

MULTIMET[®] alloy

Oxidation Resistance

MULTIMET[®] exhibits acceptable oxidation resistance up to around 1800°F. However, due to concerns with oxidation resistance, MULTIMET[®] has been generally replaced by 556[®] alloy, which has comparable creep-rupture strength but superior oxidation resistance, particularly at temperatures greater than 1800°F.

Short-term Oxidation

Comparative Oxidation Resistance in Flowing Air, 1008 Hours

Alloy	1800°F (980°C)				2000°F (1095°C)			
	Metal Loss		Average Metal Affected		Metal Loss		Average Metal Affected	
	mils	µm	mils	µm	mils	µm	mils	µm
MULTIMET[®]	0.4	10	1.3	33	8.9	226	14.3	363
556 [®]	0.4	10	2.3	58	1.5	38	6.9	175

Flowing air at a velocity of 7.0 ft/min (213.4 cm/min) past the samples. Samples cycled to room temperature once per week.

Dynamic Oxidation Burner Rig

Alloy	1600°F (870°C), 1000 h, 30-min cycles				1600°F (870°C), 2000 h, 30-min cycles			
	Metal Loss		Average Metal Affected		Metal Loss		Average Metal Affected	
	mils	µm	mils	µm	mils	µm	mils	µm
MULTIMET[®]	1.3	33	2.2	56	2.7	69	4.9	124
556 [®]	1.4	36	3.1	79	1.5	38	3.9	99

Burner rig oxidation tests were conducted by exposing samples 3/8 in. x 2.5 in. x thickness (9 mm x 64 mm x thickness), in a rotating holder, to products of combustion of No. 2 fuel oil burned at a ratio of air to fuel of about 50:1. (Gas velocity was about 0.3 mach). Samples were automatically removed from the gas stream every 30 minutes and fan-cooled to near ambient temperature and then reinserted into the flame tunnel.