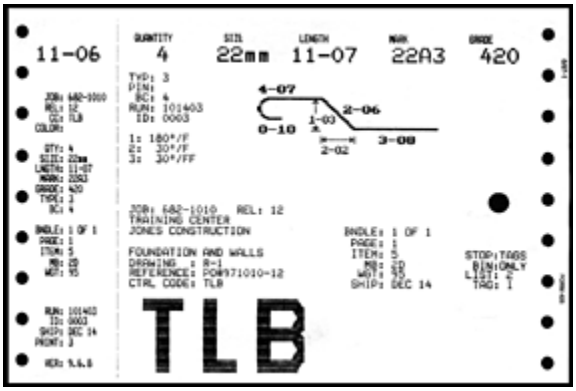
Reinforcing Bars: Frequently Asked Questions

Q: How can different shipments of reinforcing bar be identified on the job site?

A: The bar tags provide the key to identifying reinforcing bar onsite. When reinforcing bar is delivered to a job site, it is unloaded in the area where it will be used with all bar tags are at the same end so they can be read easily.

A typical bar tag shows the number pieces in a shipment of each bar. It also shows that the materials used to manufacture the bar conform to ASTM standards for reinforcing steel.

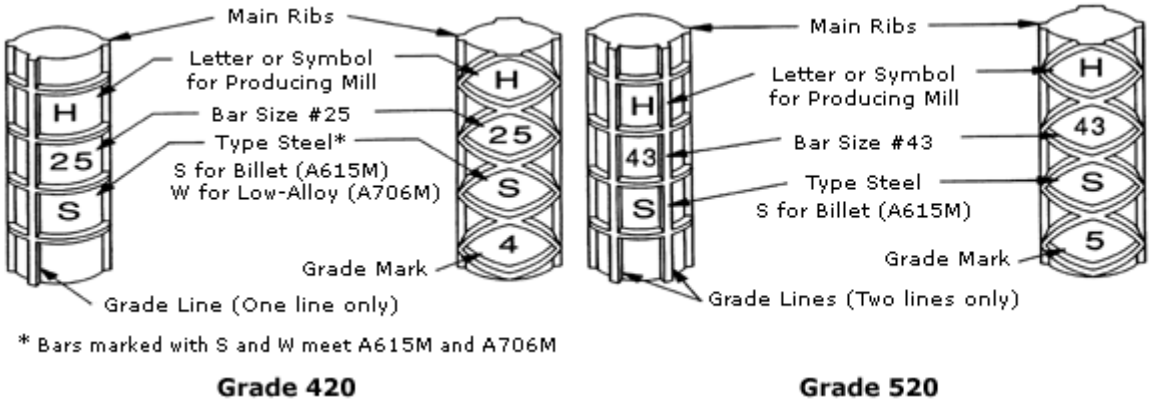


Q: What do the marks on the bars mean?

A: Each individual bar is manufactured with a series of individual markings. The top letter or symbol in these markings identifies the producing mill. The next marking is the bar size.

The third marking symbol designates the type of reinforcing bar — usually either "S" for carbon-steel or "W" for low-alloy steel.

Last, the two primary grades of rebar, Grade 60 and Grade 75, are now designated by the metric Grade 420 and Grade 520, and may be indicated by the numeral "4" or the numeral "5," or by one or two lines running the length of the bar.



Q: What does it mean to use "soft metric" equivalents in measuring reinforcing bars?

A: With the inch-pound and the metric system co-existing throughout the U.S. construction industry, a system to accommodate both has been developed.

This accommodation is referred to as a "soft conversion" system of measurement (as opposed to a "hard conversion," which would require changing the sizing system of materials in one measurement system to conform to sizes in the other measurement system).

SOFT METRIC BAR SIZES VS. INCH-POUND BAR SIZES:

Metric Bar Sizes	Inch-Pound Equivalents		lbs/ft
#10 #13 #16	#3 #4 #5	3/8″ 1/2″ 5/8″	.376 .668 .1.043
#19 #22 #25	#6 #7 #8	3/4″ 7/8″ 1″	1.502 2.044 2.67
#29 #32 #36	#9 #10 #11	1-1/8″ 1-1/4″ 1-3/8″	3.4 4.303 5.313
#43 #57	#14 #18	1-3/4″ 2-1/4″	7.65 13.6

Inch-Pound Grade	psi* Minimum Yield Strength	Metric Grade	MPa** Minimum Yield Strength
40	40,000	280	280
50	50,000	350	350
60	60,000	420	420
75	75,000	520	520

* pounds per square inch ** megapascals

Q: If reinforcing bars have been sitting on the job site for a while, and begin to show signs of rust, can they still be used that way?

A: The answer is "yes," but with certain exceptions. There are a number of things that can get onto the surface of reinforcing bar and affect the bond strength — the bond between the reinforcing bar and the concrete. These include scale, rust, oil, and mud.

Scale is a material found normally on the bars that is produced at the time the bars are manufactured. It results from the cooling of the hot metal. Loose scale is usually removed when the bars are handled at the fabricating shop — or it falls off while it's being loaded, unloaded, or handled.

Rust actually improves bond because it increases the roughness of the surface. However — and this is the exception — if there is so much rust that the weight of the bar is reduced OR the height of the deformations is reduced to below that weight, area, or deformation required by the applicable ASTM, then the rust is considered harmful.

If oil and grease gets onto the surface of the reinforcing bar, it must be cleaned off. You can do this by wiping it off with a solvent.

And finally, mud. You should load and unload bars to avoid getting them covered with mud. Any mud on the bars needs to be washed off before using the bars.

If you have any further questions please contact your Macksteel Warehouse sales representative at (866)882-2177.