








































	Material	Condition	Hardness		GUHRING COLOR RING		
			HRC	Brinell	Recommended	Alternate(s)	
 Tool Steels	Water Hardening	W1, W2, W5	Annealed	≤ 25	≤ 250		
	Nitriding	Nitralloy 125, Nitralloy 135, Nitralloy 135Mod, Nitralloy 225, Nitralloy 230, Nitralloy EZ, Nitralloy N, Nitrex 1				Normalized, Quenched and Tempered	≤ 30

	Material	Condition	Hardness		GUHRING COLOR RING			
			HRC	Brinell	Recommended	Alternate(s)		
Gray Cast Iron		ASTM A159 G1800, A48 class 20	SAE J431 G1800	As cast, Annealed	-	≤ 180		
		A159 G2500, A48 class 25	J431 G2500	As cast	≤ 25	≤ 250		
		A159 G3000, A48 class 30, 25, 40	J431 G3000					
		A159 G3500, A48 class 45	J431 G3500					
		A159 G4000, A48 class 50	J431 G4000					
		A48 class 45						
		A48 class 55		As cast, Quenched and Tempered	≤ 35	≤ 320		
		A48 class 60						

	Material	Standard				Condition	Hardness		GUHRING COLOR RING	
		UNS	ASTM	SAE	DIN		HRC	Brinell	Recommended	Alternate(s)
Ductile Cast Iron	Ferritic	F32800	A536 60-40-18	J434 D4018		Annealed	-	≤ 190		
		F33100	A536 65-45-12	J434 D4512						
	Ferritic / Pearlitic	F33800	A536 80-55-06	J434 D5506		As cast	-	≤ 220		
					GGG50, GGG60		≤ 25	≤ 250		
	Pearlitic / Martensitic	F34800	A536 100-70-03	J434 D7003	GGG70	Normalized and Tempered	≤ 33	≤ 300		
Martensitic	F36200	A536 120-90-02	J434 DQ&T	GGG80	Quenched and Tempered	≤ 36	≤ 330			

	Material	Standard		Condition	Hardness		GUHRING COLOR RING	
		UNS	SAE		HRC	Brinell	Recommended	Alternate(s)
High Alloy Cast Iron	Austenitic	F41000, F41001, F41006	A436 Type 1, A436 Type 1b, A436 Type 5	As cast	-	≤ 220		
		F41002, F41004, F41007	A436 Type 2, A436 Type 3, A436 Type 6		-	≤ 215		
		F41003, F41005	A436 Type 2b, A436 Type 4		≤ 25	≤ 250		

	Material	Standard		Condition	Hardness		GUHRING COLOR RING	
		UNS	SAE		HRC	Brinell	Recommended	Alternate(s)
High Alloy Ductile Cast Iron	Austenitic	F43000, F43002, F43004, F43006, F43007, F43010	A439 D2, A439 D2C, A439 D3A, A439 D5, A439 D5B, A571 D2M	As cast	-	≤ 200		
		F43001, F43003, F43005	A439 D2B, A439 D3, A439 D4	Annealed	≤ 28	≤ 270	