

ALLOY DATA SHEET F28-0

ABRASION RESISTANT ALLOY

HIGH CHROMIUM ALLOY MARTENSITIC WHITE IRON

REVISION: 05/00

DESCRIPTION

28-0 alloy is a high alloy martensitic white iron with an excellent abrasion and corrosion resistance. Section thicknesses of up to 8 inches can be fully air hardened. The alloy can be annealed, machined and hardened for use in machined abrasion resistant parts. Abrasion resistance is excellent under conditions of high stress abrasion (grinding), low stress abrasion (scratching), gouging abrasion, slurry erosion and corrosion/erosion. Although it is significantly tougher than low alloy pearlitic white irons, 28-0 is not suitable for applications with severe impact. 28-0 alloy's superior wear resistance is due primarily to a high volume fraction of very hard, well-dispersed primary and secondary carbides in a matrix of martensite. The high chromium content provides good resistance in corrosive environments and good oxidation resistance.

COMPOSITION

	<u>C</u>	<u>Mn</u>	<u>Si</u>	<u>Cr</u>
Min %	2.0	-	-	23.0
Max %	3.0	1.5	1.0	28.0

APPLICATIONS

Abrasive and corrosive slurries, briquetting press segments, ball and rod mill liners, sand and dredge pump parts, clay working machine parts, pulverizer impactor and blow bars, tires and grinding rings for roller mill pulverizers, wear plates, chutes and liners, shot blast impeller blades.

PRODUCT FORMS

Horizontal and vertical centrifugal castings; static castings.

PHYSICAL PROPERTIES

		Typical Hardness	
		HRC	Brinell
Density (lbs/in ³)	0.27		
Melting Point(°F)	2300°F		
Thermal Conductivity (Btu/h/ft ² /ft/°F)	13.0 @ 70°F (estimated)	As Cast 51-56	500-580
		Annealed 40-44	375-410
		Hardened 58-63	620-710
Thermal Expansion (10 ⁻⁶ in/in °F)	5.2 - 5.5 @ 70°F		

HEAT TREATMENT (Typical)

Softening Anneal: 1600-1750 °F , Furnace cool.
 Hardening: 1750-1950 °F , Air cool.
 Stress Relief: 400-800 °F , Air cool.

MECHANICAL PROPERTIES (Typical Values at room temperature, Hardened condition)

	K.S.I.
Ultimate Tensile strength	30-120
Ultimate Compression strength	100

TOUGHNESS

Toughness of 28-0 is better than low alloy pearlitic white iron, however it is not suitable for applications with severe high speed impact, such as hammers. For applications where moderate impact is a concern, alloy 15-3 B with lower carbon content provides improved toughness with only a minimal loss of hardness, although corrosion resistance is reduced.

CORROSION RESISTANCE

The high corrosion resistance of 28-0 alloy makes it ideal for use in corrosive and abrasive slurries, where the combined effects of corrosion/erosion render low alloy white irons unsuitable. Significant increases in life have been observed in environments of nitric and phosphoric acid slurries.

HARDENABILITY

Section thicknesses of up to 8 inches may be hardened for 28-0 alloy.

MACHINABILITY

28-0 is machinable in the annealed condition, using carbide tools.

SERVICE TEMPERATURE

The alloy is suitable for service at temperatures up to approximately 600 °F

WELDABILITY

Welding of 28-0 alloy is not recommended.

RELATED SPECIFICATIONS

ASTM: A 532 grade III-A

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