ACME METALS

Manufacturer

ACME Metal Works GmbH

Industrial Park 123
52066Aachen
DE
quality@acme-metal.example.com

Customer

Advanced Nuclear Systems Ltd.

Energy Square 456
Abingdon
OX14 3DB
GB
procurement@advnuclear.example.com

Digital Material Passport

ID	DMP-METAL-004	*Version*	1.0.0
Issue Date	2025-05-16	*Certificate Type*	EN 10204 3.1

Business Transaction

Order		**Delivery**	
Order ID	PO-56789	*Delivery ID*	DN-12345
Position	2	*Position*	1
Date	2025-04-10	*Date*	2025-05-15
Quantity	200 kg	*Quantity*	200 kg

Product Information

Product Name	Stainless Steel 316L
Batch ID	H-87654-01
Surface Condition	2B
Production Date	2025-05-14
Country of Origin	DE

Product Norms

Standard	ASTM A240 (2023)

Material Designations

Number (UNS)	S31603
Name (EN)	1.4404

Product Shape

Form	Plate
Length	2000 mm
Width	1000 mm
Thickness	10 mm

Packaging and Marking

Marking
316L stamped on corner with medium depth and good legibility.

Coloring
Natural finish with full coverage for protection.

Chemical Analysis

Heat Number	H-87654
Melting Process	EAF+AOD+LF
Casting Date	2025-05-13
Casting Method	ContinuousCasting
Sample Location	Ladle

Elements

Symbol	**C**	**Cr**	**Ni**	**Mo**	**Mn**	**Si**	**P**	**S**	**N**
Unit	%	%	%	%	%	%	%	%	%
Min	-	16	10	2	-	-	-	-	-
Max	0.03	18	14	3	2	0.75	0.045	0.03	0.1
Actual	0.018	17.2	10.5	2.15	1.4	0.38	0.025	0.002	0.052

Mechanical Properties

Property	*Symbol*	*Actual*	*Minimum*	*Maximum*	*Method*	*Status*
Tensile Strength 3 specimens tested					ASTM E8	✓

Individual Values	# 1	# 2	# 3
Value [MPa]	578	580	582

Statistics	**Mean**	**Min/Max**	**Std Dev**
	580	578 / 582	

0.2% Yield Strength 3 specimens tested					ASTM E8	✓

Individual Values	# 1	# 2	# 3
Value [MPa]	238	240	242

Statistics	**Mean**	**Min/Max**	**Std Dev**
ASTM E8 statistical analysis	240	238 / 242	2 (Sample)

Elongation 3 specimens tested					ASTM E8	✓

Individual Values	# 1	# 2	# 3
Value [%]	51	52	53

Statistics	**Mean**	**Min/Max**	**Std Dev**
	52	51 / 53	

Supplementary Tests

Property	*Actual*	*Target/Min*	*Maximum*	*Method*	*Status*
Intergranular Corrosion - Resistance	Yes No evidence of intergranular attack	-	-	ASTM A262 Practice E	✓
Pitting Corrosion Resistance 72 hours at 22°C in 6% $FeCl_3$	1.2g/m²	-	4g/m²	ASTM G48 Method A	✓
Crevice Corrosion Resistance 72 hours in 3.5% NaCl solution	Yes No visible crevice corrosion	-	-	ASTM G78	✓
Stress Corrosion Cracking - Resistance Boiling 42% $MgCl_2$ solution, 100 hours	Yes No cracking observed	-	-	ASTM G36	✓
Ferrite Content	2.5%	-	5%	ASTM A800	✓
Grain Size	7ASTM No.	5ASTM No.	-	ASTM E112	✓
Inclusion Rating Worst field rating	A1, B1, C1, D1	-	A2, B2, C2, D2	ASTM E45 Method A	✓
Ultrasonic Examination	Yes No recordable indications	-	-	ASTM A388	✓
Liquid Penetrant Examination	Yes No relevant indications	-	-	ASTM E165	✓
Weldability Test	0.4mm	-	1mm	Varestraint Test	✓
Surface Finish	25µin Ra	-	32µin Ra	ASME BPE SF1	✓
PREN (Pitting Resistance - Equivalent Number) Calculated using formula: %Cr + 3.3 × %Mo + 16 × %N	25.8	24	-		✓
Dimensional Tolerance	-0.3 - 0.2mm	-0.4 - 0.4mm	-	ASTM A480	✓
Flatness	4mm/m	-	9mm/m	ASTM A480	✓
PMI (Positive Material - Identification)	Yes Material confirmed as 316L stainless steel	-	-	XRF Analysis	✓

Validation

We hereby certify that the material described above has been manufactured and tested in accordance with ASTM A240/A240M and meets all specified requirements. This material is suitable for nuclear applications in accordance with RCC-M code.

Validated By

Name	*Title*	*Department*	*Date*
Thomas Wagner	Metallurgist	Quality Assurance	2025-05-16
Anna Schmidt	Quality Manager	Quality Assurance	2025-05-16

Data schema maintained by Material Identity. https://schemas.materialidentity.org/metals-schemas/v0.1.1/schema.json