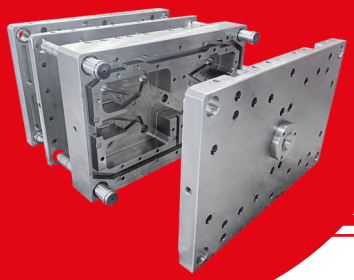

# 1.2311

# Plastic Mould Steel

## TECHNICAL SHEET

## 1 Comparision Standards

| W.Nr | DIN | JIS equivalent | AISI/SAE | AFNOR | BS | UNI |
|---|---|---|---|---|---|---|
| 1.2311 | 40CrMnMo7 | - | ~P20 | 40CMD8 | ~P20 | - |

## 2 Chemical Composition

| C | Si | Mn | P (max) | S (max) | Cr | Mo | Supply Condition | Supply Hardness (HB) |
|---|---|---|---|---|---|---|---|---|
| 0.35-0.45 | 0.20-0.40 | 1.30-1.60 | 0.035 | 0.035 | 1.80-2.10 | 0.15-0.25 | Q & T | 280 - 320 |

## 3 Main Characteristics and Applications

Pre-hardened plastic mould steel with a hardening penetration up to 400mm, featuring excellent polishing and texturing capabilities. This steel is ideal for nitriding (approximately 800 HV) and is compatible with chrome and nickel PVD plating.

**Applications:**

- Mould Base
- Injection Moulding
- Die Casting
- Extrusion Dies
- Pressing Tools

## 4 Production Route

EAF - LF - VD - Forging - Heat treatment QT

## 5 Physical Properties ( Reference Values )

| | 20°C | 100°C | 250°C | 500°C |
|---|---|---|---|---|
| Thermal expansion coefficient (10-6/K) | 12.1 | 12.4 | 12.9 | 14.1 |
| Thermal Conductivity (W/mk) | 36.1 | 36.2 | 36.4 | 33.5 |
| Young modulus (Kn/mm2) | 212 | 205 | 200 | 175 |

## 5 Heat Treatment

| TREATMENT | TEMPERATURE | HOLDING TIME (HT) | COOLING | COMMENTS |
|---|---|---|---|---|
| **Annealing** | Heat to 700 - 720 °C | Min. H.T. for 2 minute /mm | Air or Furnace | To achieve a hardness below 250 HB (24 HRC) and enhance machinability |
| **Stress relieving** | Heat to 560 - 600 °C (max 30 °C below tempering temperature) | Min. H.T. for 2 minute /mm | Air or Furnace | It is recommended to eliminate the residual stresses induced by mechanical working after machining |
| **Hardening** | Heat to 860 - 880 °C | Min. H.T. for 1 minute /mm | Polymer | - |
| **Tempering** | Heat to 550 - 620 °C | Min. H.T. for 3 minute /mm | Air or Furnace | To be performed after hardening, conduct a second tempering at a temperature no more than 30 °C below the initial tempering temperature |

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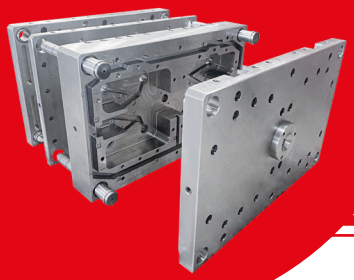
SandeepEnterprises STEEL SOLUTIONS

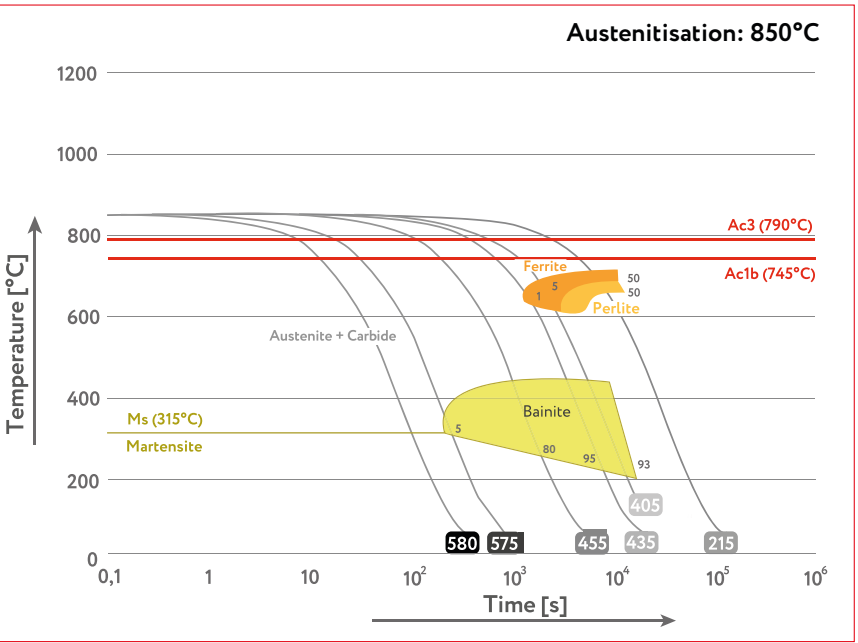


# 1.2311

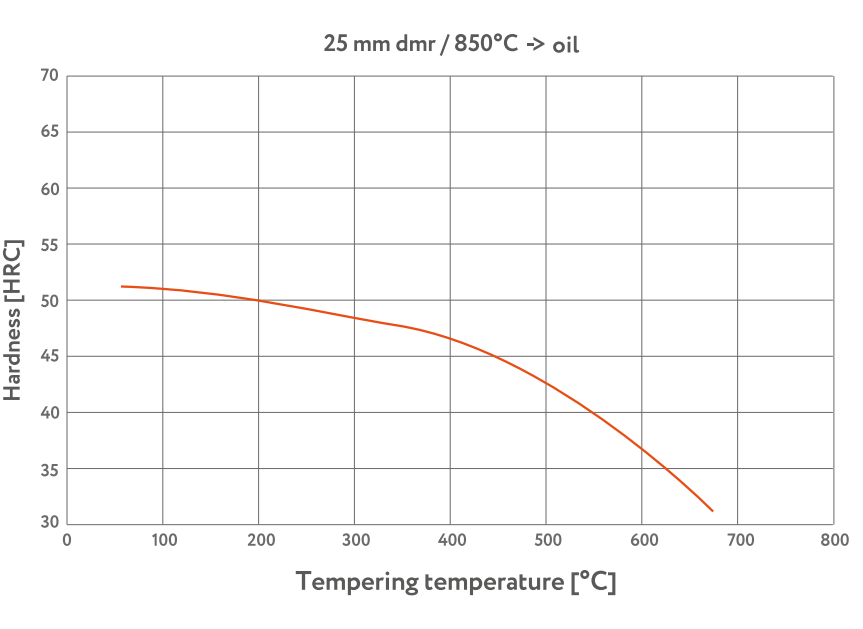
# Plastic Mould Steel

## TECHNICAL SHEET

### 7 C.C.T. Curve




### 8 Tempering Curve

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