

Certificate of Analysis

Standard Reference Materials

1206-2, 1207-1, 1207-2, 1208-1, 1208-2

High-Temperature Alloys: René 41, Waspaloy, and Inco 718

These standards are in the form of solid sections primarily for application in x-ray spectrometric analysis although they also may be useful in optical emission spectrometric analysis.

	René 41	Waspaloy		Inco 718	
	1206-2	1207-1	1207-2	1208-1	1208-2
Carbon	0.21 ₇	0.043	0.083	0.046	0.022
Manganese	.030	.34	.29 ₅	.38 ₅	.23 ₀
Phosphorus	(.004) ^a	.005	.005	.003	.003
Sulfur	.006	.009	.009	.01 ₁	.007
Silicon	.21 ₆	.47 ₂	.61 ₅	.43 ₄	.08 ₃
Copper	.040	.026	.033	.14 ₇	.077
Nickel	53.3	56.1	55.7	51.9	54.5
Chromium	19.17	18.88	19.4 ₄	17.5	17.4
Molybdenum	10.3 ₀	4.50	4.34	3.2 ₄	3.13
Titanium	2.9 ₄	3.09	2.54	0.46	(0.8 ₅)
Aluminum	1.7 ₄	1.26	1.3 ₉	(.15)	(.8 ₅)
Cobalt	11.5 ₅	13.0 ₅	13.5 ₀	.82	.76
Niobium	--	--	--	5.3 ₈	4.9 ₈
Iron	0.46	2.22	2.00	19.2	19.8
Tantalum	--	--	--	(0.012)	(0.012)
Lead	(.0027) ^b	(0.0012) ^b	(0.0022) ^b	(.00054)	(.0022)
Bismuth	(.00006)	(.000038)	(.000047)	(.000078)	(.000084)

^aValues in parenthesis are not certified but are provided for additional information on the composition.

^bLimited data on millings suggests some segregation

SIZE AND METALLURGICAL CONDITION: Samples are approximately 31 mm (1 1/4 in) square and 13 mm (1/2 in) thick; they were chill-cast by a rapid unidirectional solidification technique.

CERTIFIED PORTION: The certified portion for each sample is that extending upward 8 mm (5/16 in) from the chill-cast or test surface (the largest surface opposite the numbered surface). This portion only was analyzed in the cooperative program for certification.

PROVISIONAL CERTIFICATION: The value listed for a certified element is the present best estimate of the true value based on the results of the cooperative analytical program. The value listed is not expected to deviate from the true value by more than ± 1 in the last significant figure reported; for a subscript figure, the deviation is not expected to be more than ± 5 . Based on the results of homogeneity testing, maximum variations within and among samples are estimated less than the accuracy figures given above.

Washington, D. C. 20234
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J. Paul Cali, Chief
 Office of Standard Reference Materials

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