

PLATINUM SUBSTITUTION SOLUTIONS

Overcoming the Volatility of the Platinum Market

JM Base Prices
US\$ Daily

Platinum, Palladium & Iridium

From: 01 Jul 1992
To: 20 Oct 2011



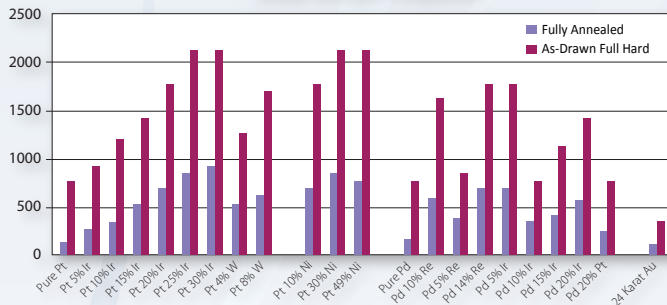
Johnson Matthey, The World Leader in Precious Metals Alloys, continues to push the envelope, and now offers more options to reduce dependency on Platinum and Platinum Alloys. Our dedicated Team of Metallurgists continues to expand the selection of Palladium-based alloys that offer similar properties to Platinum-based alloys while reducing cost.

Material	Density (g/cm ³)	Melting Point (°C)	UTS (KPSI)			% Elongation			Young's Modulus (KPSI)	Resistivity (Microhm mm)	Product Form		
			As-Drawn	Stress Relieved	Annealed	As-Drawn	Stress Relieved	Annealed			Sheet	Tube	Wire
Pure Platinum	21.45	1768	70	55	23	<2	>5	>20	168	10.6	✓	✓	✓
Platinum 5% Iridium	21.51	1775	130	80	40	<2	>2	>10	171	19	✓	✓	✓
Platinum 10% Iridium	21.56	1790	155	140	55	<2	>2	>10	172	25	✓	✓	✓
Platinum 15% Iridium	21.62	1820	200	160	75	<2	>2	>10	187	29	✓	✓	✓
Platinum 20% Iridium	21.68	1830	210	175	105	<2	>2	>10	199	31	✓	✓	✓
Platinum 25% Iridium	21.74	1860	230	195	120	<2	>2	>10	218	33	✓	-	✓
Platinum 4% Tungsten	21.34	1780	180	140	75	<2	>2	>10	195	36	-	-	✓
Platinum 8% Tungsten	21.23	1870	220	170	130	<2	>3	>20	210	62	-	-	✓
Platinum 10% Nickel	18.8	1650	240	190	120	<2	>2	>20	215 *	29.8	-	-	✓
Platinum 30% Nickel	15.07	1460	300	200	120	<2	>5	>20	218 *	22.7	-	-	✓
Platinum 49% Nickel	12.69	1430	300	190	110	<2	>2	>20	222 *	19.1	-	-	✓
Pure Palladium	12.02	1552	110	65	25	<2	>5	>10	118	9.98	✓	✓	✓
Palladium 5% Rhenium	11.71	1560	115	200	55	<2	>2	>10	125 *	21.2	✓	✓	✓
Palladium 10% Rhenium	12.29	1620	230	200	80	<2	>2	>10	195 *	32.5	-	-	✓
Palladium 14% Rhenium	12.79	1650	250	200	100	<2	>2	>10	200 *	40 *	-	-	✓
Palladium 5% Iridium	12.31	1590	100	70	40	<2	>2	>10	225	11.6 *	✓	✓	✓
Palladium 10% Iridium	12.61	1625	110	75	50	<2	>2	>10	232	16.3	✓	✓	✓
Palladium 15% Iridium	12.93	1675	160	85	60	<2	>2	>10	270	20.3	-	-	✓
Palladium 20% Iridium	13.27	1740	200	100	80	<2	>2	>10	292	25 *	-	-	✓
Palladium 20% Platinum	13.18	1600	110	55	35	<2	>5	>10	155 *	12.3	✓	✓	✓

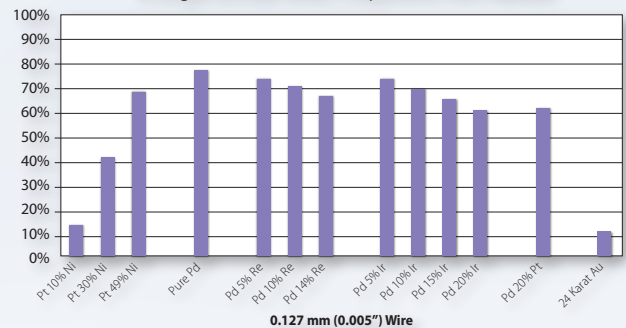
* estimated values

Custom PGM Alloy Development Available

Mechanical Properties Tensile Strength Comparison



Advantages of Platinum Substitution Alloys % Length Increase When Compared to Pure Platinum



Please contact your Johnson Matthey Sales Associate to discuss Platinum substitution alloys.



Johnson Matthey

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