

# Surface Hardness Achievable with Induction Hardening

To achieve the hardness specified for your part with induction heat treatment, the right steel grade must be selected. The greatest hardness range directly correlates to the carbon content of the steel being used. To help you develop accurate parts and specify reasonable tolerances for hardness and case depth results, Zion Industries has created the following guidelines for the maximum surface hardness achievable using induction hardening.

Material	Carbon Content	Hardness-HRc	Comments
1019	0.15 – 0.2	30	Typically carburized
1035	0.32 – 0.38	45	Can reduce by tempering
1040	0.37 - 0.44	52	Can reduce by tempering
1045	0.45 – 0.50	55+	Can reduce by tempering
1050	0.48 – 0.55	58-60	Can reduce by tempering
1070	0.65 – 0.75	65	Can reduce by tempering
1140	0.37 – 0.44	50	Can reduce by tempering
1141	0.37 – 0.45	52	Can reduce by tempering
1144	0.40 – 0.48	52-55	Can reduce by tempering
1151	0.48 – 0.55	55	Can reduce by tempering
4140	0.38 – 0.43	54-59	Can reduce by tempering
4145	0.43 – 0.48	55-62	Can reduce by tempering
4150	0.48 – 0.53	65	Tendency for cracking
4340	0.38 – 0.43	54-59	Very crack prone
52100	0.98 – 1.10	62-66	Temper soon after HT
8620	0.17 – 0.22	37-42	Typically carburized
Ductile Iron	Varies	Depends	Pearlite determines HT
Powdered Metal	Varies	Depends	Watch Porosity
High Density PM	Varies	Depends	Watch Porosity

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