

Industeel



ArcelorMittal

Steel Solutions for Plastic Molding



Our corporate values

The ArcelorMittal group is committed to «transforming tomorrow». At Industeel, we uphold four fundamental values that will help us meet this far-reaching challenge.



ArcelorMittal

Boldness

We are there to help you succeed in your boldest projects. Let our innovation materialise your boundless imagination.

Sustainability

Our solutions are built to last, optimizing the reliability and life cycle costs of your critical applications and structures. We can deliver steel plates with optimised resistance to challenging service conditions to make your projects even more reliable. At the same time, we are developing cleaner processes and greener products for a more sustainable environment.

Quality

Industeel has a longstanding reputation for quality. We supply plates for a wide range of critical applications in which the quality of the steel is crucial to the safety of equipment. For this reason, the performance levels of Industeel products often go beyond the requirements of applicable standards.

Leadership

Industeel is a leader in the field of special steel plates. Much more than a mere material supplier, we work hand in hand with customers, experts and international organizations to drive progress and deliver innovative solutions to the challenges faced by industry.

Our business

Leading supplier of high quality steels

As the leading supplier of high quality steels, INDUSTEEL constantly innovates to provide customers with the best products and services.

High quality materials designed to meet the strictest specifications

Efficient and reliable mold steel solutions delivered just-in-time by a global network of distributors

The widest dimensional range to meet all customer requirements thanks to our 3 integrated mills

A high level of technical support provided by a dedicated research & development centre

Electric arc furnace (capacity : 90 tons) ▾



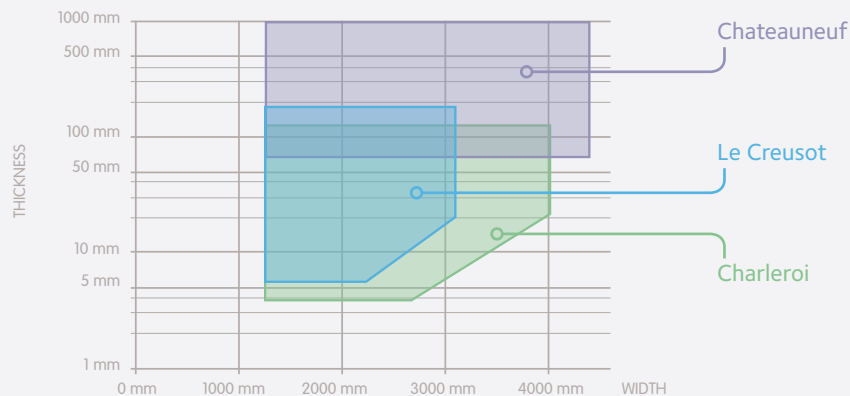
Bottom pouring ingots ▾



High level technical support ▾



The widest dimensional range



Our expertise

First-class producer of blocks for large-size molds

Our production of high performance mold steel is achieved through state of the art processing and the exclusive use of top grade raw materials.

Careful selection of raw materials to produce **high purity steel** melt by electric arc furnace

Fine tuned secondary metallurgy, vacuum and special degassing process for **high cleanliness steels**

Bottom poured ingots forged based on monitored forging program and **latest know-how techniques**

Automatic quenching devices and high precision tempering furnaces create **homogeneous hardness and microstructure** through the cross section

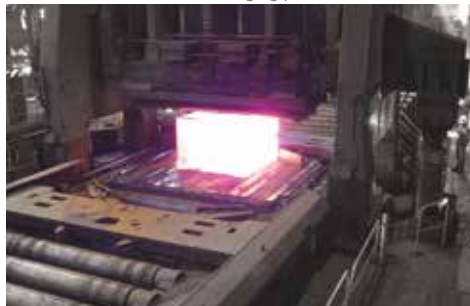
100% inspection of internal soundness by UT exam and hardness control

Tapping from EAF to ladle furnace ▼

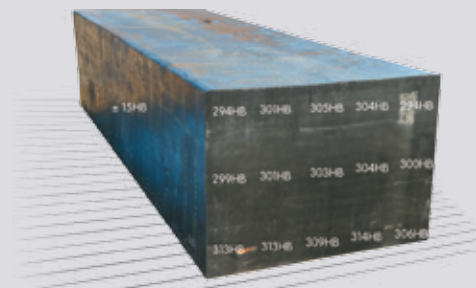


12000 MT forging press for thick blocks ▼

Automatic quenching device ▼



Homogeneous Brinell hardness on a 36 inch. thick block in Superplast® P20



Our added value

A world-class research center for innovative tool steels

Our research centre carries out full characterization of end-user properties of our mold steel solutions, and provides our customers with a high-level technical support.

Providing on-field technical assistance to help our customers in the use of our steel solutions

An integrated welding workshop with an expertise in welding metallurgy and welding processes

Cooperation with research institutes and organizations on processing operations (machining, etch graining, surface treatment)

One R&D department is fully dedicated to the development and optimization of forging and heat treatment processes

Microscopy device ▼



Welding workshop ▼



Compression test specimen ▼



High level technical support ▼



Our high performance steel solutions for your plastic molding applications

MOLD CORES AND CAVITIES

- **Mold components used to produce plastic parts that vary in size, complexity and applications.**
- **For all plastic molding processes**
 - Injection molding
 - Compression molding
 - Blow molding
 - Rubber molding
- **Mold steel requirements**
 - Consistent cross section hardness
 - Polishability
 - Etch-grainability
 - Repair weldability
 - Thermal efficiency

Steel Solutions

- > Superplast® P20
- > Superplast® P20 HH
- > AISI P20 + Ni (W 1.2738)
- > AISI P20 (W 1.2311)

WEAR-RESISTANT MOLDS

- **Mold components used when processing abrasive melts or for high volume parts.**
- **For most plastic molding processes**
 - Injection molding
 - Compression molding
 - Extrusion
- **Mold steel requirements**
 - Hardness
 - Strength
 - Etch grainability
 - Polishability
 - Repair weldability

Steel Solutions

- > Superplast® 400
- > Superplast® HPplus
- > AISI H11 / H13 (W 1.2343 / 2344)
- > AISI L6 (W 1.2714)

Our **high performance steel solutions**
for your plastic molding applications

STAINLESS CORES AND CAVITIES

- **Mold components used when processing chemically aggressive plastics or for corrosive working conditions with high surface finish.**
- **For most plastic molding processes**
 - Injection molding
 - Blow molding
 - Compression molding
 - Extrusion
- **Mold steel requirements**
 - Corrosion resistance
 - Polishability
 - Hardness
 - Dimensional stability

Steel Solutions

- > AISI 1.2316 (W 1.2316)
- > AISI 420 (W 1.2083)

CORROSION-RESISTANT HOLDERS

- **Mold base parts used when processing chemically aggressive plastics or for or corrosive working conditions.**
- **For most plastic molding processes**
 - Injection molding
 - Blow molding
 - Compression molding
 - Extrusion
- **Mold steel requirements**
 - Corrosion resistance
 - Machinability
 - Hardness
 - Dimensional stability

Steel Solutions

- > Superplast® Stainless
- > AISI 420 FM (W 1.2085)

Steel solutions for Mold cores and cavities

PREMIUM SOLUTION

Superplast® P20 (HH)

Superplast® P20 (HH) has been designed by Industeel R&D centre to provide mold makers and molders with an optimal solution to meet cores and cavities requirements.

Thanks to its original chemistry and optimized heat treatment, Superplast® P20 (HH) is specified for molds that require excellent through-hardness, uniform structure for etch-graining, and high surface finish.

- Delivery condition: hardened and tempered
- Delivery hardness: 30-34 HRC or 34-38 HRC
- Dimensional range: up to 51 inch thick

Front bumper cavity in Superplast® P20



BASIC SOLUTION

AISI P20 (W 1.2311)

(DIN 40 CrMnMo 7)

AISI P20 is the economical choice for small-size dimensions molds with low surface finish requirements.

- Delivery condition: hardened and tempered
- Delivery hardness: 29-34 HRC (or on request)
- Dimensional range: up to 15.75 inch thick

USUAL SOLUTION

AISI P20 + Ni (W 1.2738)

(DIN 40 CrMnNiMo 8-6-4)

AISI P20 + Ni is a prehardened steel grade particularly suitable for large-size molds. Its good through-hardening provides quite uniform hardness through thickness, hence its use for large-size or complex molds such as those needed for automotive bumpers.

- Delivery condition: hardened and tempered
- Delivery hardness: 29-34 HRC (or on request)
- Dimensional range: up to 24 inch thick

	DIN EN ISO 4957	TYPICAL CHEMICAL ANALYSIS (MASS WEIGHT PERCENT)							
		C	S	Si	Mn	Ni	Cr	Mo	Other
Superplast® P20 (HH)	26 CrMnMoB 6-6-4	0.26	0.002	0.10	1.40	0.30	1.50	0.50	B
AISI P20	40 CrMnMo 7	0.38	0.002	0.33	1.50		1.90	0.16	
AISI P20 + Ni	40 CrMnNiMo 8-6-4	0.38	0.002	0.30	1.50	0.95	1.90	0.20	

SUCCESS STORY

Superplast® P20
for automotive large-size mold

Superplast® P20 is the optimal time and cost effective mold steel solution. Based on an original chemistry and an optimised process, Superplast® P20 provides added value to the whole customer chain of plastic molding:

In the following example, our customer needed a large-size mold (22 inch-thick) for a dashboard cavity with a special etch-graining pattern finish requirement.



Cavity made of standard P20 + Ni was rejected due to segregation streaks



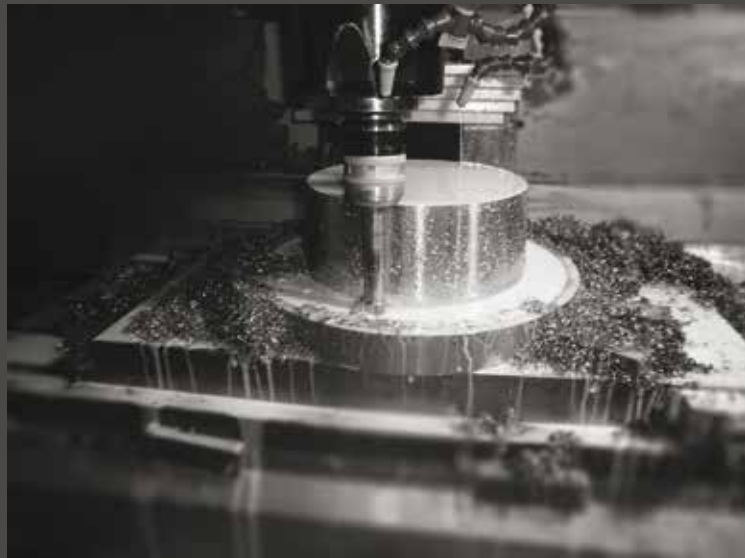
Cavity made of Superplast® P20 was approved by end user

SUCCESS STORY

Superplast® P20 for Rubber molding

Thanks to its metallurgy based on lower carbon content and optimised addition of alloying elements, Superplast® P20 provides a comprehensive solution associating high machinability, high mechanical characteristics and ability to meet standard surface finish requirements.

In the following example, Superplast® P20 was used to manufacture a rubber mold dedicated to produce metal reinforced rubber seals. "Superplast® P20 is really a quality material with excellent machining conditions and homogeneous hardness", concluded customer.



Rough machining of Superplast® P20 plate ▲



Rubber mold component after machining ▲

Steel solutions for Wear-resistant molds

PREMIUM SOLUTION

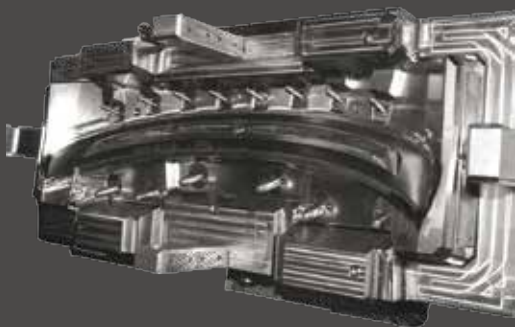
Superplast® 400

Molding of high abrasive melts and long production runs require high hardness to withstand wear. Superplast® 400 is a ready-for-use prehardened steel grade providing high hardness and robust mechanical strength, while maintaining good moldmaking properties (machinability, ability to nitriding or hard chrome plating).

Thanks to its original chemistry and optimized heat treatment, Superplast® 400 is specified for molds that require high wear resistant, excellent dimensional stability and reliable processing.

- Delivery condition: hardened and tempered
- Delivery hardness: 38-42 HRC
- Dimensional range: up to 39 inch thick

Front grid mold in Superplast® 400 ▼



BASIC SOLUTION

AISI L6 (W 1.2714)

(DIN 55 NiCrMoV 7)

AISI L6 is a prehardened grade characterized by high hardness, good toughness and high wear toughness.

- Delivery condition: hardened and tempered
- Delivery hardness: 360-400 HB (or on request)
- Dimensional range: up to 14 inch thick

USUAL SOLUTION

AISI H11

(DIN X 38 CrMoV 5-1)

AISI H11 is a hot work tool steel with improved toughness and homogeneous structure. Thanks to its high wear resistance and mechanical strength, AISI H11 is suitable for abrasive melts or high pressure molding conditions.

- Delivery condition: annealed
- Delivery hardness: max 22 HRC
- Dimensional range: up to 14 inch thick

	DIN EN ISO 4957	TYPICAL CHEMICAL ANALYSIS (MASS WEIGHT PERCENT)							
		C	Si	Mn	Ni	Cr	Mo	V	Other
Superplast® 400	25 CrMnNiMoB 8-5-3	0.25	0.10	1.20	0.80	2.0	0.60	0.07	B
AISI L6	55 NiCrMoV 7	0.57	0.30	0.85	1.70	1.10	0.50	0.08	
AISI H11	X 37 CrMoV 5-1	0.36	0.30	0.40		5.10	1.40	0.35	

Steel solutions for Corrosion-resistant holders

PREMIUM SOLUTION

Superplast® Stainless

Superplast® Stainless is a low carbon free machining stainless holder steel. Thanks to its original chemistry and optimized heat treatment, Superplast® Stainless provides much higher machinability than standard 1.2085 with the same corrosion resistance. It is delivered ready-for-use for mold frames and mold cavities with standard surface finish requirements.

- Delivery condition: hardened and tempered
- Delivery hardness: 30-35 HRC
- Dimensional range: up to 14 inch thick

Stainless mold ▼



USUAL SOLUTION

[FOR HOLDERS]

AISI 420 FM (W 1.2085)

(DIN X 33 CrS 16)

AISI 420 FM is a mold steel with good corrosion resistance and improved machinability thanks to sulphur addition. It is mainly used for mold frames and holders with low surface finish requirements.

- Delivery condition: hardened and tempered
- Delivery hardness: 29-35 HRC (or on request)
- Dimensional range: up to 14 inch thick

TYPICAL CHEMICAL ANALYSIS (MASS WEIGHT PERCENT)

	DIN EN ISO 4957	C	S	Si	Mn	Cr	Mo
Superplast® Stainless	X 7 CrS 12-12	0.07	0.12	0.10	1.40	12.0	
AISI 420 FM	X 33 CrS 16	0.32	0.07	0.35	1.32	16.4	

Steel solutions for Stainless cores and cavities

PREMIUM SOLUTION

AISI 1.2316 (W 1.2316)

(DIN X 36 CrMo 17)

Thanks to its high chromium and molybdenum content combined with high cleanliness, Industeel 1.2316 is recommended for mold cores and cavities that require both excellent corrosion resistance and high surface finish (mirror polishing).

- Delivery condition: hardened and tempered
- Delivery hardness: 29-35 HRC (or on request)
- Dimensional range: up to 14 inch thick

Stainless mold ▼



USUAL SOLUTION

AISI 420 (W 1.2083)

(DIN X 42 Cr 13)

AISI 420 exhibits good corrosion resistance and high cleanliness. This grade is recommended for mold cores and cavities that require good corrosion resistance and good polishability.

- Delivery condition: hardened and tempered
- Delivery hardness: 280-325 HB (or on request)
- Dimensional range: up to 300 mm thick

		TYPICAL CHEMICAL ANALYSIS (MASS WEIGHT PERCENT)					
DIN EN ISO 4957		C	S (max)	Si	Mn	Cr	Mo
AISI 1.2316	X 36 CrMo 17	0.39	0.002	0.3	0.90	16.0	1.0
AISI 420	X 42 Cr 13	0.40	0.002	0.40	0.60	13.0	

Efficient and reliable steels for plastic molding

Mold cores and cavities

BRAND	HARDNESS CONSISTENCY	MACHINABILITY	ETCH-GRAINING	REPAIR WELDABILITY	THERMAL CONDUCTIVITY
Superplast® P20	★★★	★★★	★★★	★★★	★★★
Superplast® P20 HH	★★★	★★	★★★	★★★	★★
W 1.2738	★★	★★	★★	★	★★
W 1.2311	★	★★	★★	★	★★

Wear-resistant molds

BRAND	HARDNESS CONSISTENCY	MACHINABILITY	ETCH-GRAINING	REPAIR WELDABILITY	THERMAL CONDUCTIVITY
Superplast® 400	★★★	★★★	★★★	★★★	★★★
Superplast® HPplus	★★★	★★	★★	★★	★
W 1.2343	★★	★	★★	★	★
W 1.2714	★★	★★	★★	★★	★★

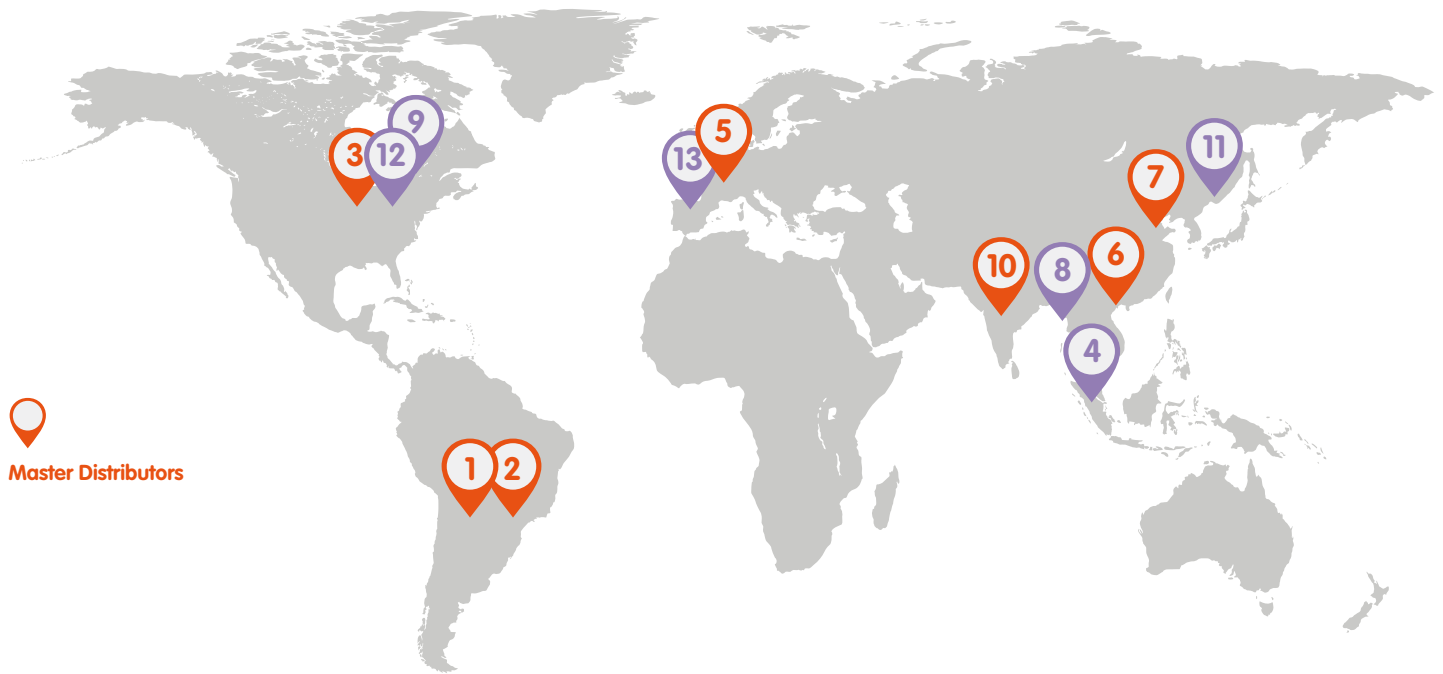
Corrosion-resistant holders

BRAND	HARDNESS CONSISTENCY	MACHINABILITY	ETCH-GRAINING	REPAIR WELDABILITY	THERMAL CONDUCTIVITY
Superplast® Stainless	★★★	★★★	★	★★	★★★
W 1.2085	★★	★★	★	★★	★★

Stainless cores and cavities

BRAND	HARDNESS CONSISTENCY	MACHINABILITY	POLISHABILITY	REPAIR WELDABILITY	THERMAL CONDUCTIVITY
W 1.2083	★★	★	★★	★★	★★
W 1.2316	★★	★	★★★	★★	★★

Industeel Distributors world presence



 Master Distributors

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