PRODUCT DATA SHEET	NIOBIUM PRODCUTS
LATEST REVISION	**Date: 01-01-2026**

Product Name	NIOBIUM PRODUCTS
Description	Niobium is a shiny, platinum-gray, soft, and ductile refractory metal. It closely resembles tantalum in its chemical properties but features only half of tantalum's atomic weight and density, making it highly valuable for weight-sensitive, high-performance applications. • Chemical Symbol: Nb (formerly Cb) • Atomic Number: 41 • CAS Number: 7440-03-1 • Standard Forms Available: Wire, rod, bar, sheet, strip, foil, seamless tubes, ingots, and sputtering targets. • Common Industry Specifications: ASTM B391 (Ingots), ASTM B392 (Bar, Rod, Wire), ASTM B393 (Plate, Sheet, Strip), ASTM B394 (Seamless/Welded Tubes).
Application	Aerospace Propulsion: Rocket engine nozzles, thrust chambers, and exhaust structures for satellites and spacecraft (predominantly using the C-103 alloy coated with silicides to combat high-temperature oxidation). Superconducting Magnets: Critical components for Magnetic Resonance Imaging (MRI) medical scanners, nuclear magnetic resonance (NMR) hardware, and particle accelerators (like the Large Hadron Collider). High-Strength Low-Alloy (HSLA) Steels: Micro-alloying additive in modern structural steel for pipelines, automotive frames, and bridges. Adding less than 0.1% niobium vastly increases grain refinement and yield strength. Nuclear Energy: Fuel element cladding and structural components within nuclear reactors due to its low thermal neutron cross-section and superior liquid metal corrosion resistance.
Chemical Properties	Niobium(Nb): ⩾99.95% (Reactor and optical grades reach 99.99%)

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	Tantalum (Ta): ≤0.10% (Geologically bound to Nb; higher purities limit Ta to ≤0.05%) Iron (Fe): ≤0.005% Silicon (Si): ≤ 0.005% Oxygen (O): ≤ 0.015% Nitrogen (N): ≤ 0.010% Carbon (C): ≤0.010% Hydrogen (H): ≤ 0.0015%	
Physical Properties		
Property	Value	
Density	8.57g/cm3	
Melting Point	2477℃	
Thermal Conductivity	53.7 w/m.k	
Coeff. of Thermal Expansion	7.3*10 -6/k	
Tensile Strength (Ultimate)	200-300Mpa	
Yield Strength (0.2% Offset)	100-150Mpa	
Modulus of Elasticity	105GPa	

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