



## Material Hardness Tonnage Ratios

Material Description	Tons/ sq. inches	Shear Strength/ sq. inches	Multiplier to Nominal Mild Steel
<b>Aluminum ≠ Soft Sheet</b>	7.5	15,000 psi	.3
<b>Aluminum ≠ Half Hard</b>	9.5	19,000 psi	.38
<b>Aluminum ≠ Hard</b>	12	25,000 psi	.5
<b>Brass ≠ Soft Sheet</b>	15	30,000 psi	.6
<b>Brass ≠ Half Hard</b>	17.5	35,000 psi	.7
<b>Copper ≠ Rolled</b>	14	28,000 psi	.57
<b>Steel ≠ Mild</b>	25	50,000 psi	1.00
<b>Steel ≠ ASTM A36</b>	30	60,000 psi	1.20
<b>Steel ≠ 50 Carbon</b>	35	70,000 psi	1.40
<b>Steel ≠ Cold Drawn</b>	30	60,000 psi	1.20
<b>Steel ≠ Stainless (18-8)</b>	35	70,000 psi	1.40

Call our experts to help you with your next project. We've got our calculators ready!

**Tel:** 800.668.4996

**Toll Free:** 1.800.668.4996

**Email:** [sales@punchtools.com](mailto:sales@punchtools.com)

[www.punchtools.com](http://www.punchtools.com)