



# Agescan International Inc.

Date of Issue: 09/10/2015

## CERTIFICATE OF ANALYSIS

1. **Product Name & Model Number:** Tungsten Alloy Rod  $\varnothing$  27.5\*580mm
2. **Chemical Composition:** 90 W7 Ni2.5Fe0.5Co      **Production Batch Number:** TP 0020150903
3. **Dimensions and Tolerance:**

### 3.1. Diameters and Production Tolerances

Diameter (mm)	Tolerance (mm)	Tested Value (mm)	Qualified (Y/N)
$\varnothing$ 27.5	$\pm$ 0.2	$\varnothing$ 27.64	Yes

### 3.2. Lengths and Tolerances

Length (mm)	Tolerance (mm)	Tested Value (mm)	Qualified (Y/N)
580	$\pm$ 0.8	580.38	Yes

### 3.3 Straightness and Tolerance

Straightness (mm)	Tolerance (mm)	Tested Value (mm)	Qualified (Y/N)
0.2 (max)		0.18	Yes

### 3.4 Other Properties

Property Category	Required Value	Reference Standard	Tested Value								Qualified (Y/N)
			1	2	3	4	5	6	7	8	
Density (g/cm <sup>3</sup> )	17.2	ASTM B311	17.2	17.25	17.22	17.2	17.2	17.24	17.24	17.25	Yes
Hardness (HRC)	40	ASTM E18	42	42.5	42.5	42	44	44.5	42.5	43.5	Yes
Tensile Strength (Ksi)	190 (min.)	ASTM E8	219.57	221.57	224.65	222.47	221.02	224.07	222.04	219.72	Yes
Yield Strength (Ksi)	180 (min.)	ASTM E8	211.19	207.09	208.25	209.27	211.44	209.95	206.51	212.89	Yes
Elongation (%)	9 (min.)	ASTM E8	10.5	11.5	10.8	11.5	9.5	9.8	10.4	10.9	Yes
Impact (ft-ib)	71.5 (min.)	ASTM E23	71.52	73.02	72.28	72.28	73.76	73.76	73.02	72.28	Yes