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**Customer**

**Advanced Nuclear Systems Ltd.**

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**Digital Material Passport**

<i>ID</i>	DMP-METAL-004	<i>Version</i>	1.0.0
<i>Issue Date</i>	2025-05-16	<i>Certificate Type</i>	EN 10204 3.1

**Business Transaction**

<b>Order</b>		<b>Delivery</b>	
<i>Order ID</i>	PO-56789	<i>Delivery ID</i>	DN-12345
<i>Position</i>	2	<i>Position</i>	1
<i>Date</i>	2025-04-10	<i>Date</i>	2025-05-15
<i>Quantity</i>	200 kg	<i>Quantity</i>	200 kg

**Product Information**

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

**Product Norms**

<i>Designation</i>	ASTM A240 (2023)
<i>Grade</i>	316L

**Material Designations**

<i>System</i>	UNS EN
<i>Designation</i>	S31603 1.4404

**Product Shape**

<i>Form</i>	Plate
<i>Length</i>	2000 mm
<i>Width</i>	1000 mm
<i>Thickness</i>	10 mm

**Delivery Conditions**

<b>Coloring</b>	
<i>Method</i>	Other
<i>Color</i>	Natural
<i>Coverage</i>	Full

**Purpose**

Protection

**Stamping**

<i>Location</i>	Corner
<i>Content</i>	316L
<i>Depth</i>	Medium
<i>Legibility</i>	Good

**Chemical Analysis**

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

**Elements**

Symbol	C	Cr	Ni	Mo	Mn	Si	P	S	N
<i>Unit</i>	%	%	%	%	%	%	%	%	%
<i>Min</i>	-	16.0	10.0	2.0	-	-	-	-	-
<i>Max</i>	0.03	18.0	14.0	3.0	2.0	0.75	0.045	0.03	0.1
<i>Actual</i>	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
<b>Tensile Strength</b>					ASTM E8	✓
3 specimens tested						
<b>Individual Values</b>		# 1		# 2		# 3
Value [MPa]		578		580		582
<b>Statistics</b>		<b>Mean</b>		<b>Min/Max</b>		<b>Std Dev</b>
ASTM E8 statistical analysis		580.0		578 / 582		
<b>0.2% Yield Strength</b>					ASTM E8	✓
3 specimens tested						
<b>Individual Values</b>		# 1		# 2		# 3
Value [MPa]		238		240		242
<b>Statistics</b>		<b>Mean</b>		<b>Min/Max</b>		<b>Std Dev</b>
ASTM E8 statistical analysis		240.0		238 / 242		2.0 ( Sample )
<b>Elongation</b>					ASTM E8	✓
3 specimens tested						
<b>Individual Values</b>		# 1		# 2		# 3
Value [%]		51		52		53
<b>Statistics</b>		<b>Mean</b>		<b>Min/Max</b>		<b>Std Dev</b>
		52.0		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 <sub>3</sub>	1.2g/m <sup>2</sup>	-	4.0g/m <sup>2</sup>	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 <sub>2</sub> solution, 100 hours	Yes No cracking observed	-	-	ASTM G36	✓
Ferrite Content	2.5%	-	5.0%	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	-	1.0mm	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	24.0	-		✓
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
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Data schema maintained by [Material Identity](#).

<https://schemas.materialidentity.org/metals-schemas/v0.1.1/schema.json>