



## LAMINATION TOOLING

Serving the P.C. Industry Since 1977

### LAMINATION PRESS PLATES

Plates are supplied with hardened bushings (bottom and/or top) holes, slots or any combination of the above.

TADCO has achieved longer bushing and plate set life by recessing the bushing in our plates .010" on the top and bottom of each plate. This not only prevents breakage due to press pressure on the flush-mounted bushings, but also allows the plates to be resurfaced at least one time without changing the standard size bushing.



## AISI 4140

### STANDARD TOLERANCES

Hardness:	36/40 Rockwell C
Parallelism:	within .001" TIR
Flatness	.005"/ft.
Hole to Hole Location:	±.001"
Surface Finish:	#32 RMS
Thickness:	.375" ±.002"
Expansion Factor (TCE):	12.1 x 10 <sup>-6</sup> per C°

### SUPER TOOLING TOLERANCES

Super tolerances in flatness and hole-to-hole location will be required for the next generation of multilayers. TADCO can provide this new dimension in tooling for the close tolerance demands of the future.

Flatness: .0025"/ft

Hole-to-hole location: up to ±.00025"

All other specifications will remain as listed for our standard tooling.

### HOT OR COLD ROLLED STEEL

TADCO will not offer hot or cold rolled steel plates due to the softness and the tendency to end easily. There is also significant evidence of premature failure in tolerance and flatness specifications when they are used as lamination plates.

TADCO only offers lamination plates consisting of 4140 Chromium-Molybdenum steel heat treated to 36/40 Rockwell C hardness.

TADCO plates are manufactured as sets consisting of a top and bottom plate. Each set is marked on a .75" x 45° chamfer on the corner of each plate identifying both the set number and the top and bottom plate.

### STAINLESS STEEL SEPARATOR PLATES

All separator plates are shipped with a vinyl coating and a scratch-free custom polish on both sides.

Slots and holes are .005"/.010" over pin size.

Plates sized to requirement +1/16 – 0.

Standard thickness is .060" with other thickness available upon request.

### 304 STAINLESS STEEL

Custom Polish: #4 finish

### 420 STAINLESS STEEL

Hardness:	44/50 Rockwell C
Parallelism:	Within .001" TIR
Thickness:	±.003"
Custom Polish:	#6 finish
Expansion Factor (TCE):	11.6x10 <sup>-6</sup> per C°

### 630 STAINLESS STEEL

Hardness:	44/50 Rockwell C
Parallelism:	Within .001" TIR
Thickness:	±.003"
Custom Polish:	#6 finish
Expansion Factor (TCE):	11.6x10 <sup>-6</sup> per C°

### CARRIER PLATES

Cookie sheets used to transport lamination books in and out of the press are available to customer specifications.



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## TOOLING PLATE STEEL COMPARISON HOT ROLLED STEEL A-36 VERSUS #4140 ALLOY

### *What is Tensile Strength?*

Tensile strength is the pull of a 1" square bar to the point of breaking.



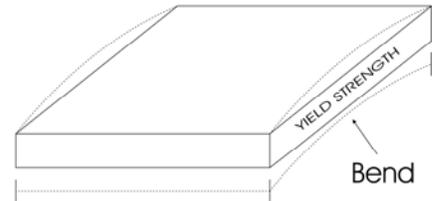
### *What is Yield Strength?*

Yield strength is the point at maximum yield that steel won't return to its original point "Bend."

### *Comparable Strength*

Hot Rolled Steel A-36 Tensile Strength	58,000 PSI
#4140 Hard to R.C. 36/40	160,000 PSI

Hot Rolled Yield Strength	36,000 PSI
#4140 Yield Strength	136,000 PSI



**#4140 is 270% to 380% tougher, stronger, and harder than H.R.S. A-36 (Boiler Plate).**

## 4140 ALLOY CHROMIUM-MOLYBDENUM STEEL

Chromium-Molybdenum steel, AISI 4140 alloy, is oil-hardened steel of relatively hardenability. The chromium content provides good hardness penetration, and the molybdenum imparts uniformity of hardness and high strength. This grade is especially suitable for forging because it has self-scaling characteristics. It responds readily to heat treatment and is comparatively easy to machine in the heat-treated condition. It resists creep in temperatures up to 1000°F and maintains its properties even after long exposure at these relatively high temperatures. With a combination of such highly desirable properties as good strength, wear resistance, excellent toughness, good ductility, and the ability to resist stress at elevated temperatures, it is understandable why TADCO uses such a highly reliable alloy steel.

Immediate price and delivery quotations are available by calling us at (509) 674-0990, emailing us at [tadco@tadco.com](mailto:tadco@tadco.com), or visiting our website at [www.tadco.com](http://www.tadco.com).