

Materials

Metallic

Non-Metallic

Ferrous

Non-Ferrous

Ceramic

Composite

Steel

Cast Iron

Al Alloys

Cu Alloys

Ceramic Matrix

Polymer Matrix

GRE

Metal Matrix

Polymer

Thermoplastic

Thermoset

PP

Epoxy

PE

Phenolic

PVC

Stainless Steel

Ferritic (13Cr)

Martensitic (13Cr)

Austenitic (18Cr - 8Ni)

Duplex (22Cr)

Precipitation Hardenable

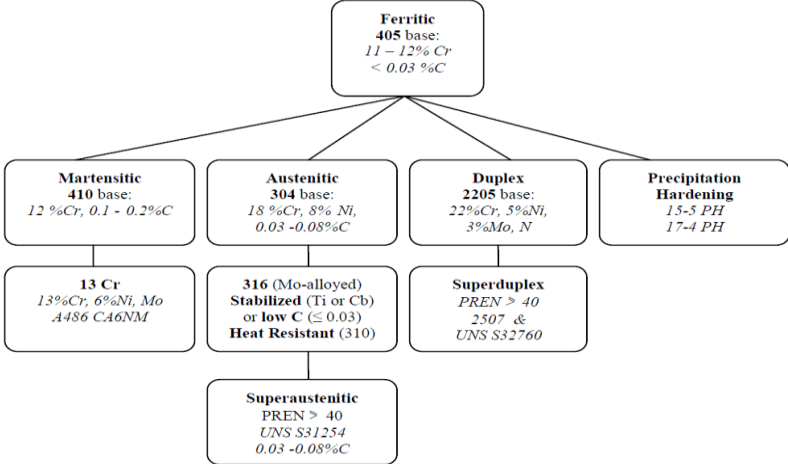
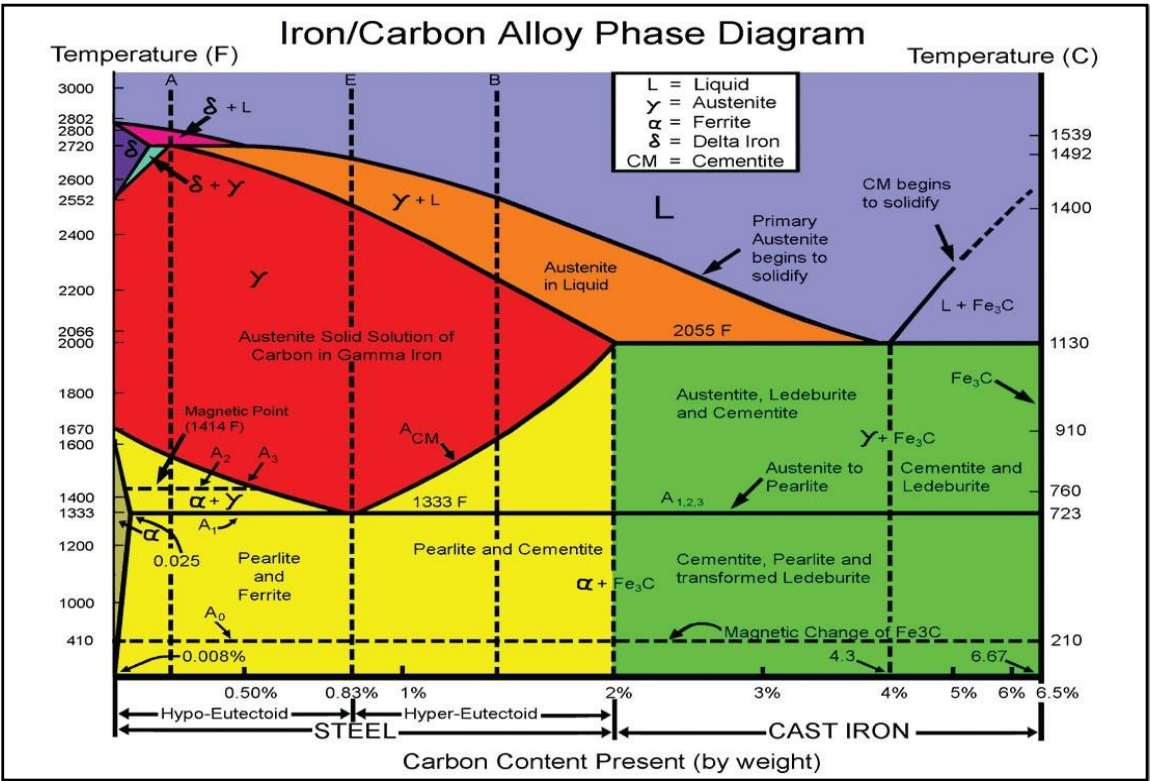


Figure 1 – Stainless Steel Alloy Tree



Material Properties.

Mechanical Properties.

Corrosion Resistance

Heat Treatment.

Alloying Elements.

Fabrication

Stainless Steel	Comment	Grade	Composition					Notes		
			Cr	Ni	C	Mo	Other			
Ferritic		405	13				0.3 Al	Lower Cr, Al added to prevent hardening when cooled from elevated temperatures.		
		409	11				0.4 Ti	Ti added to oppose carbide precipitation.		
		430	17					Basic Alloy		
Martensitic	Higher Carbon Than Ferritic	410	13		0.14			Basic Alloy		
		410S	13		0.08			Low carbon for welding		
Austenitic	Stabilized with Nickel	304	18	8	0.08			Base	Basic Alloy	
		304 L	18	8	0.03				low carbon content to avoid carbide precipitation during welding.	
		316	18	10	0.08	2.5		Mo added for pitting resistance	Basic Alloy	
		316 L	18	10	0.03	2.5			low carbon to avoid carbide precipitation during welding.	
		316 H	18	10	0.1	2.5			Higher carbon for high temperature use.	
		321	18	10			0.5 Ti	Stabilized Grades for High T.	Titanium added to minimize Cr carbide precipitation	
		347	18	10			0.8 Nb		Ta and Nb added to minimize Cr carbide Precipitation	
		310	25	20					Higher Cr & Ni for improved heat resistance	
PH		17-4PH	17	4		3	0.3Nb			
		17-7PH	17	7			1.2 Al			
Duplex	50% Austenitic 50% Ferritic	2205								
		2507								