



## HOT ROLLED & HIGH STRENGTH COIL

Essex Trading Company is currently offering steep price discounts on Hot Rolled High Strength Steel Coil. This page offers an overview of Hot Rolled; pages 2-3 specifically address Essex's high strength products.

Hot Rolled is the most basic form and, typically, least expensive of the flat-rolled steels. It can be used in its original form or becomes the feedstock for Cold Rolled and coated sheet steels. It's usually produced in conformance with ASTM A568.

### Categories

Unprocessed (a.k.a. "Band"): The crudest flat-rolled form. Coil product not cut back to gauge at ID and OD, not edge trimmed, not temper-rolled. Surface subject to mill finish, crossbreaks, scale and rust. Some mills are installing scale breakdown rolls to improve surface and eliminate the need for subsequent pickling. Unprocessed is usually not intended for applications requiring critical surface, flatness or tight thickness tolerances.

Temper Rolled (a.k.a. "Sheet"): An upgrade from Unprocessed, the coil is temper-rolled (a.k.a. skin passed), edge-trimmed, with coil ID and OD cropped back to ordered thickness. Provides improved flatness, smoother surface, and absence of Lüders Lines.

Pickled: A product that has been washed in hydrochloric and/or sulfuric acid to remove scale and rust. Has a smoother surface than unpickled unprocessed coil or sheet. After pickling, should promptly be oiled to protect against rust. Can be applied to Unprocessed or Temper Rolled product. Usually intended for applications requiring clean surface (i.e., for improved painting or die forming).

### Product Common Classifications

Commercial Steel, Drawing Steel, Structural Steel, High Strength Low Alloy Steel

Mechanical Properties				
Classification	Yield Str. psi	Tensile Str. psi	Elong. % / 2"	Rock. B
Commercial Steel (Type B)	39000 typ.	52000 typ.	39 typ.	61 typ.
Drawing Steel (Type B)	35000 typ.	48000 typ.	41 typ.	56 typ.
Deep Drawing Steel	30000 typ.	46000 typ.	36 typ.	50 typ.
Struct. Steel – Grd. 33	33000 min.	52000 min.	23 min.	60 typ.
Struct. Steel – Grd. 36	36000 min.	53000 min.	22 min.	63 typ.
Struct. Steel – Grd. 40	40000 min.	55000 min.	21 min.	68 typ.
Struct. Steel – Grd. 50	50000 min.	65000 min.	17 min.	77 typ.
HSLA A607 Grd. 45 Cl. 1	45000 min.	60000 min.	25 min.	--
HSLA A607 Grd. 50 Cl. 1	50000 min.	65000 min.	22 min.	--
HSLA A607 Grd. 55 Cl. 1	55000 min.	70000 min.	20 min.	--
HSLA A607 Grd. 60 Cl. 1	60000 min.	75000 min.	18 min.	--

typ. denotes typical commercial; min. denotes minimum per ASTM standards



**FEATURED PRODUCT – HOT ROLLED HIGH STRENGTH**

Essex is offering very low pricing on selected Hot Rolled High Strength coils. Most of these stocks fall within a thickness range of .200”-.500”. These are not low-alloy (not containing Molybdenum, Vanadium, Titanium, etc). Instead, the strength generally derives from high Manganese and Silicon content. The material is well suited for flatwork and particularly when structural strength is required. Generally, steel with B-scale Rockwells will take a 90° bend; C-scale Rockwells will not. We’re pleased to provide further information and recommendations. Essex can also have metallurgical tests (physical properties, bending, chemistry, etc) performed for specific coils in which you’re interested.

**Physical/Chemical Properties & Comparisons**

The below data was compiled from metallurgical analyses on various samples. It offers insight on material capabilities, limitations, etc.

Long. = longitudinal bend (with grain, easy way) ▪ Trans. = transverse bend (against grain, hard way)  
 OK = passed ▪ NG = failed

Physical Properties				Bending Characteristics				Chemistry			
Rock.	Yield Str. psi	Tensile Str. psi	Elong. %/2"	90° 1T	90° 2T	180° 1T	180° 0T	C	Mn	Si	Al
				Long.	Long.	Long.	Long.				
				Trans.	Trans.	Trans.	Trans.				
B83	56000	75500	24.5	OK OK	OK OK			.092	2.34	.040	.041
B86	63500	80500	32.5	OK OK	OK OK	OK OK	OK NG	.093	2.34	.037	.058
B88	74000	83000	32.0	OK OK	OK OK			.060	1.40	.185	.045
B91	56500	91500	32.0	OK NG	OK OK			.27	1.20	.228	.049
B93	79000	100000	21.5	OK OK	OK OK	OK NG	NG NG	.178	1.76	1.18	.048
B97	85500	104000	26.5	OK OK	OK OK			.060	1.40	.189	.043
C38	83500	122000	13.5	NG NG	NG NG			.114	2.22	.054	.69
C38	84500	104000	13.5	NG NG	NG NG			.107	2.10	.063	.74



**FEATURED PRODUCT – HOT ROLLED HIGH STRENGTH**

Overall processing and applications capabilities are shown below, but limited to processor and/or customer equipment, procedures, etc.

Operation	Feasibility
Slitting	OK
Leveling	OK
Shearing	OK
Pressbraking	OK < B99, possible springback
Rollforming	OK < B99, possible springback
Stamping, Drawing	Very limited
Welding	OK with Carbon Equivalent of .35 max. Carbon Equiv. = %Carbon + (%Mn + %Si)/6
Painting	OK
Hot Dip Galvanizing	OK with Si % <.10 or >.30

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