ATOMET DB49

ATOMET DB49, containing 4% Ni, 2% Cu and 1.5% Mo is a highly compressible diffusion-bonded steel powder, designed for demanding applications requiring very high strength and dimensional control in parts.

- **Compressibility** - high compressibility extends the benefits of high alloy compositions to high density applications for improved strength and reduced tool stress.
- **Compositional homogeneity** - the diffusion process bonds alloying elements to the iron particles, giving increased compositional homogeneity over premixes of similar composition. This ensures low part-to-part variation and improved part stability.
- **Dynamic properties** - heterogeneous mixture of phases in the sintered part impedes crack growth, improving dynamic properties such as increased ductility and high impact strength and toughness.
- **Consistency** - a stable ore base, modern steelmaking practice and statistically controlled powder manufacturing ensure lot-to-lot consistency and low part-to-part variation.
- **Purity and cleanliness** - state-of-the-art clean steel practice ensures low residuals and sets new standards for cleanliness giving improved mechanical and dynamic properties.

PHYSICAL AND CHEMICAL PROPERTIES

Chemistry, wt%

C	O	S	Mn	Mo	Ni	Cu
0.01	0.09	0.009	0.15	1.50	4.00	2.00

	Particle Size Analysis, wt%				A.D.	Flow	Density*
U.S. mesh	+60	+100	+325	-325	**g/cm^3**	**s/50g**	**g/cm^3**
µm	+250	+150	+45	-45	3.05	23	7.05
	Trace	7	71	22			*@43.5 tsi
							@600 MPa

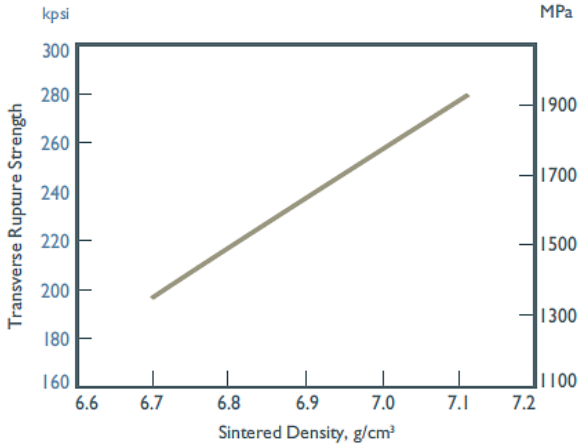
SINTERED PROPERTIES

Mix formulation: **ATOMET DB49** + 0.6% graphite + 0.75% ZnSt (combined carbon = 0.51%).

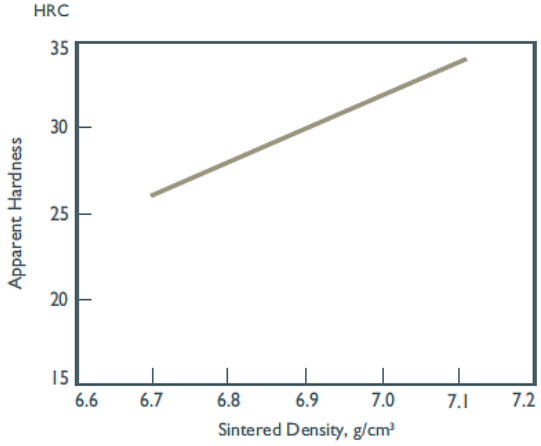
Green Density	Compressibility		Green Strength		Sintered Density	Transverse Rupture Strength		Dimensional Change	Dimensional Change	Apparent Hardness
g/cm^3	MPa	tsi	MPa	psi	g/cm^3	MPa	kpsi	vs die size, %	vs green size, %	HRC
6.70	430	31.20	7.30	1055	6.70	1382	200.50	-0.16	-0.35	26
6.90	530	38.40	9.60	1390	6.91	1601	232.20	-0.07	-0.27	30
7.10	700	50.70	12.20	1767	7.11	1947	282.40	0.02	-0.22	34

Effect of Density on sintered properties of **ATOMET DB49** + 0.6% graphite + 0.75% ZnSt

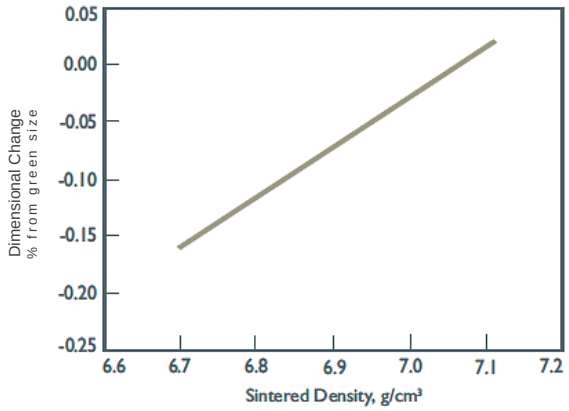
Transverse Rupture Strength

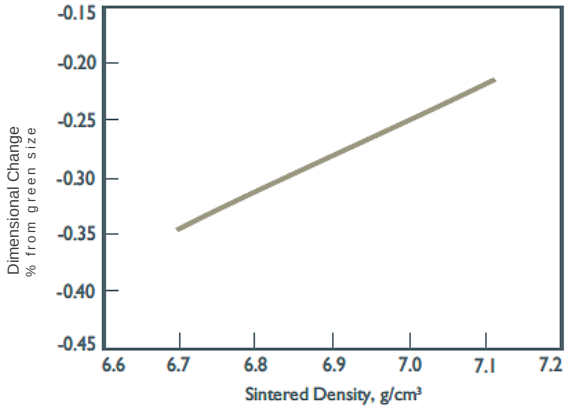


Apparent Hardness



Dimensional Change





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