

# DATA SHEET



## Finkl Steel

### 420M®

~AISI 420 - ~1.2083 - ~X40Cr14

### STAINLESS MOLD STEEL

#### TYPICAL APPLICATIONS

- Plastic Injection molds
- Glass molds
- Corrosive plastics injection molds
- Dies for corrosive plastics extrusion

#### GENERAL:

##### Delivery Condition:

Annealed ~ 229 BHN

Available in EAF VD Quality

Premium Qualities ESR or VAR

Ultra Quality (ESR+VAR)

**420M®** is a stainless mold steel grade specially designed for wear resistance, polishability, improved corrosion resistance compared to standard grades and simple post-production mold maintenance.

**420M®** is recommended for plastics, glass, and other materials requiring molds exhibiting excellent polishability. The addition of the molybdenum improves the corrosion resistance of 420M versus AISI 420. This may reduce or eliminate the need to chrome plate molds in order to avoid corrosion.

**420M®** exhibits improved toughness over AISI 420 stainless steel. 420 stainless steel. The DBTT curve illustrates its increased impact toughness at all test temperatures. Premium Quality increases the toughness even further resulting in molds and dies with greater resistance to cracking and catastrophic failure.

#### Typical Chemical Analysis - % weight

C	Mn	Si	Cr	Mo	Other
0.35	0.50	0.35	13.0	0.50	Micro alloying

**420M®** is melted to a low sulphur content to enhance polishability.

**420M®** is characterized by :

- Improved corrosion resistance
- Best polishability
- Improved wear resistance
- Higher Fracture toughness than standard grades

**420M®** is forged on our largest presses equipped with wide dies assuring maximum deformation during forging process.

**420M®** is 100 % ultrasonic tested to very stringent acceptance levels. It is defect free.

Premium Quality **420M®** (ESR or VAR) is especially recommended for plastic lenses or other high quality optical applications.

Ultra Quality is now available for applications requiring ISO N0 surface finish. Its double remelting process provides the purest corrosion resistant steel.

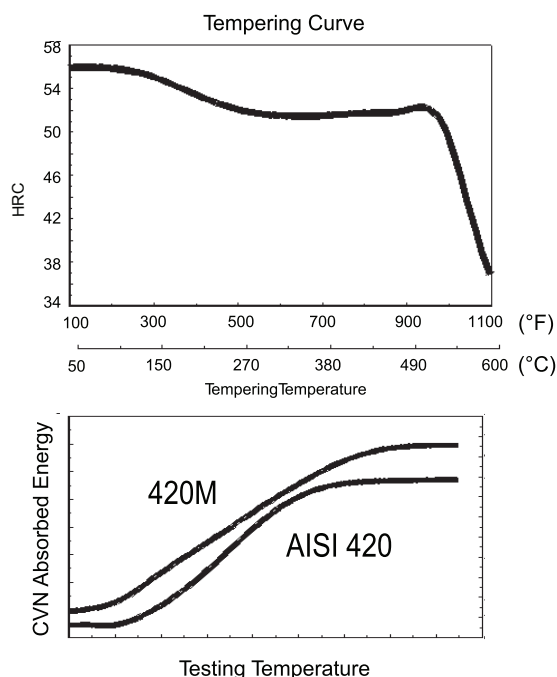
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# DATA SHEET

## STAINLESS MOLD STEEL

### 420M®

#### MATERIAL CHARACTERISTICS



#### PROPERTIES 420M®

##### • Cleanliness

EAF VD	A	B	C	D
ASTM E45	≤ 1.5	≤ 1.0	≤ 0.5	≤ 1.0
DIN 50602	K4 ≤ 20			

##### Premium Quality 420M®

ESR	A	B	C	D
ASTM E45	≤ 0.5	≤ 0.5	0	≤ 1.0
DIN 50602	K1 ≤ 50			

VAR	A	B	C	D
ASTM E45	≤ 1.0	≤ 0.5	0	≤ 0.5
DIN 50602	K1 ≤ 20			

##### Ultra Quality 420M®

ESR+VAR	A	B	C	D
ASTM E45	≤ 0.5	0	0	0
DIN 50602	K0 ≤ 50			

##### • Physical Properties:

Thermal conductivity	Thermal expansion coefficient (10 <sup>-6</sup> K <sup>-1</sup> )			Thermal capacity	Density
(W.m <sup>-1</sup> .K <sup>-1</sup> )	25-100 °C	25-300 °C	25-400°C	(J.Kg <sup>-1</sup> .K <sup>-1</sup> )	g/cm3
23.5	10.98	11.25	11.52	460.5	7.76

#### HEAT TREATMENT

Process	Temperature	Cooling (Quenching)
Annealing	1425-1500 °F (775-815 °C)	Slow cool in furnace
Stress Relieving	50-100 °F (30-55 °C) below final tempering temperature	Slow cool to [875 °F] (470 °C), then in air
Preheating	700-1225 °F (370-660 °C)	Preheat in two stages
Hardening	1850-1950 °F (1010-1065 °C) soaking 30 min.	Oil or salt bath [650-850 °F] (340-450 °C)
Tempering	See figure, hold 1hr/inch (25 min/cm) of thickness	Air

**Note:** Provided technical data and information in this data sheet are typical values. Normal variations in chemistry, size and conditions of heat treatment may cause deviations from these values. We suggest that information be verified at time of enquiry or order. For additional data or metallurgical assistance, please contact us.

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**Finkl Steel**