

P-20 Modified

TECHNICAL DATASHEET

CHEMISTRY

Typical	C	Cr	Mn	Mo	Si
Analysis %	0.34	1.75	0.8	0.4	0.4

DESCRIPTION

P-20 Modified is an improved pre-hardened plastic mold steel that has been specially designed for large plastic molds. Supplied hardness of 293-321 HB (30-34 HRc) Hardness loss in large cross sections is minimal.

CHARACTERISTICS

- Good compressive strength
- Good polishability
- Minimum hardness loss in large cross sections

APPLICATIONS

- Injection Molds
- Mold Frames
- Compression Molds
- Die Holders

PHYSICAL PROPERTIES

Density	0.282 lbs/in ³ (room temperature)
Coefficient of Thermal Expansion	70 °F – 200 °F / 6.8 X 10-6/°F
	70 °F – 400 °F / 7.0 X 10-6/°F
	70 °F – 550 °F / 7.1 X 10-6/°F
Thermal Conductivity	70 °F / 202 Btu/in/ft²/hr/°F
	400 °F / 209 Btu/in/ft²/hr/°F
	800 °F / 216 Btu/in/ft²/hr/°F

MECHANICAL PROPERTIES

Yield Strength KSI	Tensile Strength KSI	Elongation %	RA%
130	150	15	35

POLISHING

P-20 Modified can yield an A-2 polish when proper procedures are followed. Caution must be taken to avoid over polishing which can lead to orange peel effect and pitting. A **Swiss Steel** representative should be consulted for additional information.

HEAT TREATMENT

Stress Relieving		
Temperature	Cooling	Note
850 °F - 900 °F	Air Cool	Large cross sections require accurate control of time and temperatures.
Hold 1hr/inch		

TEMPERING

Temperature °F	Hardness HRc
700	51
800	50
900	47
1000	43
1050	40
1100	35
1150	33

- Tempering hardness is approximate and based on two hours at temperature.
- Heat uniformly and thoroughly at the selected temperature and hold at temperature for 1hr per inch of total thickness.

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WELDING

- Preheat insert to 900-1000 °F. Maintain temperature above 800 °F
- Use TIG with D.C. positive polarity
- Slowly cool down to 350 °F before post heat.
- Post heat: retemper 300 °F/900 °F, 1hr/inch of weld depth plus one additional hour. Double temper if possible.
- Depending on the application, various welding rods can be used. Please contact your **Swiss Steel** heat treat representative for recommendations.

WELDING GUIDELINES

Electrode Dia. (mm)	Filler Rod Dia (mm)	Welding AMPS	Argon Flow (ltr/min)	Nozzle Dia. (mm)
1.0	1.0	15-18	4-8	8
1.6	1.6	70-150	6-9	8-10
2.4	2.4	100-250	7-10	8-10
3.2	3.2	250-400	10-15	8-10

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NORTH AMERICAN DISTRIBUTION

HEADQUARTERS +
TECHNICAL SUPPORT

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