**UNITED METAL HOLDINGS (SC) SDN BHD** (1467501-X)
LOT 8298, JALAN SUNGAI PUTUS, KAMPUNG BATU BELAH,
42100, KLANG, SELANGOR.
Tel:03-33597779 H/P: 012-4040115 E-mail : unitedmetalsc@gmail.com

# *AISI 8620*

## *Typical analysis*

| C | Mn | P | S | Si | Mo | Ni | Cr |
|---|---|---|---|---|---|---|---|
| 0.18-0.23 | 0.7-0.9 | max 0.035 | max 0.040 | 0.15-0.35 | 0.15-0.25 | 0.4-0.7 | 0.4-0.7 |

**8620 is a low nickel - chromium - molybdenum medium hardenability, case hardening (carburizing) steel, generally supplied in the as rolled condition with a maximum brinell hardness of 280 (Rc30).Characterised by good core strength and toughness in small to medium sections with case hardness up to Rc62 when carburized, hardened and tempered.8620 can also be used (uncarburised) as a high tensile steel, which when suitably hardened and tempered can be utilized for various applications requiring good tensile strength and reasonable toughness.Pre hardened and tempered (uncarburized) 8620 can be further surface hardened by nitriding but will not respond satisfactorily to flame or induction hardening due to its low carbon content.8620 (carburized) is used extensively by all industry sectors for light to medium stressed components and shafts requiring high surface wear resistance with reasonable core strength and impact properties,**
**Typical uses are: Arbors, Bearings, Bushings, Cam Shafts, Differential Pinions, Guide Pins, King Pins, Pistons Pins, Splined Shafts, Ratchets, Sleeves etc**

## *Typical applications*

**Caburized splined shafts, piston pins, cam shafts, guide pins, bushings, automotive differential pinions and transmissions, arbors, bearings, sleeves king pins, carburized gears, general engineering purposes.**

## *Mechanical properties*

| | | |
|---|---|---|
| **Tensile strength** | **PSI** | **85,500** |
| **Yield strength** | PSI | 52,000 |
| **Elongation** | % | 28 |
| **Reduction in area** | % | 61 |

| | | |
|---|---|---|
| **Brinell hardness** | | 186 |

### *Forging and Heat Treating Parameters*

| Thermal Process | Temperature (Celsius) |
|---|---|
| **Forging** | Commence at 1200°C Max. Finish at 950°C |
| **Annealing** | 856°C - 926°C Cool Slowly in Furnace |
| **Normalizing** | 898°C - 926°C Cool in Air |
| **Hardening and Tempering** | (Uncarburized) - 815°C - 855°C Oil or Water Quench, temper at 200°C to 650°C according to strength level required.<br><br>(Carburizing) - Direct Oil Quenching<br><br>1. Oil quench direct from carburizing temperature. Draw at desired temperature for at least 1 to 2 hours per inch of section.<br><br>2. Single refine - Box cool from pack carburizing or air cool from other media. Reheat to 829°C - 842°C , oil quench. Draw at desired temperature for minimum 1 to 2 hours per inch of section. (provides good case hardness and core properties)<br><br>3. Double refine - Box cool from carburizing media. Reheat to 829°C - 842V, oil quench. Reheat to 760°C - 787°C , oil quench. Draw at desired temperature for minimum 1 - 2 hours per inch of section. (Provides optimum combination of case hardness, core strength and toughness) |

### *Machinability*

***AISI 8620 in the annealed condition has a machinability rating of 68% of AISI B-1112. Average surface cutting speed is 110 feet per minute.***

### *Shear strength*

***The ultimate shear strength is approximately 70% of the ultimate tensile strength.***

### *Weldability*

***AISI 8620 is safe for manual arc welding without preheating. However, even at this low carbon level, preheat is advisable in sections greater than 1" or where a weldment is subject to restraint and is unable to contract freely during cooling. As steel hardening ability increases, so should the preheat temperature.***