



HARRIS STEEL

INDUSTRY PROPERTIES FOR STEEL SHEETS – COLD ROLLED & HOT DIPPED ZINC COATED
Typical Ranges For Mechanical Properties – Yield And Elongation Are Nonmandatory

Cold Rolled	C%	Mn%	P%	S%	Al%	Hardness ¹	Yield ksi	Elong%	r-value	n-value
CS Type A	0.10 max	0.60 max	0.030 max	0.035 max	*	B65 max	20-40	30 min	–	–
CS Type B	0.02-0.15	0.60 max	0.030 max	0.035 max	*	B65 max	20-40	30 min	–	–
CS Type C	0.08 max	0.60 max	0.100 max	0.035 max	*	B70 max	20-40	30 min	–	–
Zinc Coated	C%	Mn%	P%	S%	Al%		Yield ksi	Elong%	r-value	n-value
CS Type A	0.10 max	0.60 max	0.030 max	0.035 max	*	B70 max	25-55	20 min	–	–
CS Type B	0.02-0.15	0.60 max	0.030 max	0.035 max	*	B70 max	30-55	20 min	–	–
CS Type C	0.08 max	0.60 max	0.100 max	0.035 max	*	B70 max	25-60	15 min	–	–
Zinc Coated	C%	Mn%	P%	S%	Al%		Yield ksi	Elong%	r-value	n-value
FS Type A	0.10 max	0.50 max	0.020 max	0.030 max	*	B60 max	25-45	26 min	1.0-1.4	0.17-0.21
FS Type B	0.02-0.08	0.50 max	0.020 max	0.030 max	*	B60 max	25-45	26 min	1.0-1.4	0.17-0.21

*There is no requirement, but the analysis results shall be reported. Typically 0.01% min.

¹Rockwell hardness, B scale, Typical Maximum, nonmandatory. <0.025” add 5 RB units. Batch anneal, deduct 10 RB units.

Cold Rolled	C%	Mn%	P%	S%	Al%	Hardness ¹	Yield ksi	Elong%	r-value	n-value
DS Type A	0.08 max	0.50 max	0.020 max	0.030 max	0.01 min	B55 max	22-35	36 min	1.3-1.7	0.17-0.22
DS Type B	0.02-0.08	0.50 max	0.020 max	0.030 max	0.02 min	B55 max	22-35	36 min	1.3-1.7	0.17-0.22
Cold Rolled	C%	Mn%	P%	S%	Al%		Yield ksi	Elong%	r-value	n-value
DDS	0.06 max	0.50 max	0.020 max	0.025 max	0.01 min	B50 max	17-29	38 min	1.4-1.8	0.20-0.25
Zinc Coated	C%	Mn%	P%	S%	Al%		Yield ksi	Elong%	r-value	n-value
DDS	0.06 max	0.50 max	0.020 max	0.025 max	0.01 min	B50 max	20-35	32 min	1.4-1.8	0.19-0.24
Cold Rolled	C%	Mn%	P%	S%	Al%		Yield ksi	Elong%	r-value	n-value
EDDS	0.02 max	0.40 max	0.020 max	0.020 max	0.01 min	B45 max	15-25	40 min	1.7-2.1	0.23-0.27
Zinc Coated	C%	Mn%	P%	S%	Al%		Yield ksi	Elong%	r-value	n-value
EDDS	0.02 max	0.40 max	0.020 max	0.020 max	0.01 min	B45 max	15-25	40 min	1.6-2.1	0.22-0.27

TEN CODE

Cold Rolled	C%	Mn%	P%	S%	Al%	Hardness	Yield ksi		Elong%
1002	0.02-0.04	0.35 max	0.030 max	0.050 max	0.01min	B55 max	22-35		36 min
1006	0.06 max	0.45 max	0.030 max	0.050 max	0.01min	B55 max	22-35		36 min
1008	0.10 max	0.50 max	0.030 max	0.050 max	0.01min	B55 max	22-35		36 min
1010	0.08-0.13	0.30-0.60	0.030 max	0.050 max	0.01min	B65 max	36 nom		30 nom
1020	0.18-0.23	0.30-0.60	0.030 max	0.050 max	0.01min	B62 nom	42 nom		30 nom
1035	0.32-0.38	0.60-0.90	0.030 max	0.050 max	0.01min	B72 nom	42 nom		26 nom
1050	0.48-0.56	0.60-0.90	0.030 max	0.050 max	0.01min	B77 nom	46 nom		23 nom
1065	0.60-0.70	0.60-0.90	0.030 max	0.050 max	0.01min	B81 nom	53 nom		22 nom
1074	0.70-0.80	0.50-0.80	0.030 max	0.050 max	0.01min	B83 nom	60 nom		21 nom

SS – Structural Steel

Cold Rolled	C%	Mn%	P%	S%	Al%		Yield ksi	Tensile ksi	Elong%
Grade 25	0.20 max	0.60 max	0.035 max	0.035 max	0.01 min		25 min	42 min	26 min
Grade 30	0.20 max	0.60 max	0.035 max	0.035 max	0.01 min		30 min	45 min	24 min
Grade 40 T1	0.20 max	1.35 max	0.035 max	0.035 max	0.01 min		40 min	52 min	20 min
Grade 50	0.20 max	1.35 max	0.035 max	0.035 max	0.01 min		50 min	65 min	18 min
Grade 60	0.20 max	1.35 max	0.035 max	0.035 max	0.01 min		60 min	75 min	12 min
Grade 70	0.20 max	1.35 max	0.035 max	0.035 max	0.01 min		70 min	85 min	6 min

Chemistry other elements – Max %: Cu – 0.20, Ni – 0.20, Cr – 0.15, Mo – 0.06, V – 0.008, Cb – 0.008, Ti – 0.025

HSLA – High Strength Low Alloy Steel – Class 1

Cold Rolled	C%	Mn%	P%	S%	Al%		Yield ksi	Tensile ksi	Elong%
Grade 45	0.22 max	1.65 max	0.04 max	0.04 max	0.01 min		45 min	60 min	22 min
Grade 50	0.23 max	1.65 max	0.04 max	0.04 max	0.01 min		45 min	60 min	22 min
Grade 55	0.25 max	1.65 max	0.04 max	0.04 max	0.01 min		50 min	65 min	20 min
Grade 60	0.26 max	1.65 max	0.04 max	0.04 max	0.01 min		60 min	75 min	16 min
Grade 65	0.26 max	1.65 max	0.04 max	0.04 max	0.01 min		65 min	80 min	15 min
Grade 70*	0.26 max	1.65 max	0.04 max	0.04 max	0.01 min		70 min	85 min	14 min

Chemistry others – Max %: Cu – 0.20, Ni – 0.20, Cr – 0.15, Mo – 0.06, *0.16, V – 0.005, Cb – 0.005, Ti – 0.005

HSLAS-F – High Strength Low Alloy Steel with improved Formability

Cold Rolled	C%	Mn%	P%	S%	Al%		Yield ksi	Tensile ksi	Elong%
Grade 50	0.15 max	1.65 max	0.02 max	0.025 max	0.01 min		50 min	60 min	22 min
Grade 60	0.15 max	1.65 max	0.02 max	0.025 max	0.01 min		60 min	70 min	18 min
Grade 70*	0.15 max	1.65 max	0.02 max	0.025 max	0.01 min		70 min	80 min	16 min
Grade 80*	0.15 max	1.65 max	0.02 max	0.025 max	0.01 min		80 min	90 min	14 min

Chemistry others – Max %: Cu – 0.20, Ni – 0.20, Cr – 0.15, Mo – 0.06, *0.16, V – 0.005, Cb – 0.005, Ti – 0.005

CS – COLD ROLLED – COMMERCIAL STEEL (CS) – Formerly CQ – This material is intended for exposed or unexposed parts where bending, moderate drawing, forming and welding may be involved.

CS – HOT DIPPED ZINC COATED – COMMERCIAL STEEL (CS) – Formerly CQ – This material is intended for exposed or unexposed parts where bending, moderate forming and welding may be involved.

FS – HOT DIPPED ZINC COATED – FORMING STEEL (FS) – Formerly DQ – This material is intended for exposed or unexposed parts where bending, moderate drawing, forming and welding may be involved.

DS – COLD ROLLED – DRAWING STEEL (DS) – Formerly DQSK – This material is intended for fabricating identified parts where particularly severe drawing or forming may be involved.

DDS – HOT DIPPED ZINC COATED – DEEP DRAWING STEEL (DDS) – Formerly DQSK – This material is intended for fabricating identified parts where particularly severe drawing or forming may be involved.

DDS – COLD ROLLED – DEEP DRAWING STEEL (DDS) – This material is intended for fabricating identified parts where very severe drawing or forming in excess of the abilities of materials may be involved. Some aging may occur with this product if continuous annealed.

EDDS – COLD ROLLED – EXTRA DEEP DRAWING STEEL (EDDS) – This material is intended for fabricating identified parts where extremely severe drawing or forming in excess of the abilities of DS and DDS materials may be involved, or when a product essentially free of aging is required.

EDDS – HOT DIPPED ZINC COATED – EXTRA DEEP DRAWING STEEL (EDDS) – This material is intended for fabricating identified parts where particularly severe drawing or forming may be involved.

SS – STRUCTURAL STEEL – Stiffer material used when strength is needed.

HSLAS – HIGH STRENGTH LOW ALLOY STEEL – Stiffer material with some minor formability

HSLAS-F – HIGH STRENGTH LOW ALLOY STEEL – FORMABILITY – Stiff with more formability