

GATEWAY 4140 PH - Tooling Plate

Prehardened Alloy Tool Steel

Gateway 4140 PH is a prehardened, high -quality alloy steel intended for all mechanical uses where improved machinability, uniform hardness and excellent flatness are required. Product hardness range is 269-321 Brinell (28-32 HRC).

Typical Chemistry

| | | | | |
|------------|----------|--|------------|----------|
| Carbon | .40 | | Silicon | .25 |
| Manganese | .85 | | Chromium | .95 |
| Phosphorus | .035 max | | Vanadium | .015 max |
| Sulfur | .040 max | | Molybdenum | .20 |

Applications

Suitable for use in many applications including form dies, machinery components, gear blanks and mold holder blocks where the combination of good machinability and medium hardness is required.

Stress Relief

Heat slowly and uniformly to 1000 F and soak one hour per inch of section thickness. Air cool or furnace cool to room temperature.

Annealing

It is recommended that Gateway 4140 PH*DCF be annealed prior to rehardening. Heat slowly or furnace cool to room temperature.

Heat Treating

Gateway 4140 PH may be heat treated to higher levels of hardness for higher strength. Preheat to 1250 F and hold for one hour. Heat to 1550/1600 F and soak one half hour when material is up to temperature. Oil quench or air cool to hand warm (approximately 150 F) and temper immediately. After preheating to 1500F for one half hour to one hour, heat to 1750/1800F and soak one half hour until material is up to temperature. Air cool to hand warm (approximately 150 F) and temper immediately.

GATEWAY 4140 PH - Tooling Plate

Tempering

Temper one hour per inch of section thickness to desired hardness. Representative hardness levels after tempering are tabulated below.

| Oil Quenched from 1600 F * Tempered 4 hours | | |
|---|--|----------------|
| (Section Size - 4" X 4") | | |
| Tempering Temperature (F) | | Hardness (HRC) |
| 400 | | 42 |
| 500 | | 41 |
| 600 | | 40 |
| 700 | | 39 |
| 800 | | 37 |
| 900 | | 36 |
| 1000 | | 34 |
| 1100 | | 29 |
| 1200 | | 25 |

Note: Variations in section size, heating rate, soak time, quench rate and tempering will cause deviations from the above values. Gateway Metals should be consulted for specific applications.

EDM

Electro-discharge machining is widely used in the production of many tooling components. However, this operation produces recast, rehardened, and retempered layers on the die surface. It is recommended that Gateway 4140 PH be stress relieved after electro-discharge machining to temper the rehardened layer produced by EDM.

Nitriding

Gateway 4140 PH may be nitrided to a surface hardness in excess of RC 60 for improved wear resistance.