INTRODUCING PX5

MODIFIED P20

KNOCK OUT THE COMPETITION

The High Performance Alternative for:

- PLASTIC MOLDS
- RUBBER MOLDS
- PRESS PLATENS
- DIES

Features

- Machines 30 to 50 percent faster than P20
- Pre-hardened to 29-33 HRC
- Uniform microstructure & hardness with extremely improved machined surface finish
- Never needs stress relieving
- Improved weldability and greatly reduced susceptibility to weld cracking
- Reduced surface-hardened layer in EDM making finishing operations easier

DAIDO STEEL

PX5 is distributed by
International Mold Steel, Inc.,
a Daido partner company.

INTERNATIONAL MOLD STEEL, INC.

6796 Powerline Dr.• Florence, KY • 41042
1-800-625-6653 • Web: www.imsteel.com

Chemical Composition

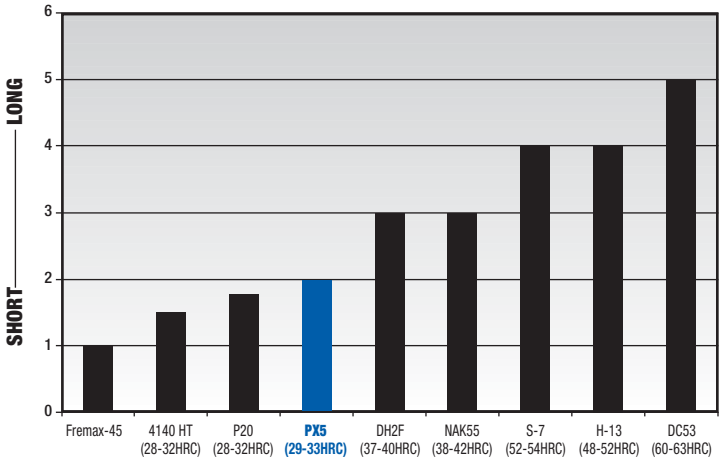
General Chemistry

Material	Hardness	Chemical Composition (%)						AISI Grade
		C	S	Mn	Cr	Mo	V	
PX5	29-33HRC	.20	.05	1.75	2.00	.40	.10	P20 Modified

Quality Characteristics I

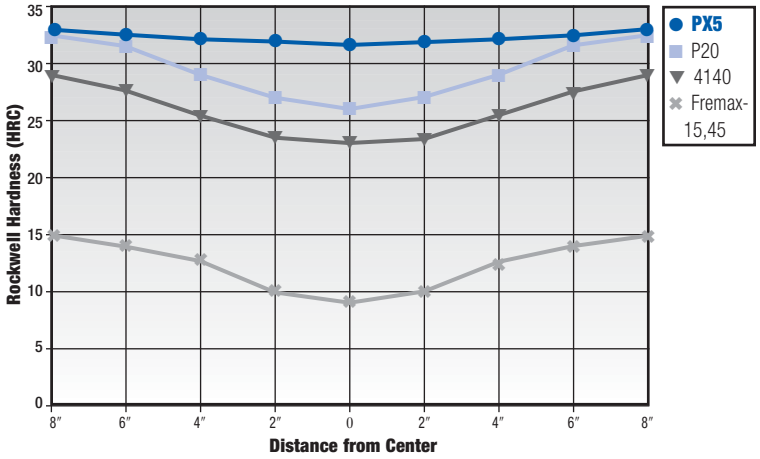
Materials / Mold Life

General purpose plastic molding material for mass production.



Hardness Distribution

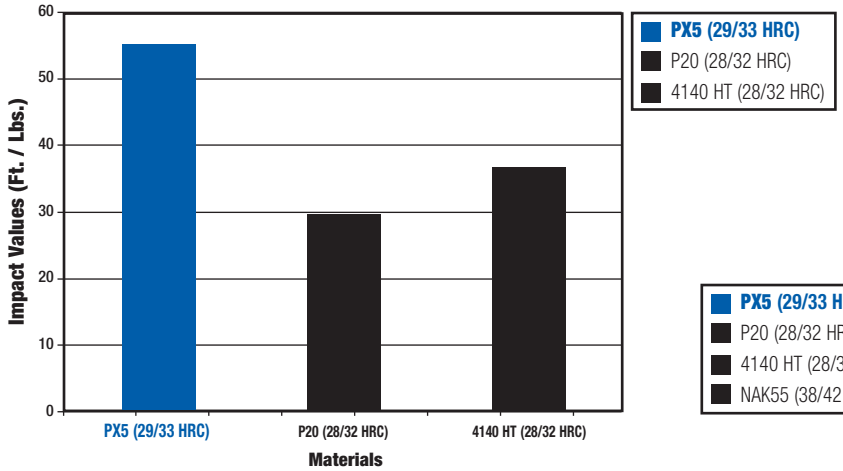
PX5 shows uniform hardness distribution through to the center.



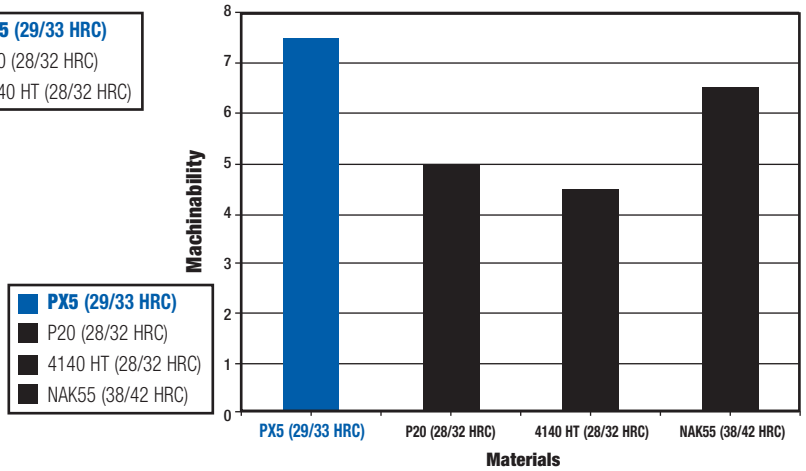
Quality Characteristics II

- ***Features – Isotropy and Uniform Strength***
  - – PX5's strength is the same level at both the center and surface of the material and the isotropy (T/L) is at least 0.95.
  - – PX5 ranks in the highest toughness class among P20 materials.

Toughness

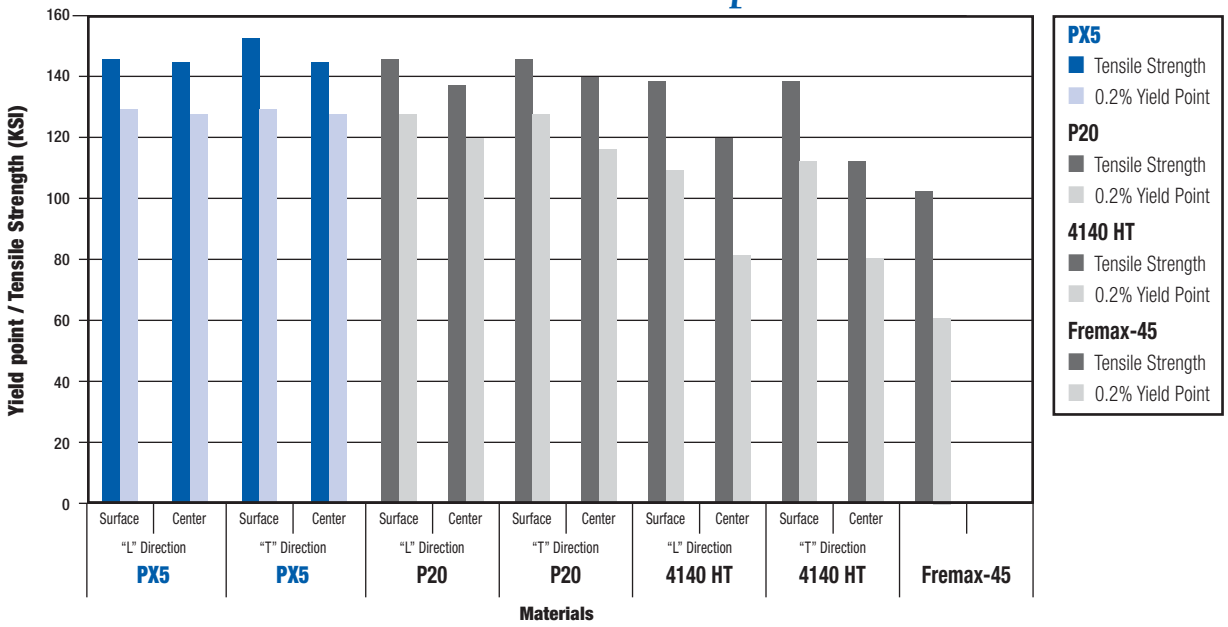


Machining Characteristics



Quality Characteristics II

Tensile / Yield Properties



• Physical Properties

Thermal Conductivity (W/m • °C) (( ) cal/cm•sec•°C)

	20°C	100°C	200°C	300°C	400°C
PX5	42.45 (0.1014)	42.36 (0.1012)	42.07 (0.1005)	39.22 (0.0937)	38.80 (0.0927)
4140 HT	42.28 (0.1010)	41.61 (0.0994)	42.70 (0.1020)	39.39 (0.0941)	38.00 (0.0908)
P20		48.30 (0.1153)	41.50 (0.0991)	38.60 (0.0921)	38.10 (0.0910)

Coefficient of Thermal Expansion (x 10 $^{-6}$ / °C)

	30 ~ 100°C	30 ~ 200°C	30 ~ 300°C	30 ~ 400°C	30 ~ 600°C
PX5	11.9	12.7	13.1	13.5	14.1
4140 HT	11.9	12.7	13.2	13.7	14.2
P20	11.9	12.3	12.7	12.8	13.7

Specific Heat (J/kg • °C) (( ) cal/g•°C)

	20°C	100°C	200°C	300°C	400°C
PX5	481.40 (0.115)	489.80 (0.117)	540.00 (0.129)	552.60 (0.132)	627.90 (0.150)
4140 HT	481.40 (0.115)	514.90 (0.123)	581.90 (0.139)	590.20 (0.141)	607.00 (0.145)
P20	460.20 (0.109)	477.20 (0.114)	493.90 (0.118)	527.40 (0.126)	786.90 (0.188)

Young's Modulus (Mpa) (( ) kfg/mm^2)

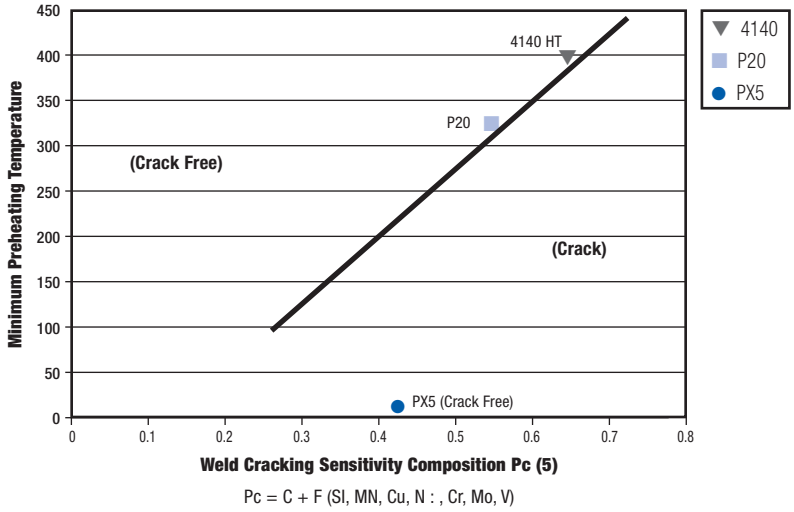
	20°C	100°C	200°C	300°C	400°C
PX5	207,482 (21,150)	204,048 (20,800)	198,162 (20,200)	192,276 (19,600)	184,919 (18,850)
4140 HT	206,991 (21,100)	203,067 (20,700)	197,672 (20,150)	190,314 (19,400)	181,976 (18,550)
P20	205,863 (20,985)	202,532 (20,645)	200,471 (20,092)	191,686 (19,539)	184,902 (18,898)

Welding Characteristics

• PX5 and Conventional Knowledge on Weld Cracking

– PX5 is an alloy designed to decrease weld crack susceptibility. Thus, it is possible to lower the pre- and post-heat temperature from the conventional range of 300°C - 500°C to 200°C.

Weld Cracking Sensitivity

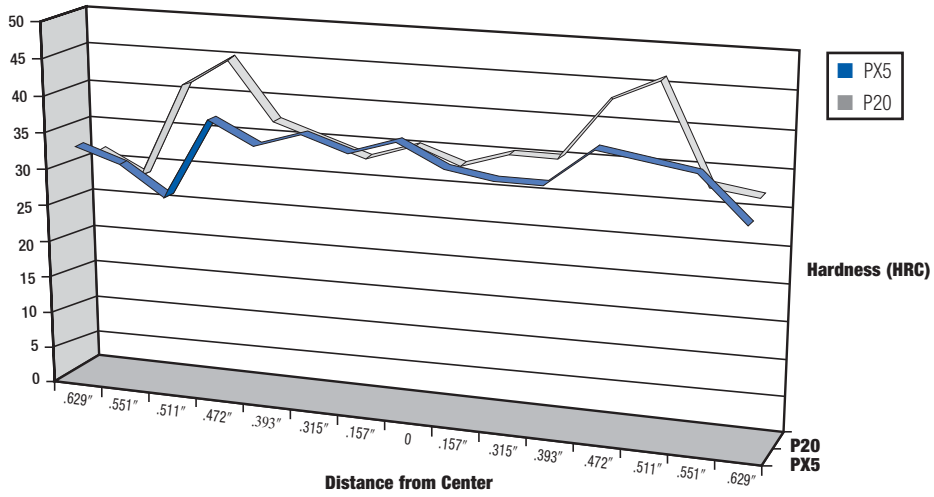


Pc = C + F (SI, MN, Cu, N : , Cr, Mo, V)

• Hardness of Welded Area

– PX5's maximum hardness on the heat affected area is the lowest among the P20-type materials. Thus, the susceptibility for fracture is low and cutting and grinding operations are carried out more easily.

Hardness Distribution Around the Weld



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