT by method or methods, PCN strongly recommends that this person should hold and maintain level 2 certification in those methods.

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Regrettably, attempts to forge PCN Certificates occasionally occur. Verification of certification on-line at www.bindt.org/PCN is strongly encouraged.

PART 4 - KEY TO CODES USED TO DEFINE SCOPE OF CERTIFICATION

Code Sectors (Industry)

- 1 Aerospace
- 2 Pre and in-service inspection
- 3 Railway maintenance
- 8 Radiation

Code Sectors (product)

- 4 Castings
- 5 Forgings and wrought products
- 6 Weldments
- 7 Tubes and pipe
- 16 In-Service Inspection

Code NDT Methods & Techniques

- 20 Eddy Current
- 21 Magnetic Particle Testing
- 22 Liquid Penetrant Testing
- 23 Visual testing
- 24 Ultrasonic Testing
- 25 Radiography
- 26 ACFM
- 27 TOFD
- 28 Phased Array
- 29 Computer Radiographic Testing
- 30 Digital Radiographic Testing
- 31 Guided Wave
- 32 Weld Inspection
- 33 Radiography (welds) Aero
- 34 Radiographic Interpreter
- 35 Computer Radiographic Interpreter
- 36 Digital Radiographic Interpreter
- 37 Phased Array Interpretation
- 38 Basic Radiation Safety
- 39 Radiation protection
- 40 Railway Axles
- 41 Rail (NR/055)
- 42 Rail UT Weld
- 48 Thickness measurement & corrosion monitoring

Scopes of Competence

- X-rays
- Gamma rays
- Dye penetrants
- Fluorescent penetrants
- Fixed installations
- Portable equipment
- Composite materials
- Materials and components
- Structures
- Light metals
- Dense metals
- Plate
- Bars and billets
- General Forgings
- Condenser Tubes
- NDT instruction writing
- Critical defect sizing
- Single frequency
- Multiple frequency
- Butt welds in plate
- Butt welds in pipe
- 'T' joint welds
- Nozzle welds
- Node welds
- Wavemaker
- Teletest
- MSS
- ISO 20807 Inspection of Wrought Plate
- Steel components
- Profile Tangential
- Weld inspection 'complies with PCN WI 01'

100% PMI PARTS - INSPECTION REPORT 23/01/2024

MATERIAL 32760 a PP

PRODUCT DESCRIPTION	JOB NUMBER	LINE NUMBER	
m42 x 350 mm studbolt	84294	10000	
DRAWING/STANDARD	SO NUMBER:	INSPECTOR	CAST
	101463	RYAN	565527

instrument: Olympus DPO-2000 Serial number: 540276 Certification number:472914

Item No	XRF #	Best Match	PASS	Item No	XRF #	Best Match	PASS			
		Result	FAIL			Result	FAIL			
1	118	ZERON 100	PASS	106						
2	119	ZERON 100	PASS	107						
3	120	ZERON 100	PASS	108						
4	121	ZERON 100	PASS	109						
5	122	ZERON 100	PASS	110						
6	123	ZERON 100	PASS	111						
7	124	ZERON 100	PASS	112						
8	125	ZERON 100	PASS	113						
9	126	ZERON 100	PASS	114						
10	127	ZERON 100	PASS	115						
11	128	ZERON 100	PASS	116						
12	129	ZERON 100	PASS	117						
13	130	ZERON 100	PASS	118						
14	131	ZERON 100	PASS	119						
15	132	ZERON 100	PASS	120						
16	133	ZERON 100	PASS	121						
17	134	ZERON 100	PASS	122						
18	135	ZERON 100	PASS	123						
19	136	ZERON 100	PASS	124						
20	137	ZERON 100	PASS	125						
21	138	ZERON 100	PASS	126						
22	139	ZERON 100	PASS	127						
23	140	ZERON 100	PASS	128						
24	141	ZERON 100	PASS	129						
25	142	ZERON 100	PASS	130						
26	143	ZERON 100	PASS	131						
27	144	ZERON 100	PASS	132						
28	145	ZERON 100	PASS	133						
29	146	ZERON 100	PASS	134						
30	147	ZERON 100	PASS	135						
31	148	ZERON 100	PASS	136						
32	149	ZERON 100	PASS	137						
33	150	ZERON 100	PASS	138						
34	151	ZERON 100	PASS	139						
35	152	ZERON 100	PASS	140						
36	153	ZERON 100	PASS	141						
37	154	ZERON 100	PASS	142						
38	155	ZERON 100	PASS	143						
39	156	ZERON 100	PASS	144						
40	157	ZERON 100	PASS	145						
41	158	ZERON 100	PASS	146						
42	159	ZERON 100	PASS	147						
43	160	ZERON 100	PASS	148						
44	161	ZERON 100	PASS	149						
45	162	ZERON 100	PASS	150						
46	163	ZERON 100	PASS	151						
47	164	ZERON 100	PASS	152						
48	165	ZERON 100	PASS	153						
49	166	ZERON 100	PASS	154						

100% PMI PARTS - INSPECTION REPORT 23/01/2024

MATERIAL 32760 a PP

PRODUCT DESCRIPTION	JOB NUMBER	LINE NUMBER	
m42 x 350 mm studbolt	84294	10000	
DRAWING/STANDARD	SO NUMBER:	INSPECTOR	CAST
	101463	RYAN	565527

instrument: Olympus DPO-2000 Serial number: 540276 Certification number:472914

Item No	XRF #	Best Match	PASS	Item No	XRF #	Best Match	PASS			
		Result	FAIL			Result	FAIL			
1	118	ZERON 100	PASS	106						
2	119	ZERON 100	PASS	107						
50	167	ZERON 100	PASS	155						
51				156						
52				157						
53				158						
54				159						
55				160						
56				161						
57				162						
58				163						
59				164						
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88				193						
89				194						
90				195						

100% PMI PARTS - INSPECTION REPORT 23/01/2024

100% PMI PARTS - INSPECTION REPORT 23/01/2024			MATERIAL	32760 a	PP
PRODUCT DESCRIPTION	JOB NUMBER	LINE NUMBER			
m42 x 350 mm studbolt	84294	10000			
DRAWING/STANDARD	SO NUMBER:	INSPECTOR		CAST	
	101463	RYAN		565527	

instrument: Olympus DPO-2000 Serial number: 540276 Certification number:472914

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		Result	FAIL			Result	FAIL			
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2	119	ZERON 100	PASS	107						
91				196						
92				197						
93				198						
94				199						
95				200						
96										
97										
98										
99										
100										
101										
102										
103										
104										
105										

ALLOY 32760

Customer Details		Order Details	
SFC Europe Ltd Unit 13 Dunstall Trading Est Gorsebrook Road Wolverhampton UK WV6 0PJ		Date	11/12/2023
		Lot No	Z17560
		Cast / Heat No	568692
		Form	S-DUPLEX 32760 3" Dia Machined Bar
Conforming Specifications		UNS S32760, ASTM A182-21 S32760 F55, ASTM A276-17 S32760, ASTM A479-21 S32760, BS EN 10088-3:2014 1.4501, NACE MR 0175/ ISO 15156-3:2015, NORSOK M-650 Qualified Mill, NORSOK MDS D57 Rev 5	

Works Order No. **SO192913**

Cust Order No. **P067191**

Item 1 1 Piece(s)

LA0000687678

216.20 Kgs

Enclosures

Mill Certificate

The following results are actual values taken from tests carried out on a sample from this Lot

Chemical Analysis (WT%)

Element:	C	Si	P	S	Cr	Ni
Specification:	0.000 - 0.030	0.00 - 1.00	0.000 - 0.030	0.0000 - 0.0100	24.00 - 26.00	6.00 - 8.00
Actual:	0.011	0.35	0.021	<0.0005	25.27	6.82
Element:	Mo	W	Cu	N	Mn	Sn
Specification:	3.00 - 4.00	0.50 - 1.00	0.50 - 1.00	0.200 - 0.300	0.00 - 1.00	
Actual:	3.78	0.61	0.58	0.268	0.56	
Element:	Al	Pb	Fe			
Specification:						
Actual:	0.016		Balance			

MELTED & MANUFACTURED BY AN ISO:9001 APPROVED BODY WITHIN WESTERN EUROPE
MELTING IS CARRIED OUT BY ELECTRIC ARC FURNACE
THIS MATERIAL HAS BEEN REFINED BY ARGON-OXYGEN DECARBURIZATION
THIS MATERIAL HAS BEEN REFINED BY LADLE REFINERY FURNACE
HOT ROLLED PEELED BAR, NO WELD REPAIR, NO MERCURY CONTAMINATION
THE MATERIAL SUPPLIED IS FREE FROM RADIOACTIVE CONTAMINATION

CHKD 11

Certified that the whole of the supplies hereon has been inspected, tested and unless otherwise stated above conforms in all respects with their requirements of the contract or order. The quality control arrangements adopted in respect of these supplies have accorded with the conditions of our BS EN ISO 9001 approval.

This test certificate is issued in accordance with EN 10204:2004 3.1.

Signed



Date

11/12/2023

Gary Wilson- Quality Manager

Certificate not valid without QA stamp



Mechanical Results

Diameter / Thickness	mm	76.20	R of A (Z)	%	74.0
Pitting Resistance Equiv No.		42.0	Brinell Hardness	BHN	245
PREN-W		43.0	Rockwell C	HRC	24.7
0.2% Proof Stress	N/mm ²	581.0	Charpy Imp. < = -46°C Long	Joules	311, 303, 313
Tensile Strength Long	N/mm ²	822.0		Average	309
Elongation 4D% (A4)	%	41.0			

HEAT TREATMENT

Solution Treated followed by Water Quenching 1,100 °C 0.50 Hrs

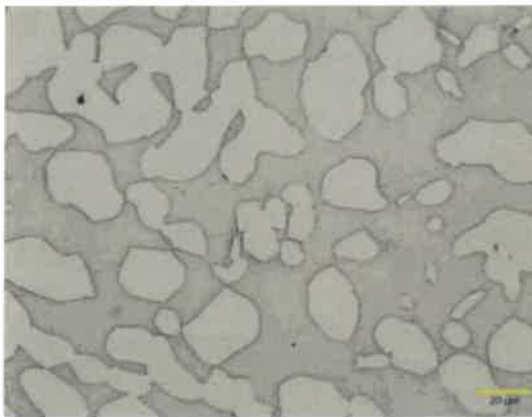
ANCILLIARY TESTING

Ferrite Count ASTM E562	Ferrite content according to ASTM E562 50.10 %
Microstructure	Microstructure is free from grain boundary carbides, sigma, chi and Laves phases according to ASTM A923 Method A. Magnification: x 500
G48A Surf-CTR Cor Test @ 50°C	Surface to CTR Corrosion test carried out at 50°C for 24h, samples pickled or passivated Result: No evidence of pitting corrosion (x20 magnification) and weight loss 0.0000 g/m ²

CONDITION OF SUPPLY

NORSOK Qualification M-650	A Norsok M650 approved mill has manufactured this material which has been tested to & complies with all the mechanical & physical requirements of its relevant Norsok M630 Material Data Sheet.
----------------------------	---

PHOTOMICROGRAPH



Etched Photomicrograph
Magnification: X 500

Certified that the whole of the supplies hereon has been inspected, tested and unless otherwise stated above conforms in all respects with their requirements of the contract or order. The quality control arrangements adopted in respect of these supplies have accorded with the conditions of our BS EN ISO 9001 approval.

This test certificate is issued in accordance with EN 10204:2004 3.1.

Signed

Date

11/12/2023

Gary Wilson- Quality Manager

Certificate not valid without QA stamp



A02/Z03

INSPECTION CERTIFICATE acc to
EN 10204 3.1

A06

LANGLEY ALLOYS LTD UK DIRECT
THE WHARF 504-506 LOWFIELD DRIVE
ST5 0UU NEWCASTLE
UNITED KINGDOM

INSPECTION STAMP

SVQ

Customer References	Alleima References
PO290367 Customer order 2023-03-27 180-08965 LANGLEY DI	Order No. Sub No. Dispatch note 45293/53 Suppl. No C.Code 285-73573 03

Material description	Steel/material Designations
HOT WORKED STAINLESS BAR STEEL ROLLED ANNEALED & STRAIGHTENED PEEL TURNED Melt Source ALLEIMA AB SWEDEN Metallurgical process Origin EAFAOD+LRF Sweden	Alleima UNS SAF 32760+ S32760 EN no 1.4501

Technical requirements
Langley PS:SD3276:B Rev.10 + Alleima DDR EN 10088-3:-2014, EN10272:-2016*, EN10060:2003, EN 10221:1996 EN10222-5:-2017*, PED 2014/68/EU, ISO 17781:2017:QL1, IOGP S-563:2018 NACE MR0175/ISO 15156-3:-2020, NACE MR0103/ISO 17945-1:-2015 ASTM A-276-17, ASME SA-276-ED-21 SECT II PART A, ASTM A-479-23A, ASME SA-479-ED-21 SECT II PART A, ASTM A-484-23, ASTM A-182-23*, ASTM A-1049-18(2023)*, ASTM A-314-19*, NORSOK M-630:2020, NORSOK MDS D57 REV. 6*, *Please see the appendix

EXTENT OF DELIVERY

B07-B13

It	Product designation	Heat	Lot	Pieces	Kg
05	XMBR-SAF32760+-3	568692	60191	32	6815.0
Total				32	6815.0

Heat Recycled material (%)

568692 Continuous casting 74.6

TEST RESULTS

Reduction ratio (times)

Lot

60191 17.0

Chemical composition (weight%) acc. to ASTM A-751

Heat PRE PRE2 + W

568692 42.0 43.0



Quality assurance - Erik Jansson/QA-manager Primary Products
MTC Service / Certificates

A05/Z02



Chemical composition (weight%)

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
568692	0.011	0.35	0.56	0.021	<0.0005	25.27	6.82	3.78
	W	Co	V	Ti	Cu	Al	Nb	B
568692	0.61	0.081	0.060	0.003	0.58	0.016	0.01	0.0024
	O	N						
568692	0.0040	0.268						

Tensile test at room temperature acc to ASTM A-370

Longitudinal

Location half radius

Lot	Yield strength		Tensile strength		Elongation	
	Mpa	MPa	Mpa		%	%
	Rp0.2	Rp1.0	Rm		A	2"
60191	581	674	822		41	41
	Red.of Area					
	%					
	Z					
	74					

Hardness test acc. to ASTM E-10

Location half radius

Lot	HRC	HRC	HRC
60191	24	25	25

Near Surface

Lot	HRC	HRC	HRC
60191	24	25	24

Impact test, J, Longitudinal acc. to ASTM A-370/ISO 148-1

Location half radius

Lot	Single values			Avg. Temperature	
	Joule			Joule	°C
60191	311	303	313	309	-50
	298	303	306	302	20

Lateral expansion

Lot				Temperature
	mm			°C
60191	2.03	1.97	2.05	-50

Impact test, J, Transversal acc. to ASTM A-370

Location half radius

Lot	Single values			Avg. Temperature	
	Joule			Joule	°C
60191	200	203	207	203	-50

SHEAR FRACTURE

%		
60	60	60

Lateral expansion

Lot				Temperature
	mm			°C
60191	1.68	1.69	1.73	-50



Corrosion test according to ASTM G-48A, 50°C +/-1°C for 24 hours.
In delivery condition. No pitting corrosion found at 20x enlargement.
Test location acc to NORSOK MDS D57

Specimen weight loss

Lot	g/m2
60191	0.00

Ferrite acc to ASTM E-562

Tested at surface, half radius and center.
20 Fields and 25 Points per Field (*)

Lot	%
60191	44.5
	50.1
	53.5

Austenite Spacing

acc. to DNV-RP-F112 Section 7

Lot	mym
60191	21.0

Following controls/tests have been satisfactorily performed:

- Material Identification.
- Ultrasonic testing (*)
- Visual inspection and dimensional control.

Melt Source

Heat 568692 ALLEIMA AB SWEDEN

HEAT TREATMENT:

Up to 74.9 mm: Batch furnace. Material soaking 1100°C,
min. 30 minutes. Quenched in water. Water temp. pre-quench max 38°C,
after quench max 49°C.
Transfer time furnace to quenching <150 seconds.

75 - 180mm: Continuous heat treatment furnace. Material
soaking 1090°C, min. 30 minutes. Alleima is using a continuous water
spray quenching process. Water temp pre-quench max 38°C,
after quench max 49°C. Transfer time furnace to quenching
<60 seconds.

>180 - 250mm: Batch furnace. Material soaking 1100°C,
min. 60 minutes. Quenched in water. Water temp pre-quench max 38°C,
after quench max 49°C.
Transfer time furnace to quenching <150 seconds.

The raw material is free from radioactive contamination.

Microscopic Examination X 500 acc. to ASTM A 923 Method A/NORSOK M630
Free from grain boundary carbides and intermetallic phases.

Material free from mercury contamination.

No welding or weld repair.

Certified acc. Pressure Equipment Directive (2014/68/EU Annex 1 para
4.3) TUEV CERT-Certification body for pressure equipment of the
TUEV NORD GRUPPE; notified body, reg.-no. 0045.



The delivered products comply with the specifications and requirements of the order.

The material is manufactured according to a Quality system, approved and registered to ISO 9001:2015.

No unauthorized alterations. The contents of this Inspection Certificate may not be modified or revised in any way without the prior written approval of Alleima.

Unauthorized alterations to the Inspection Certificate, including introduction of false, fictitious or fraudulent statements or entries, may be punishable by fines, imprisonment, or both. This Inspection Certificate may be copied only in the manner and for the purposes specified in Section 6 of EN 10204:2004. Contravention of this notice will be prosecuted to the fullest extent of applicable law.

The certificate is produced with EDP and valid without signature.



ADDITIONAL INFORMATION**Lab accreditation**

Our lab is accredited under SWEDAC Accreditation number 1636 for testing as per ISO/IEC 17025

Applicable only to specific dimensions

12,5mm - 160mm: EN 10088-5 EN (Only valid for CE marked products together with Alleima Declaration of Performance certificate).

12,5mm - 160mm: PED 2014/68/EU EN 10272 (Stainless steel bars for pressure purposes)

12,5mm - 250mm: EN 10222-5 (Chemical composition only)

12,5mm - 180mm: NORSOK M-630 - NORSOK MDS D57 (for length max 7500 mm)

Suitable for manufacturing of components in acc, with ASTM A-182 (F55), ASTM A-1049 & ASTM A-314.

Test location**Mechanical, ferrite testing:**

Bar dim < 50 mm - Longitudinal test pieces in center of the bar.

Bar dim > 50mm & < 100 mm - Longitudinal test pieces, 1/4 T and minimum 100 mm from any second surface.

Bar dim > 100 mm & < 250 mm - Longitudinal test pieces, 1/4 T and minimum 100 mm from any second surface. Transversal test pieces, 1/4 T and minimum 100 mm from any second surface.

One set of test samples per heat treatment lot.

Maximum lot size 15 ton.

Micro: To ensure a sound, and unaffected structure all through the material three samples are taken, one close to surface, half radius, and in the center of the bar.

Furnace calibration every third month according to API 6A 21th Edition Annex M, Thermocouples of S-type (+/- 5°C tolerance) are used to monitor the Furnace temperature.

Ferrite Testing: Alleima ferrite testing per ASTM E-562 at 20 fields and 25 points, is fulfilling the requirements of ASTM E-562 testing at 30 fields and 16 points.

Ultrasonic test

Dim 29 - 74 mm: EN 10308 quality class 3

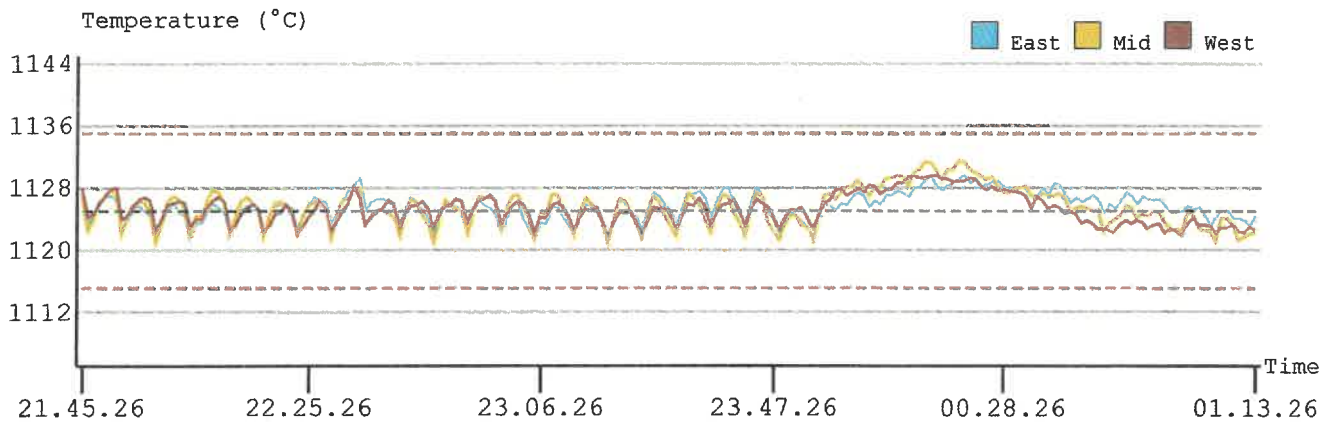
Dim 75 mm - : EN 10228-4, Tab 3 Scan coverage 1a 100%, Tab 5 Quality Class 3, ASTM A-388, API 6A PSL3/3G.

Alleima, formerly Sandvik Materials Technology. During a brand transition period, both Sandvik and Alleima marking on products may exist.

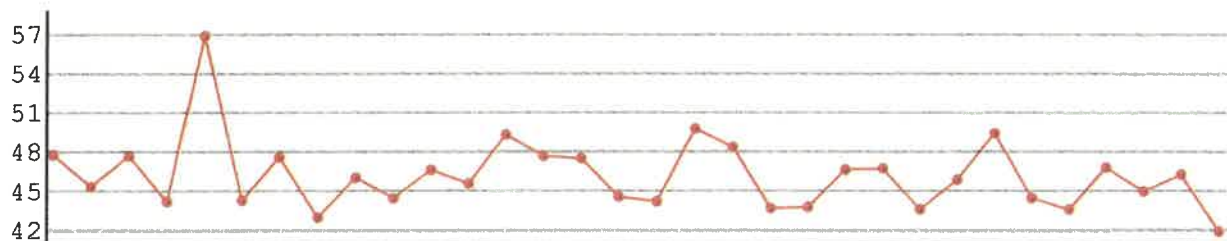


						Setpoints					
Work order	Num. of pieces	Dim (mm)	Weight (kg)	Steel Grade	Heat Number	Strategy	Zone 3 (°C)	Mtrl. temp. out furn. (°C)	Total time (mm)	Cooling time 1 (mm:ss)	Cooling time 2 (mm:ss)
60191	32	85.4	8640	2RDKW99	568692	80	1125	1115	209	1:15	1:35

Heating Temperature (°C) - Zone 3 - Soaking



Temperature after cooling (°C)



Date 2023-06-25	Customer Langley Alloys Ltd	Specification EN 10228-4, EN 10308, ASTM A388 and API 6A PSL 3/3G	
Alleima Order No	Grade 2RDKW99	Procedure No. 72-4031	Testpiece No. 35809
Level 1 Operator Certified acc.: ISO 9712 and ASNT-SNT-TC-1A		Level 2 Technician Certified acc.: ISO 9712 and ASNT-SNT-TC-1A	
Performed by 72223 - Danielzon		Approved by 17658 - Pyyköne 	

EQUIPMENTS

Apparatus EcoMAC FD4	Sorting	Marking	Alarm X	Recording X	
Apparatus	Sorting	Marking	Alarm	Recording	
Apparatus	Sorting	Marking	Alarm	Recording	
Transducer Technisonic	Type ILD-0208-SP 2.25MHz/6"	Size 25,4 mm	Beam width mm	Focal length mm	Freq 2,25 MHz
Transducer	Type	Size mm	Beam width mm	Focal length mm	Freq MHz
Transducer	Type	Size mm	Beam width mm	Focal length mm	Freq MHz

EQUIPMENTS

☐ Contact	Rotation Speed of	
☒ Immersion	☒ Tube/Bar	☐ Transducer 150,4 RPM Pitch 44 mm/Rev Testspeed 6,62 m/min
Scanning	Sensitivity/calibration /testing	
☐ Axial	/testing	
☐ Longitudinal Defects, Two Way Search		
☐ Axial	Sensitivity/calibration	/testing
☐ Transverse Defects, Two Way Search		
☐ Axial Straight Beam	Sensitivity/calibration	/testing
☒ Circumferential Straight Beam	FBH Ø 3,0 mm	100%
Couplant Water	Surface condition Peeled	
Note		

RESULT OF TESTING

Dim in mm	Lot No	Heat No	Number of tested tubes/bars	Accepted without report	Accepted with report	Not Accepted	Note
Ø 76,2	60191	568692	32	32 			

Microstructure Examination Report

Page 1 of 1

Material Information

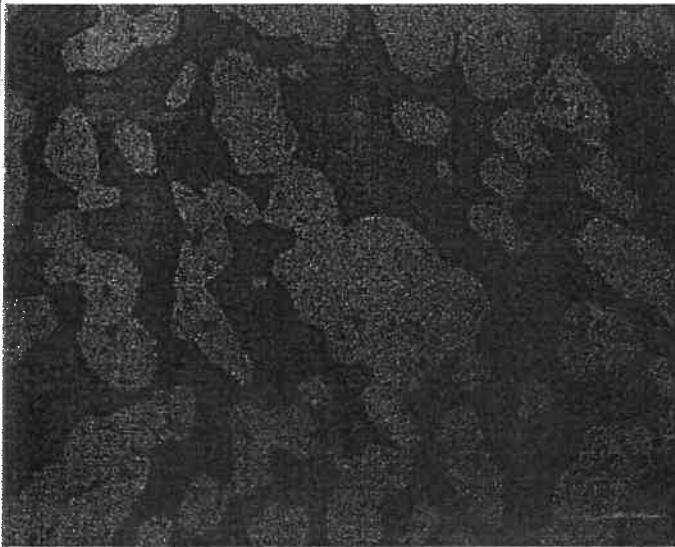
Grade SAF32760+
Heat 568692
Lot 60191
Dim 76.20 x

Technical Information

Certificate No. A/23-161974
Test Date 2023-07-04
Etchant NAOH
Test Result OK

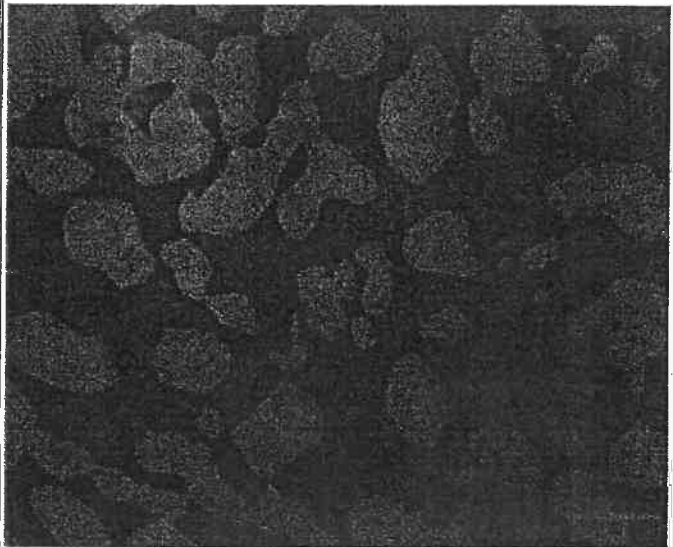
Test No: 382 O

Magnification: 500X



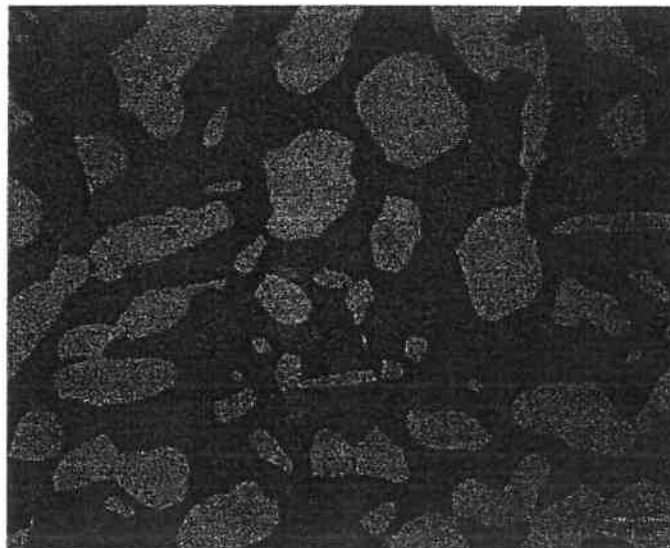
Test No: 383 R

Magnification: 500X



Test No: 384 C

Magnification: 500X



EXAMINATION REPORT

Method of Test	Fluorescent Water Washable – Dry Development 100% Of The Surface
Specification	ASTM E1417-21e1 (ASTM A962-23a S56)
Acceptance Criteria	ASTM A962-23a S57
Procedure and Technique	PT-PR-ASTME1417-01 Revision: 03

CUSTOMER DETAILS

Customer:	SFC (Europe) LTD	Date Tested:	18/01/2024		
Address:	Unit 12 Dunstall Hill Trading Estate, Gorsebrook Road,Wolverhampton, WV6 0PJ	Customer Order:	P067866		
Tel:	01902 420287	Tested Quantity:	11	Representing Quantity:	101
Contact:	Leon Bradshaw	Fluoro-Tech Job Number:	27695-P067866		
Email:	Leonb@sfc-europe@com	Test Report Number:	27695-P067866		
Customer Code:	SF002	Issue No:	001		

COMPONENTS UNDER EXAMINATION

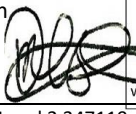
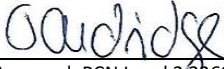
Product Description	M42 Nut		
Part Number	Not Advised		
Drawing Number	ISO 4032		
Material Specification	S32760A		
Internal Cast Number	Not Advised	Cast Number	568692
Batch Number	Not Advised		
Manufacturing Stage	Fully Machined	Surface Condition	No Contamination
Limitations	Zero Limitations		
Job Number	101463		

EQUIPMENT USED & METHOD

Dye Penetrant Inspection	Water-Washable System Fluorescent		
Consumable Manufacturer	Sherwin Babbco	Consumable Batch Numbers	N-120 Cleaner - Cleaner PL220200613-1 HM-3A Penetrant - Penetrant 18933 D-90-g Developer - Developer 117-G92
Penetrant Sensitivity Level	AMS 2644 Level 2	Sensitivity Recorded	3 Indications on TAM Panel
Method Description	Immersion, Water-Washable, Circulating Air Drying, Dry Development		
Component Temperature	23°c		
Penetrant Dwell Time	20 mins		
Penetrant Temperature	26°c		
Wash Temp & Pressure	27°c at 13psi		
Drying Parameters	68°c for 4 mins		
Temp at Development	21°c	Developer Dwell Time	15 Mins
Inspection Time	≤ 1 Minute Following Development		
UV-A Light Intensity Min	LED Source - 1200μw/cm2 Minimum & 10 Lux Maximum at Inspection Surface – LED Serial Number 002		
Pre Test Calibration	In accordance with ID-PTCP-01		
Equipment Calibration Date	≤ 6 Months Serial Numbers – 600200-37 & 522133/20		

RESULTS AND COMMENTS

PASS Quantity	11	FAILED Quantity	0
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Comments	Passed – No indications evident during examination. Samples selected using internal procedure ID-CRSP-01		
Test Technician:	Report Approved By:	(Third Party Approval) Approved By:	
Darren Nelson  PCN DARREN NELSON PCN No. 347119 www.bindt.org/PCN	James Aldridge  PCN JAMES ALDRIDGE PCN No. 326019 www.bindt.org/PCN		
Approval: PCN Level 2 347119	Approval: PCN Level 2 326019		

All results are subject to uncertainty of measurement budgets, details available on request. The outcome of the above result falls within the bounds of the laboratories flexible scope of accreditation. The laboratory has procedures in place to satisfy the requirements within UKAS Document GEN 4 Edition 1 to ensure the test and the result meets the acceptable requirements within the standard at the revision status on this report. This certificate shall not be reproduced. Any act of tampering, modification, alteration, counterfeiting and/or any actions which modifies the contents of this certificate may constitute a violation of applicable UK civil and criminal law.



RMR MATERIALS TESTING LTD

MECHANICAL TESTING - PROOF LOAD TESTING - CHEMICAL ANALYSIS
WELDER & WELD PROCEDURE QUALIFICATIONS

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Dudley
West Midlands
DY3 2DZ

SFC (Europe) Limited

Unit 15, Dunstall Trading Estate,
Gorsebrook Road,
Wolverhampton,
WV6 0PJ

TEST CERTIFICATE

Test Certificate No.	0124 / 9403	O/No. P067865	Date Received	18.01.2024
Page 1 of 1			Tested/Reported	19.01.2024

Item

M42 ISO 4032 S32760A Nut- ISO 4032 Cast: 568692 SFC SO: 101463 JOB084294-1

Specification for Test

ASTM A194 – 23 Grade 7 (Proof load only)

Proof Load *ASTM A962: 2022*

M42 Hexagon nut proof loaded to 1159.2 kNf Test Result: Satisfactory
Nut revolved freely on mandrel following test.

TEST RESULTS ACCEPTABLE TO SPECIFICATION REQUIREMENTS

For and on behalf of RMR Materials Testing Co. Ltd

Martin C Richards

(Quality Assurance Director)

Test results pertain only to the item submitted for testing
The contents of this report are governed by the terms and conditions overleaf

100% PMI PARTS - INSPECTION REPORT 22/01/2024

MATERIAL

s32760-a

PP

PRODUCT DESCRIPTION	JOB NUMBER	LINE NUMBER	
m42 nuts	84294 - 1	10000	
DRAWING/STANDARD	SO NUMBER:	INSPECTOR	
iso 4032	101463	RYAN	568692

instrument: Olympus DPO-2000 Serial number: 540276

Certification number:472914

Item No	XRF #	Best Match	PASS	Item No	XRF #	Best Match	PASS			
		Result	FAIL			Result	FAIL			
1	3	ZERON 100	PASS	106						
2	4	ZERON 100	PASS	107						
3	5	ZERON 100	PASS	108						
4	6	ZERON 100	PASS	109						
5	7	ZERON 100	PASS	110						
6	8	ZERON 100	PASS	111						
7	9	ZERON 100	PASS	112						
8	10	ZERON 100	PASS	113						
9	11	ZERON 100	PASS	114						
10	12	ZERON 100	PASS	115						
11	13	ZERON 100	PASS	116						
12	14	ZERON 100	PASS	117						
13	15	ZERON 100	PASS	118						
14	16	ZERON 100	PASS	119						
15	17	ZERON 100	PASS	120						
16	18	ZERON 100	PASS	121						
17	19	ZERON 100	PASS	122						
18	20	ZERON 100	PASS	123						
19	21	ZERON 100	PASS	124						
20	22	ZERON 100	PASS	125						
21	23	ZERON 100	PASS	126						
22	24	ZERON 100	PASS	127						
23	25	ZERON 100	PASS	128						
24	26	ZERON 100	PASS	129						
25	27	ZERON 100	PASS	130						
26	28	ZERON 100	PASS	131						
27	29	ZERON 100	PASS	132						
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45	47	ZERON 100	PASS	150						
46	48	ZERON 100	PASS	151						
47	49	ZERON 100	PASS	152						
48	50	ZERON 100	PASS	153						
49	51	ZERON 100	PASS	154						

PMI PASS FAIL

100% PMI PARTS - INSPECTION REPORT 22/01/2024

MATERIAL

s32760-a

PP

PRODUCT DESCRIPTION	JOB NUMBER	LINE NUMBER	
m42 nuts	84294 - 1	10000	
DRAWING/STANDARD	SO NUMBER:	INSPECTOR	
iso 4032	101463	RYAN	568692

instrument: Olympus DPO-2000 Serial number: 540276 Certification number: 472914

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		Result	FAIL			Result	FAIL			
1	3	ZERON 100	PASS	106						
2	4	ZERON 100	PASS	107						
50	52	ZERON 100	PASS	155						
51	53	ZERON 100	PASS	156						
52	54	ZERON 100	PASS	157						
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54	56	ZERON 100	PASS	159						
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85	87	ZERON 100	PASS	190						
86	88	ZERON 100	PASS	191						
87	89	ZERON 100	PASS	192						
88	90	ZERON 100	PASS	193						
89	91	ZERON 100	PASS	194						
90	92	ZERON 100	PASS	195						

100% PMI PARTS - INSPECTION REPORT 22/01/2024

MATERIAL

s32760-a

PP

PRODUCT DESCRIPTION	JOB NUMBER	LINE NUMBER	
m42 nuts	84294 - 1	10000	
DRAWING/STANDARD	SO NUMBER:	INSPECTOR	
iso 4032	101463	RYAN	CAST
			568692

instrument: Olympus DPO-2000 Serial number: 540276

Certification number:472914

Item No	XRF #	Best Match	PASS	Item No	XRF #	Best Match	PASS			
		Result	FAIL			Result	FAIL			
1	3	ZERON 100	PASS	106						
2	4	ZERON 100	PASS	107						
91	93	ZERON 100	PASS	196						
92	94	ZERON 100	PASS	197						
93	95	ZERON 100	PASS	198						
94	96	ZERON 100	PASS	199						
95	97	ZERON 100	PASS	200						
96	98	ZERON 100	PASS							
97	99	ZERON 100	PASS							
98	100	ZERON 100	PASS							
99	101	ZERON 100	PASS							
100	102	ZERON 100	PASS							
101	103	ZERON 100	PASS							