



**SIMOLD**...

PLASTIC MOLD STEEL

**SIHARD**...

COLD WORK TOOL STEEL

**SITHERM**...

HOT WORK TOOL STEEL

**SIRAPID**...

HIGH SPEED STEEL

**sij**...

Tool steels

**SIMOLD | SITHERM | SIHARD | SIRAPID**





SIJ is a vertically integrated holding company, the leading steel manufacturer in Slovenia, and one of the largest stainless and special steel manufacturers in Europe. SIJ Group consists of the two largest steel companies in Slovenia (SIJ Acroni and SIJ Metal Ravne), other manufacturing and processing companies (SIJ Ravne Systems, SIJ Elektrode, SIJ SUZ), specialized service and sales centers across Europe and the USA, and companies for scrap steel collection and sales.

[www.sij.si](http://www.sij.si)



#### **INCREASE YOUR PRODUCT'S LIFE SPAN**

The highest steel quality, based on world class production equipment and more than 400 years of experience in steel making



#### **DECREASE MACHINING COSTS**

Narrow dimensional tolerances, exceeding international standards



#### **OPTIMIZE YOUR MANUFACTURING PROCESSES**

Extensive range of mechanical treatment possibilities to find the best fit for your production process



#### **EXCEED YOUR CUSTOMERS' EXPECTATIONS**

Strong in-house R&D department and broad applied knowledge helps you get the best solutions for your customers' needs

**BEST THINGS IN THE WORLD**

**CONTAIN SLOVENIAN STEEL**



SIJ GROUP — YOUR PARTNER IN THE TOOLING INDUSTRY

SIJ MWT,  
LANDSBERG AM LECH, DE

SIJ METAL RAVNE,  
RAVNE NA KOROŠKEM, SI

SIJ ACRONI,  
JESENICE, SI

SIJ SIDERTOCE  
GRAVELONA TOCE VB, IT

SIJ RAVNE STEEL CENTER  
LJUBLJANA, SI

ORO MET,  
PIVKA, SI

Based on its vertical integration, SIJ Group has developed into a reliable partner for the tool makers. From own steel scrap collection and steel production, to own steel centers and tool components production – all from one source in a timely manner, according to the most stringent tooling industry requirements and standards.



STEEL PRODUCTION

**SIJ ACRONI** is the largest Slovenian steel manufacturer and one of the leading quarto plate producers in Europe, producing steel by recycling scrap in an electric arc furnace, casting it on a continuous caster and rolling it into high quality flat rolled steel products. With our state of the art plate mill, we produce plates up to 2500 mm in width. Besides tool steels for plastic moulding and hot work tool steels, Acroni also produces stainless and electrical steel.

**SIJ METAL RAVNE**, the second largest Slovenian steel manufacturer and one of the largest tool steel producers in Europe, produces steel by recycling scrap in an electric arc furnace, casting it into ingots and rolling or forging it into quality long steel products. Own forging shop, rolling mill, ESR remelting furnaces and a wide range of heat treatment and machining options allow us to produce a rich pallet of more than 200 steel grades in different dimensional shapes, from carbon and alloyed structural steels.



STEEL SERVICE AND DISTRIBUTION

Based in Slovenia (Ravne Steel Center), Italy (Sidertoce), Germany (SIJ MWT) and USA (Kopo International), SIJ has an network of localized service centers, providing technical support and quick delivery of precut or machined steel for the tooling industry. Regularly stocking more than 50 different tool steel grades in more than 1.100 dimensional formats, equipped with modern cutting and surface treatment equipment, we provide unrivald service and material availability to meet the requirements of modern day tooling industry.



ONE STOP SHOP FOR TOOLING INDUSTRY

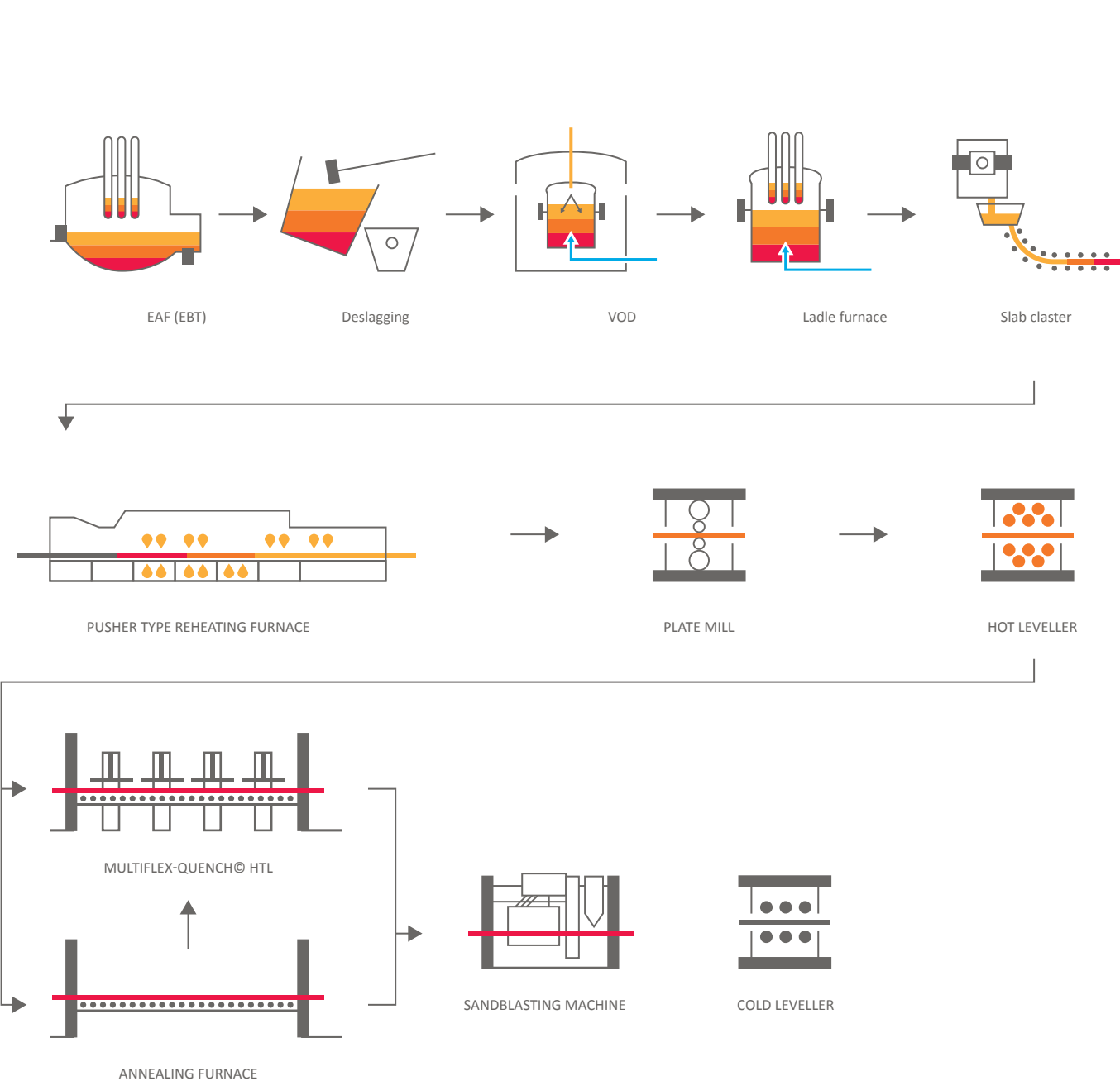
**SIJ ORO MET** provides standard and customized tool plates, standard tool frames and CNC machined plates weighting up to 10 tons. Being compliant with Kongsberg automotive tool material standard and ISO 9001:2008 certified, SIJ ORO MET is a reliable partner for the tool makers all around Europe.



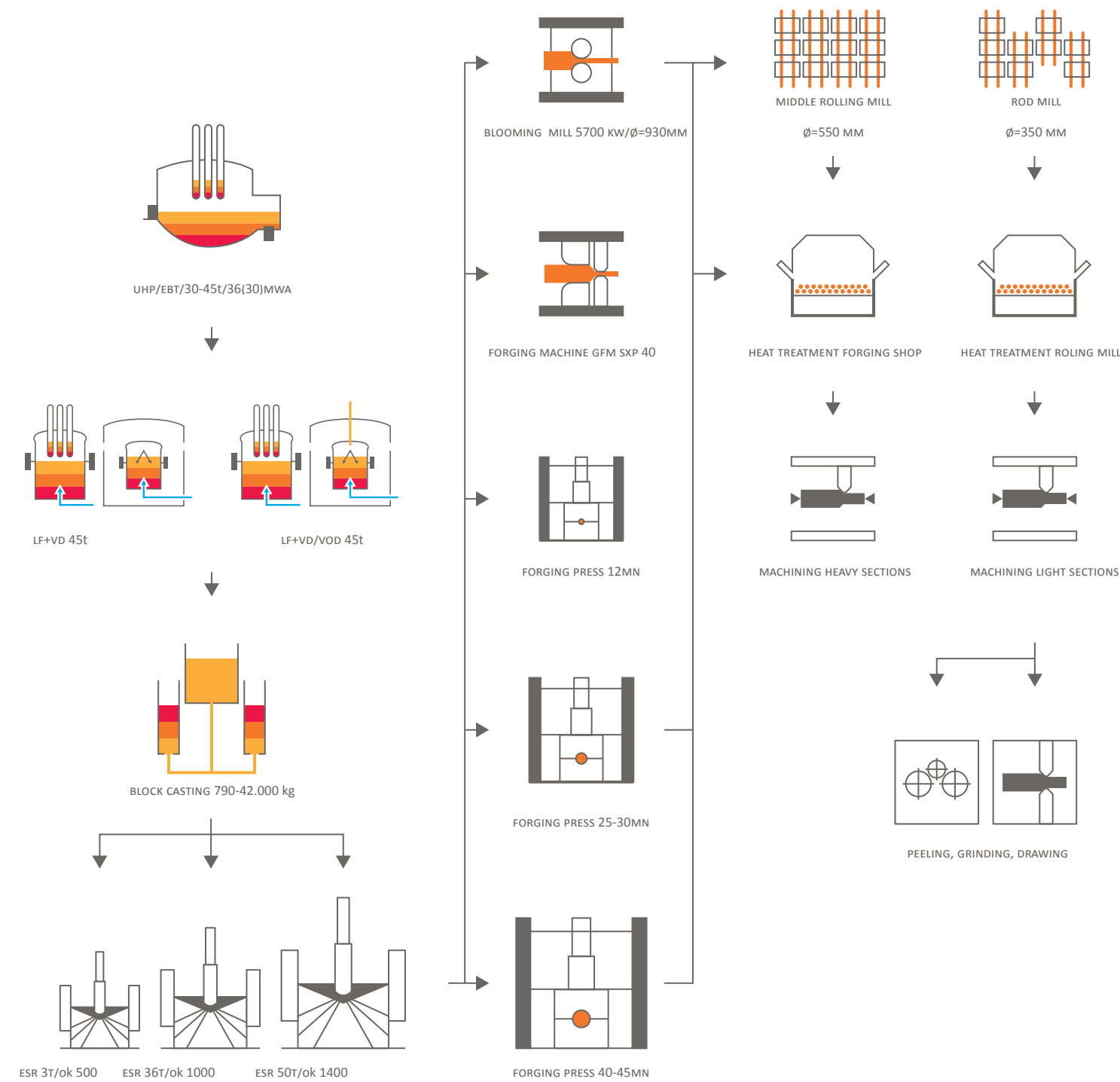
CUSTOM-MADE WELDING MATERIALS

**SIJ ELEKTRODE JESENICE**, is the largest welding material manufacturer in Slovenia, and a prominent one in Europe, with technology development and manufacturing tradition dating back more than 70 years. Manufacturing program includes welding materials for manual, semi-automatic and automatic - robotic welding of all steel types including the plastic moulding tool steels.

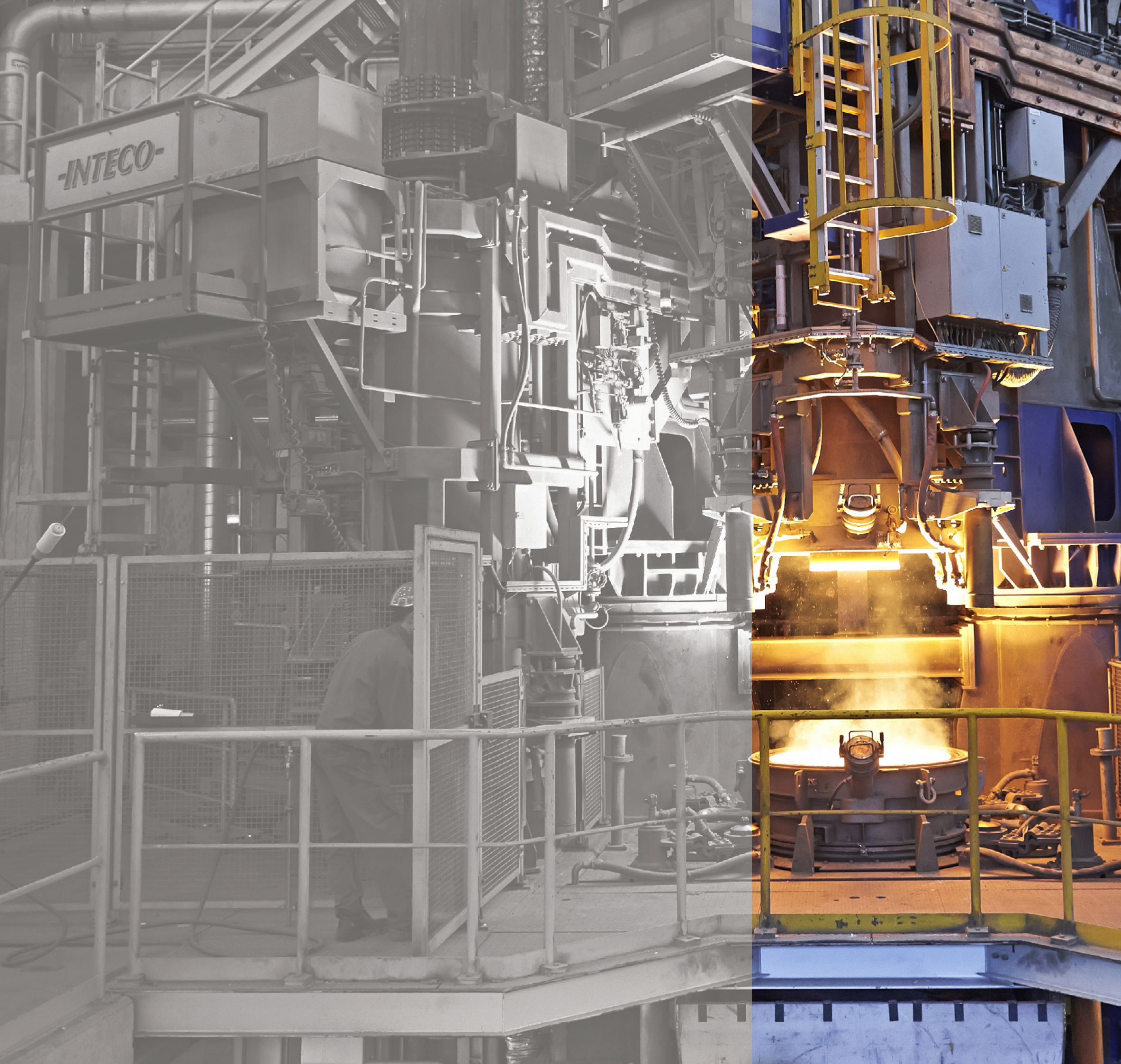
PRODUCTION PROCESS FLAT PRODUCTS



PRODUCTION PROCESS LONG PRODUCTS







**THE ELECTROSLAG REMELTING PLANT** features two large 36 and 50 ton ESR furnaces and a smaller one of 3 ton. Via ESR method we can produce extra clean tool steels to ensure the maximum performance of the tool. Based on ESR remelting, we are also developing customized tool steel grades to meet requirements for even the most demanding tooling applications.

#### **ESR1**

- Ingot formats:
  - $\varnothing$  430 mm,  $\varnothing$  330 mm and sq. 400 mm
- Max. ingot weight: 2500 kg

#### **ESR 2**

- Ingot formats:
  - sq. 400mm,
  - $\varnothing$ 430,  $\varnothing$ 500,  $\varnothing$ 630,  $\varnothing$ 850 and  $\varnothing$ 1000 mm;
- Max. ingot weight: 30 tons
- Max. ingot length: 5500 mm

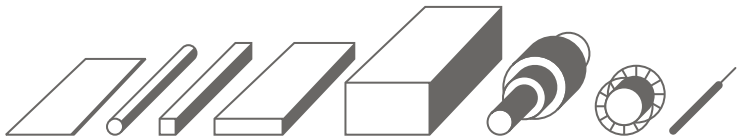
#### **ESR 3**

- Remelting under protective atmosphere of nitrogen, argon or a combination of both.
- Ingot formats:
  - $\varnothing$ 850,  $\varnothing$ 1000 and  $\varnothing$ 1400 mm format
- Max. ingot weight: 50 tons
- Max. ingot length: 4900 mm



SIMOLD...

SIMOLD...



**SIMOLD** tool steel is intended for the manufacture of different moulds for plastics, synthetic resins and rubber moulding. Backing parts of plastic injection moulding tools are made of SIMOLD tool steel alloyed with sulphur, added to increase their machinability. SIMOLD brand steel, alloyed with chromium (over 12% Cr), is characterised by its excellent corrosion resistance, thus placing this in the category of so-called corrosion-resistant tool steels. The SIMOLD brand of tool steel is installed in a wide variety of tools within an extremely broad industrial spectrum. During use they are exposed to pressure, wear and even corosion under certain conditions. Ex-treme (long) durability confirms the excellent quality of our SIMOLD brand steel.

CHEMICAL COMPOSITION

DESIGNATION	CHEMICAL COMPOSITION (WT.%)												WORK
SIJ BRAND	W. NR.	C	Si	Mn	Cr	Mo	Ni	V	S	AL	Cu	P	HARDNESS
SIMOLD 2311	1.2311	0.40	0.40	1.50	1.90	0.20	/	/	/	/	/	/	255 - 310 HBW
SIMOLD 2312	1.2312	0.40	0.40	1.50	1.90	0.20	/	/	0.07	/	/	/	255 - 310 HBW
SIMOLD 2738*	1.2738	0.40	0.30	1.40	1.90	0.20	1.00	/	/	/	/	/	280 - 325 HBW
SIMOLD 2083	1.2083	0.35	0.40	0.25	13.00	0.20	0.20	/	/	/	/	/	38 - 43 HRC
SIMOLD 2085	1.2085	0.30	0.35	0.80	15.00	/	/	/	0.07	/	/	/	50 - 54 HRC
SIMOLD 2316	1.2316	0.39	max. 1.00	max. 1.00	16.50	1.05	max. 1.00	/	/	/	/	/	28 - 36 HRC**

PRODUCT RANGE

SIJ GRADE	plate	square sections	flat sections	round bars	forgings	welding wire	electrodes
SIMOLD 2311	•	•	•	•	•	•	•
SIMOLD 2312	•	•	•	•	•	•	•
SIMOLD 2738	•	•	•	•	•	•	•
SIMOLD 2083	•	•	•	•	•	•	•
SIMOLD 2085	•	•	•	•	•	•	•
SIMOLD 2316		•	•	•	•		

DIMENSIONAL RANGE

plates	thickness 15 – 100 mm; width 1.000 – 2.500 mm; length 4.000 – 12.000 mm
square sections	25 mm to 700 mm
flat sections	40 x 7 mm to 1500 x 600 mm
round bars	Ø 7 mm to Ø 800 mm

For any information about dimensions outside specified ranges, please contact us directly.





SIMOLD S: CUSTOM-MADE GRADES FOR PLASTIC MOULDING



SIMOLD S are steels specially designed to increase through hardenability and more uniform hardness distribution in larger dies.

DESIGNATION		CHEMICAL COMPOSITION (WT.%)											WORK
SIJ BRAND	W. NR.	C	Si	Mn	Cr	Mo	Ni	V	S	AL	Cu	P	HARDNESS
SIMOLD S131	1.2738 HH	0.28	max. 0.3	1.40	1.50	0.50	1.00	0.15	/	/	/	/	320 - 360 HBW
SIMOLD S133	/	0.28	max. 0.4	1.40	1.40	0.50	1.00	0.22	/	/	/	/	350 - 390 HBW
SIMOLD S150R	/	0.13	0.31	1.50	0.25	0.30	2.85	/	/	0.95	1.00	/	40 - 42 HRC

SIMOLD S150R is remelted by ESR process to achive superior micropurity, lower micro segregation and outstanding mechanical properties.

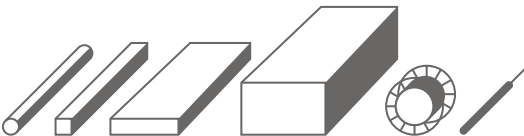
THE MAIN FEATURES OF THE SIMOLD S, STEELS FOR PLASTIC MOULDING ARE:

- Microcleanliness - high purity steel
- High polishability
- Machinability
- Temperature resistance
- Wear resistance
- Dimensional stability





# SIHARD...



The **SIHARD** brand steels are adapted for machining and cutting metal, wood and synthetic materials and have the characteristics of dimensional stability, high compressive strength and the required toughness, considering their intended use. The adjusted chemical composition and processing technology provides SIHARD brand steel with the necessary resistance to adhesion, abrasion, cut-edge fragmentation, the possibility of nitration, hard PVD and EDM coatings.

SIHARD brand steels are used for cyclically loaded tools such as: punchers, pressers, die inserts for the compaction of powders, knives/ blades, forging, rolling and deep drawing tools.

### CHEMICAL COMPOSITION

DESIGNATION	CHEMICAL COMPOSITION (WT.%)									HARDNESS AFTER HARD. (HRC) MIN.	WORK HARDNESS (HRC)
	W. NR.	C	Si	Mn	Cr	Mo	Ni	V	W		
SIHARD 2357	1.2357	0.50	0.60	0.60	3.30	1.50	/	0.10	/	60	55 - 60
SIHARD 2361	1.2631	0.90	0.50	0.50	18.00	1.10	/	0.10	/	57	50 - 55
SIHARD 2363	1.2363	1.00	0.30	0.55	5.20	1.05	/	0.20	/	63	57 - 61
SIHARD 2379	1.2379	1.55	0.25	0.30	11.50	0.70	/	1.00	/	64	57 - 61
SIHARD 2510	1.2510	0.95	0.25	1.10	0.60	/	/	0.10	0.60	64	57 - 62
SIHARD 2767	1.2767	0.45	0.25	0.30	1.35	0.25	4.00	/	/	56	52 - 55
SIHARD 2842	1.2842	0.90	0.25	2.00	0.35	/	/	0.10	/	64	57 - 62

### PRODUCT RANGE

SIJ GRADE	plate	square sections	flat sections	round bars	forgings	welding wire	electrodes
SIHARD 2357	/	•	•	•	•	/	•
SIHARD 2361	/	•	•	•	•	•	•
SIHARD 2363	/	•	•	•	•	•	•
SIHARD 2379	/	•	•	•	•	•	•
SIHARD 2510	/	•	•	•	•	/	/
SIHARD 2767	/	•	•	•	•	•	•
SIHARD 2842	/	•	•	•	•	•	•

### DIMENSIONAL RANGE

square sections	25 mm to 500 mm
flat sections	40 x 7 mm to 1000 x 500 mm
round bars	Ø 7 mm to Ø 800 mm

For any information about dimensions outside specified ranges, please contact us directly.





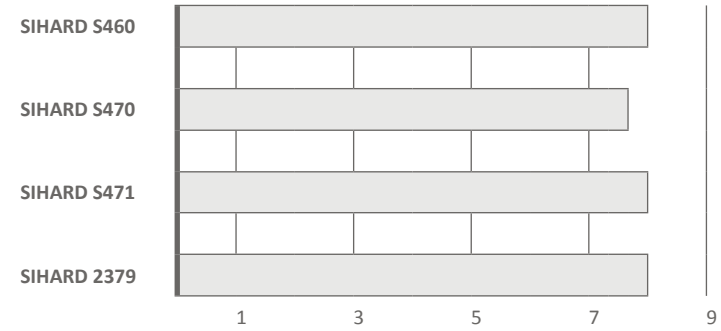
SIHARD S: CUSTOM-MADE COLD WORK TOOL STEEL GRADES



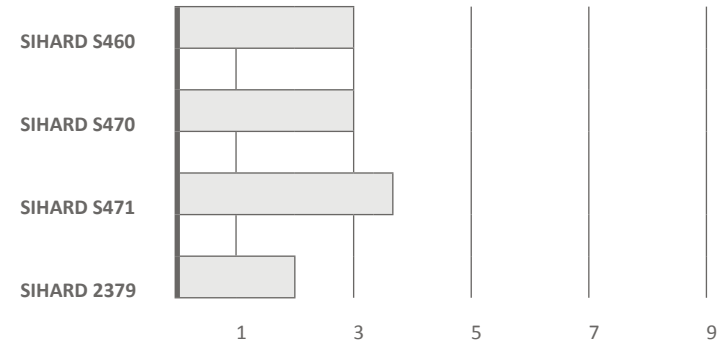
SIHARD S steel grades are developed to achieve higher working hardness in comparison to 12 Cr ledeburitic steels. Improved toughness, great and uniform wear resistance ensures longer knife and tool life. SIHARD S custom made steels are filling the gap between 12 % ledeburitic Cr and high speed steels.

SIJ GRADE	CHEMICAL COMPOSITION (MAS.%)								
	W. NR.	C	Si	Mn	Cr	Mo	Ni	V	W
SIHARD S460	/	1	1.1	0.3	8	2.3	/	0.3	/
SIHARD S470	/	0.9	0.25	0.4	8	1.5	/	2.1	/
SIHARD S471	/	1.1	1	0.35	7.9	1.5	/	2.1	1.2

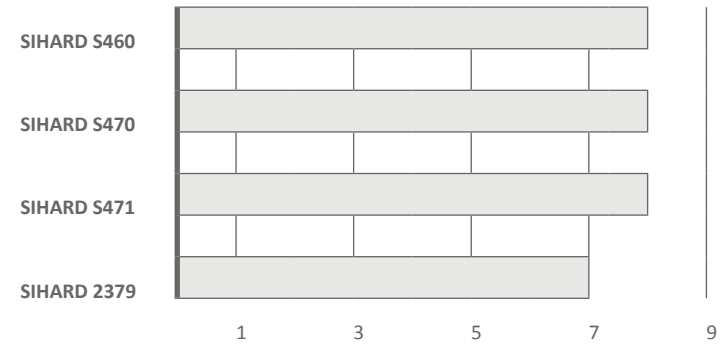
WEAR RESISTANCE



TOUGHNESS

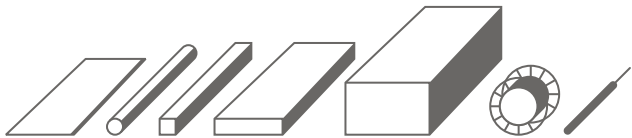


MAX WORKING HARDNESS





# SITHERM...



## SITHERM...

The **SITHERM** brand encompasses premium-grade high-temperature and hot-work steels. These are used in dynamic loading, and the design and manufacture of ferrous as well as nonferrous metals and steels. SITHERM brand steel is used to manufacture complex tools such as: moulds, die casting tools, high pressure die casting tools, cores, hot cutting and extrusion tools. The tool surface is exposed to cyclic temperature variations and mechanical loadings. In response to this, SITHERM brand steel is characterised by high tempering resistance, great toughness, and ductility by hot in cold conditions .

### CHEMICAL COMPOSITION

DESIGNATION	CHEMICAL COMPOSITION (WT.%)									HARDENED	WORK
	W. NR.	C	Si	Mn	Cr	Mo	V	Ni	Other	STEEL (HRC)	HARDNESS (HRC)
SITHERM 2343*	1.2343	0.37	1.00	0.40	5.00	1.30	0.40	/	/	50 - 56	43 - 48
SITHERM 2344*	1.2344	0.39	1.05	0.40	5.15	1.35	1.00	/	/	52 - 56	43 - 50
SITHERM 2345*	1.2345	0.51	0.95	0.30	5.00	1.35	0.90	/	/	55 - 57	45 - 52
SITHERM 2365*	1.2365	0.32	0.25	0.30	2.95	2.75	0.55	/	/	52 - 56	40 - 48
SITHERM 2367*	1.2367	0.38	0.40	0.40	5.00	2.95	0.50	/	/	53 - 57	44 - 50
SITHERM 2885*	1.2885	0.32	0.25	0.30	2.80	2.80	0.50	/	Co:2.80	52 - 54	44 - 50

### PRODUCT RANGE

SIJ GRADE	plate	square sections	flat sections	round bars	forgings	welding wire	electrodes
SITHERM 2343	•	•	•	•	•	•	•
SITHERM 2344	•	•	•	•	•	•	•
SITHERM 2345	•	•	•	•	•	•	•
SITHERM 2365	/	•	•	•	•	•	•
SITHERM 2367	/	•	•	•	•	•	•
SITHERM 2885	•	•	•	•	•	•	•

### DIMENSIONAL RANGE

plates	thickness 15 – 100 mm; width 1.000 – 2.500 mm; length 4.000 – 12.000 mm
square sections	25 mm to 600 mm
flat sections	40 x 7 mm to 1000 x 600 mm
round bars	Ø 7 mm to Ø 800 mm

For any information about dimensions outside specified ranges, please contact us directly.





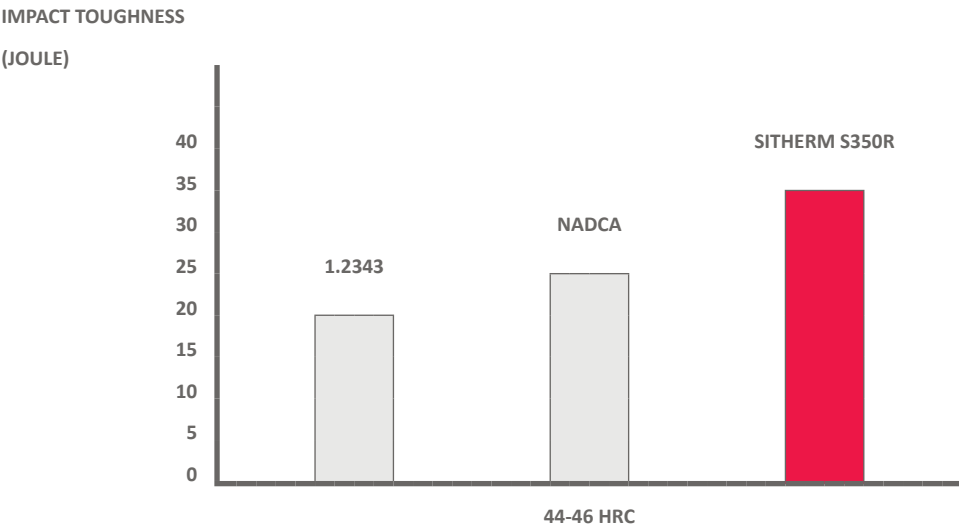
# SITHERM<sup>...</sup> S350R

SITHERM S350R is a modified steel grade with high toughness and good thermal fatigue within the normal range of hardness for hot-work applications like die casting, die forging and extrusion.

SIJ METAL RAVNE	AISI	W. Nr.	C	Si	Mn	Cr	Mo	V
SITHERM S350R	H11 mod	~1.2343	0.36	0.20	0.30	5.00	1.35	0.45

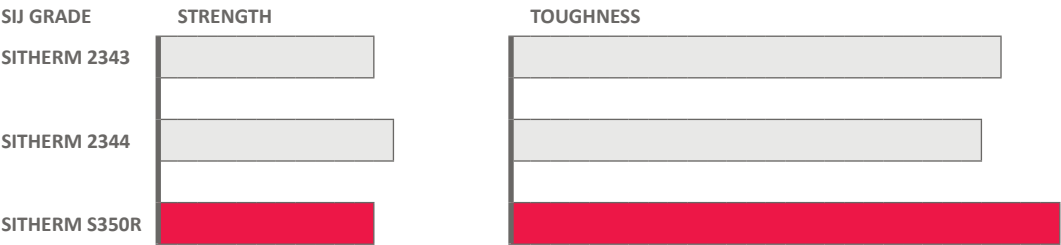
## TOUGHNESS

KV impact specimens (EN ISO148-1:2017 / ASTM A370-05-17) are used to test impact toughness in transverse direction. Specimens are quenched and tempered to 45+/-1 HRC, and test is performed at 20°C. Average impact toughness of forged quality is higher than 24 Joule for the average forging size of 1000 x 400 mm. (NADCA#229-2016)



## QUALITY COMPARISON

SITHERM S350R is a premium tool steel of high toughness produced by SIJ Group. The chart below shows its toughness compared to SITHERM 2343 and SITHERM 2344 hot-work tool steels. Hot-work tool steel SITHERM S350R with increased toughness is especially suitable for applications with a risk of gross cracking.





# SITHERM<sup>...</sup> S361R

SITHERM S361R is a modified steel grade with high toughness and good thermal fatigue at normal range of hardness for hot-work applications like die casting, extrusion, die forging and hot stamping.

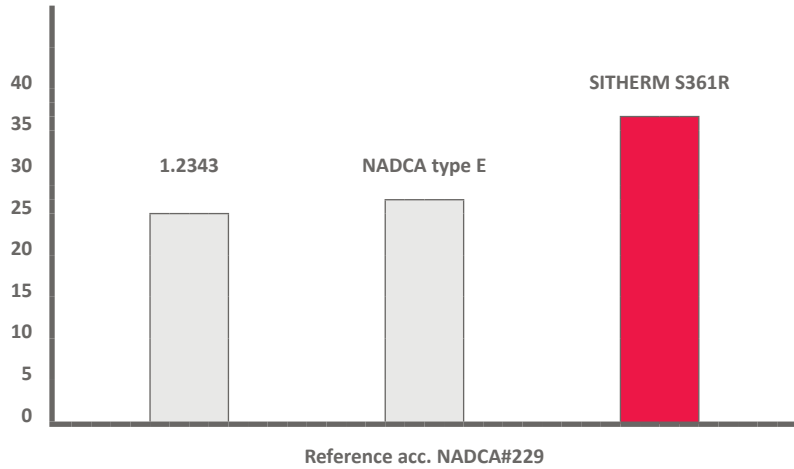
### CHEMICAL COMPOSITION (%)

SIJ GRADE	AISI	W. Nr.	C	Si	Mn	Cr	Mo	V	Ni
SITHERM S361R	/	/	0.37	0.25	0.40	4.90	1.80	0.60	1.60

### TOUGHNESS

KV impact specimens (EN ISO148-1:2017 / ASTM A370-05-17) are used to test impact toughness in transverse direction. Specimens are quenched and tempered to 45 +/-1 HRC and test is performed at 20 °C. Average impact toughness of forged quality is higher than 33 Joule for the forging size up to 800 x 400 mm. (acc. NADCA#229-2016).

IMPACT TOUGHNESS  
(JOULE)



### QUALITY COMPARISON

SITHERM S361R is a premium tool steel of highest toughness produced by SIJ Metal Ravne. The chart below shows its toughness compared to SITHERM 2343, SITHERM 2344 and to SITHERM S350R hot-work steels. Tool steel with increased toughness is critical in applications with risk of gross cracking.







# SITHERM<sup>...</sup> S360R

SITHERM S360R is a supreme hot-work tool steel produced by SIJ Metal Ravne and it excels in the following properties:

- good impact toughness
- high tensile properties and high working hardness
- improved thermal conductivity
- good polishability
- excellent hardenability
- high cleanliness
- excellent homogeneity

## CHEMICAL COMPOSITION (%)

Chemical composition with a minimal content of detrimental elements compared to standard steel grades.

Chemical element content is in wt. %

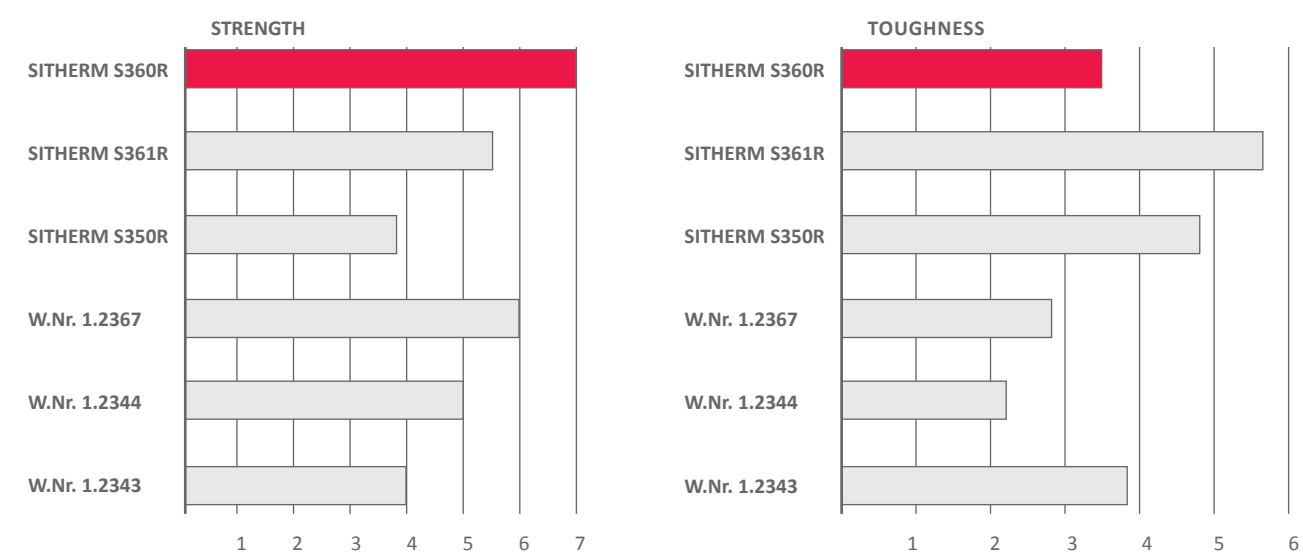
SIJ METAL RAVNE	AISI	W. Nr.	C	Si	Mn	Cr	Mo	V	Ni
SITHERM S360R	/	/	0.52	0.25	0.30	4.80	3.00	0.60	0.60

## CONDITIONS AS DELIVERED

SITHERM S360R is supplied in annealed condition, max. 229 HBW.

## COMPARISON OF STRENGTH AND TOUGHNESS

In comparison with other conventional steels of this group, SITHERM S360R has an increased amount of carbon and it is modified by Ni-addition which improves toughness and increases hardenability and thermal conductivity of steel (tool). This contributes to more homogeneous properties throughout tool volume.







# SIRAPID



These steels are alloyed with molybdenum and tungsten. **SIRAPID** steels achieve high hardness with both hot and cold rolling, and at the same time provide wear and shock resistance. The SIRAPID high-speed steel is hardened to 62 - 67 HRC, and maintains this hardness well even at the temperatures tool steels are used at. Due to its exceptional properties, SIRAPID steel is used for cutting tools (knives, drill bars, milling cutters, etc., rolls for cold rolling and other cold-work tools).

### CHEMICAL COMPOSITION

DESIGNATION		CHEMICAL COMPOSITION (MAS.%)						ACHIEVABLE
SIJ BRAND	W. NR.	C	Cr	Mo	V	W	Co	HARDNESS (HRC) MIN.
SIRAPID 3343	1.3343	0.90	4.10	5.00	1.90	6.30	/	64
SIRAPID 3346	1.3346	0.82	3.90	8.50	1.20	1.70	/	63
SIRAPID 3344	1.3344	1.20	4.10	5.00	2.90	6.30	/	64
SIRAPID 3351	1.3351	1.32	4.10	4.60	3.90	5.60	/	64
SIRAPID 3355	1.3355	0.78	4.10	/	1.10	17.90	/	63
SIRAPID 3302	1.3302	1.27	4.10	0.90	3.70	12.00	/	65
SIRAPID 3243	1.3243	0.91	4.10	5.00	1.90	6.30	4.70	64
SIRAPID 3247	1.3247	1.10	4.00	9.50	1.10	1.50	8.00	66

### PRODUCT RANGE

SIJ GRADE	plate	square sections	flat sections	round bars	forgings	welding wire	electrodes
SIRAPID 3343	/	•	•	•	/	/	•
SIRAPID 3346	/	•	•	•	/	/	•
SIRAPID 3344	/	•	•	•	/	/	•
SIRAPID 3351	/	•	•	•	/	/	•
SIRAPID 3355	/	•	•	•	/	/	•
SIRAPID 3302	/	•	•	•	/	/	•
SIRAPID 3243	/	•	•	•	/	/	•
SIRAPID 3247	/	•	•	•	/	/	•

### DIMENSIONAL RANGE

square sections	25 to 150 mm
flat sections	40 x 7 to 250 x 80 mm
round bars	Ø 7 to Ø 215 mm

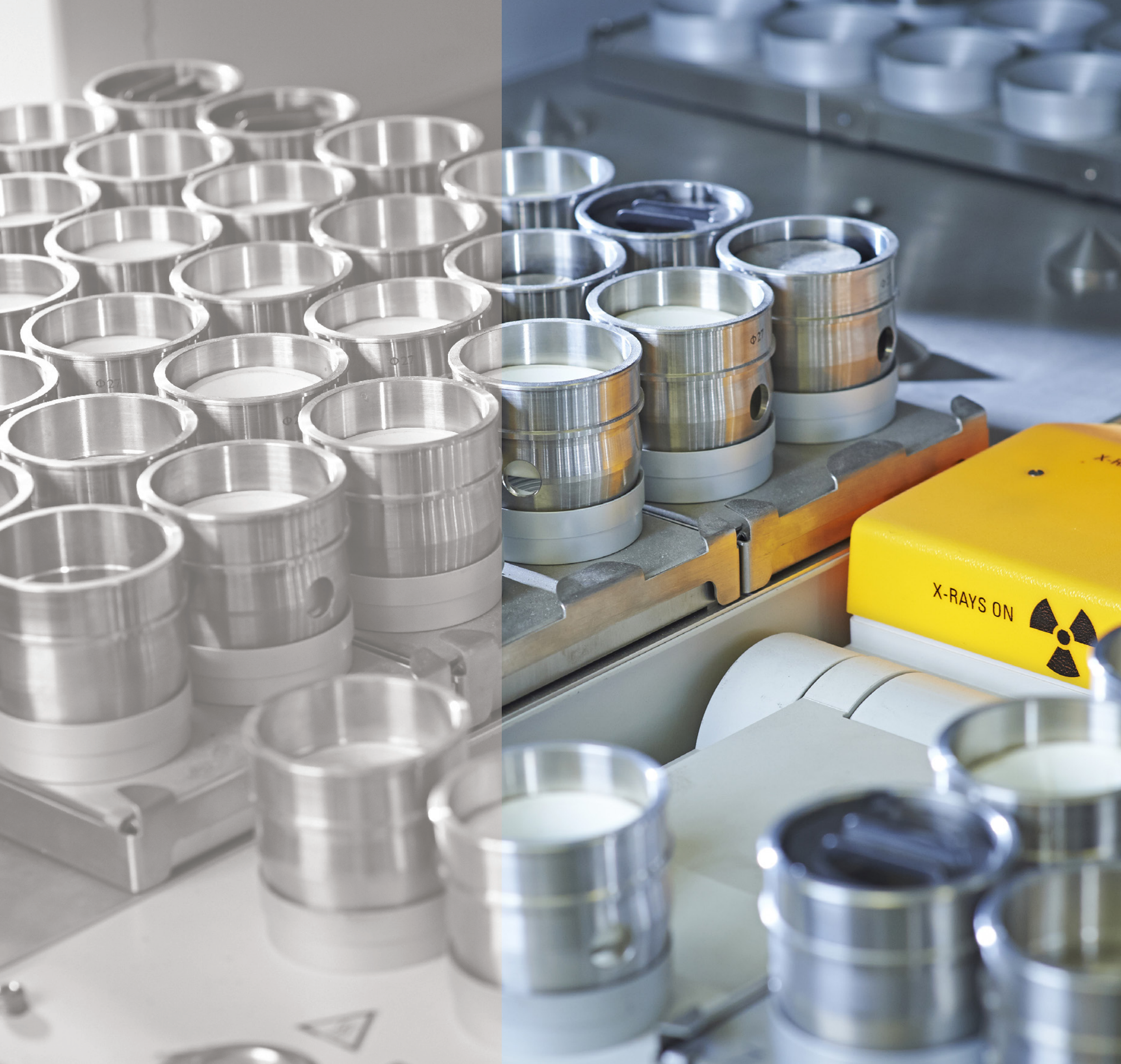
For any information about dimensions outside specified ranges, please contact us directly.

TOOL STEEL GRADE RANGE

SIJ	W.Nr.	EN	AISI/ASTM	DIN	METAL RAVNE
DESIGNATION		DESIGNATION	DESIGNATION	DESIGNATION	OLD DESIGNATION
SIMOLD 2083	1.2083	X42Cr13 †		X40Cr14	PK4N
SIMOLD 2085	1.2085				PK4S
SIMOLD 2311	1.2311				UTOPNEX
SIMOLD 2312	1.2312				UTOPN
SIMOLD 2316	1.2316			X35CrMo17	PK335
SIMOLD 2329	1.2329				UTOPNFEX
SIMOLD 2332	1.2332				VCMO145
SIMOLD 2542	1.2542		~S1		OSIKRO2
SIMOLD 2550	1.2550	60WCrV7 †	~S1	60WCrV8	OSIKRO4
SIMOLD 2738	1.2738	40CrMnNiMo8-6-1 †	P20 Mod.	40CrMnNiMo8-6-4	UTOPNIN
SIMOLD S130			P20		UTOPNMO
SIMOLD S150					UTOPNICU
SIHARD 2080	1.2080		D3	X210Cr12	OCR12
SIHARD 2201	1.2201			X165CrV12	OH842
SIHARD 2357	1.2357		S7	50CrMoV13-14	OH253
SIHARD 2361	1.2361	X91CrMoV18	440B	X91CrMoV18	OCR6
SIHARD 2360	1.2360			X48CrMoV8-1-1	OH252
SIHARD 2363	1.2363		A2	X100CrMoV5-1	OA2
SIHARD 2369	1.2369			81MoCrV42-16	OH260
SIHARD 2376	1.2376			X96CrMoV12	CRV1
SIHARD 2378	1.2378		D2	X220CrVMo12-2	OCR12V2
SIHARD 2379	1.2379	X160CrMoV 121	D2	X155CrVMo12-1	OCR12VM
SIHARD 2436	1.2436	X210CrW 12 1		X210CrW12	OCR12SP
SIHARD 2601	1.2601	X160CrMoV 12 1		X165CrMoV12	OCR12EX
SIHARD 2631	1.2631			X50CrMoW9-1-1	CRV2
SIHARD 2690	1.2690				CRV3
SIHARD 2721	1.2721			50NiCr13	OH251
SIHARD 2746	1.2746			45NiCrMoV16-6	OH250
SIHARD 2767	1.2767	40NiCrMoV 16		X45NiCrMo4	OH239
SIHARD 2824					OH263
SIHARD S460					OH255
SIHARD S471					OCR8W
SIHARD S670					OCR12VMS
SIHARD K560	1.2360 mod.				OH236
SIHARD K571					OH261
SIHARD K572					OH236NI

SIJ	W.Nr.	EN	AISI/ASTM	DIN	METAL RAVNE
DESIGNATION		DESIGNATION	DESIGNATION	DESIGNATION	OLD DESIGNATION
SITHERM 2343	1.2343	X37CrMoV 51	H11	X38CrMoV5-1	UTOPMO1
SITHERM 2344	1.2344	X40CrMoV 51	H13	X40CrMoV5-1	UTOPMO2
SITHERM 2345	1.2345		Approx. H11	X50CrVMo5-1	UTOPMO4
SITHERM 2362	1.2362		-	X63CrMoV51	OV266
SITHERM 2365	1.2365	30CrMoV 12 11	H10	X32CrMoV33	UTOP33
SITHERM 2367	1.2367		-	X38CrMoV5-3	UTOPMO7
SITHERM 2564	1.2564		-	X30WCrV41	UTOP1
SITHERM 2581	1.2581	X30WCrV 93	H21	X30WCrV9-3	UTOP2
SITHERM 2606	1.2606		H12	X37CrMoW5-1	UTOP3
SITHERM 2662	1.2662			X30WCrCoV9-3	UTOPCO
SITHERM 2747	1.2747			28NiMo17	TMCN1
SITHERM 2885	1.2885		H10A	X32CrMoCoV3-3-3	UTOPCO2
SITHERM 2888	1.2888			X20CoCrWMo10-9	UTOPCO3
SITHERM S150					UTOPEX4
SITHERM S250					UTOPEX3
SITHERM S363			A9		UTOPMONI
SITHERM S570					UTOPMO5
SITHERM R460			A8		UTOPMO6
SIRAPID 3202	1.3202		T15	S12-1-4-5	BRCV
SIRAPID3207	1.3207		T42	S10-4-3-10	BRU
SIRAPID 3243	1.3243	HS6-5-2-5	M35	S6-5-2-5	
SIRAPID 3244	1.3244		M3C1.2+Co		RAVNE30
SIRAPID 3247	1.3247		M42		BRCMO2
SIRAPID 3255	1.3255	HS18-1-1-5	T4	S18-1-2-5	BRC
SIRAPID3265	1.3265	HS18-0-1-10	T5	S18-1-2-10	BRC3
SIRAPID 3302	1.3302		T1,no.Co	S12-1-4	BRW1
SIRAPID 3343	1.3318			S12-1-4	BRW2
SIRAPID3333	1.3333			S3-3-2	BRM
SIRAPID 3343	1.3343	HS6-5-2	M2	S6-5-2	BRM2
SIRAPID 3344	1.3344		M3/2	S6-5-3	BRM3
SIRAPID 3344	1.3344		M3:2	S6-5-3	RAVNE23
SIRAPID 3346	1.3346		M1	S2-9-1	BRM1
SIRAPID 3348	1.3348	HS2-9-2	M7	S2-9-2	BR885
SIRAPID 3351	1.3351		M4		BRM4
SIRAPID 3355	1.3355	HS18-0-1	T1	S18-0-1	BRW





## RESEARCH AND DEVELOPMENT

SIJ in-house development departments employ a team of highly competent experts, and is constantly being upgraded since our desire to bring the added value to our customers is set on a long-term basis.

## IN-HOUSE R&D DEPARTMENTS

At SIJ we are constantly striving to find optimal solutions for our clients, according to their needs and application of their products. Therefore we have 3 in-house R&D departments, with more than 90 employees and modern testing equipment including scanning electron microscope with an EDS analyzer, an X-ray diffractometer and a dilatometer along with a mechanical and a chemical laboratory as well as laboratory heat-treatment furnaces.

On yearly basis we carry out more than 100 R&D projects with our clients and win multiple national innovation awards. Newly developed products represent more than 7% of our yearly turnover.

## COMPETENCE CENTER

Incorporation into a partner development network represents a vital part of our research and development. On one hand, this means a closer cooperation with the top-level knowledge and development institutions, while on the other hand, it brings close cooperation with development departments held by our partners and customers as well as competent consulting.

SIJ is an incorporator and active member of KC IKM competence centre, an organisation where more than 250 engineers and researchers fully equipped with designing, laboratory, prototyping and measurement equipment are actively working in the sphere of new product and solutions development in close cooperation with our customers and end-users of the product.





## QUALITY ASSURANCE

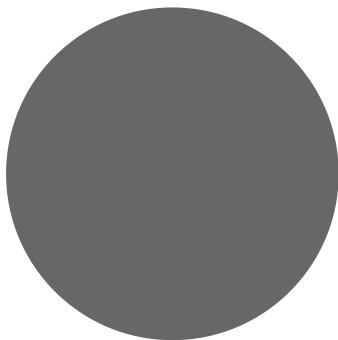
Both of our steel mills are EN ISO 14001:2015, EN ISO 9001:2015 and OHSAS 18001:2007 and 17025:2005 certified.

SIJ among other departments consists of many well respected accredited and in house laboratories with highly qualified staff, which perform a wide range of calibrations, testing and inspections according to ISO/IEC 17025 and ISO/IEC 17020. Services that laboratories provide are all performed following internal procedures which conform to international standards ISO, EN and ASTM. Main services include:

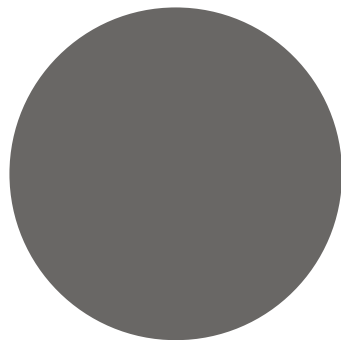
- Non-destructive testing using RT, MT, PT, UT and VT methods
- Residual stress measuring
- Chemical testing
- Hardness and microhardness testing
- Macroscopic and microscopic metallographic examinations
- Calibration of length gauges and instruments, including shape and roughness testing
- Calibration of mechanical quantities: hardness, torque, force, etc.
- Ultrasonic measuring instrument inspection



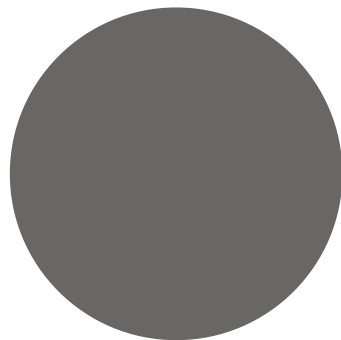
Our work is never truly done; we are a part of an endless process. This is symbolised by the **three dots** in our corporate logo, and the logos of each SIJ Group product and service brand. **Three dots equals three values.** Each one stands firmly on its own, and they all stand together, forever. As a sign of trust and quality, they symbolise our three main values, which define who and what we are.



CUSTOMISATION.

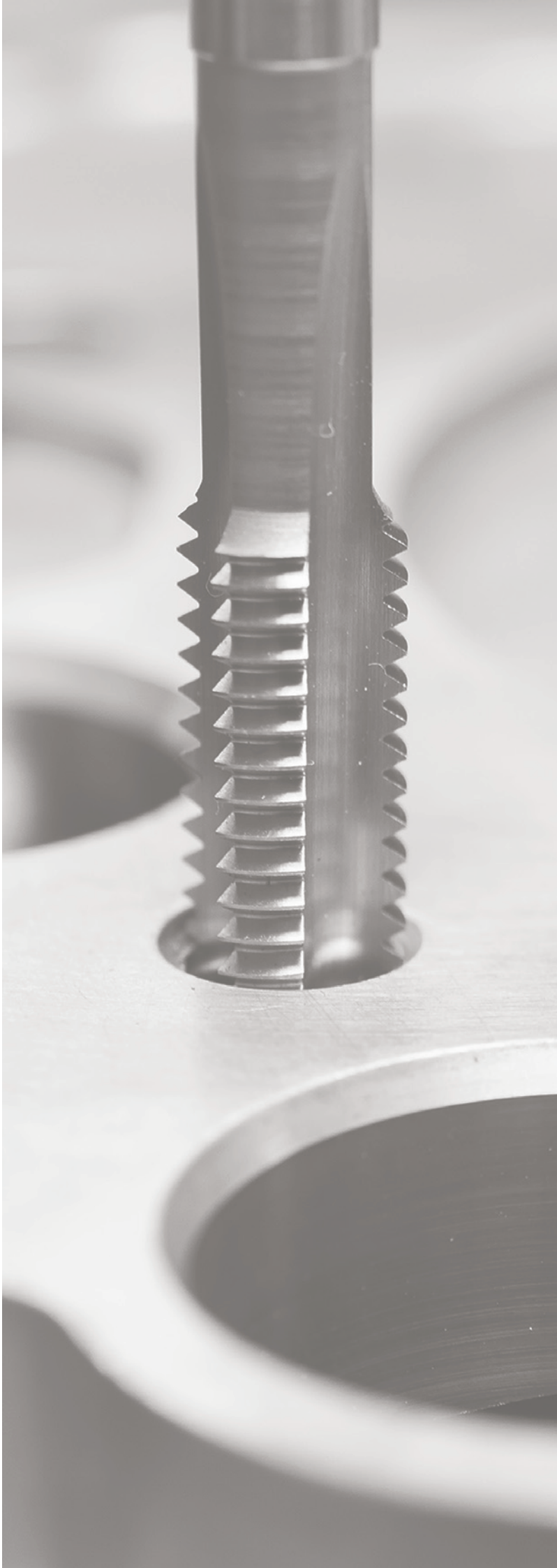


STRIVING.



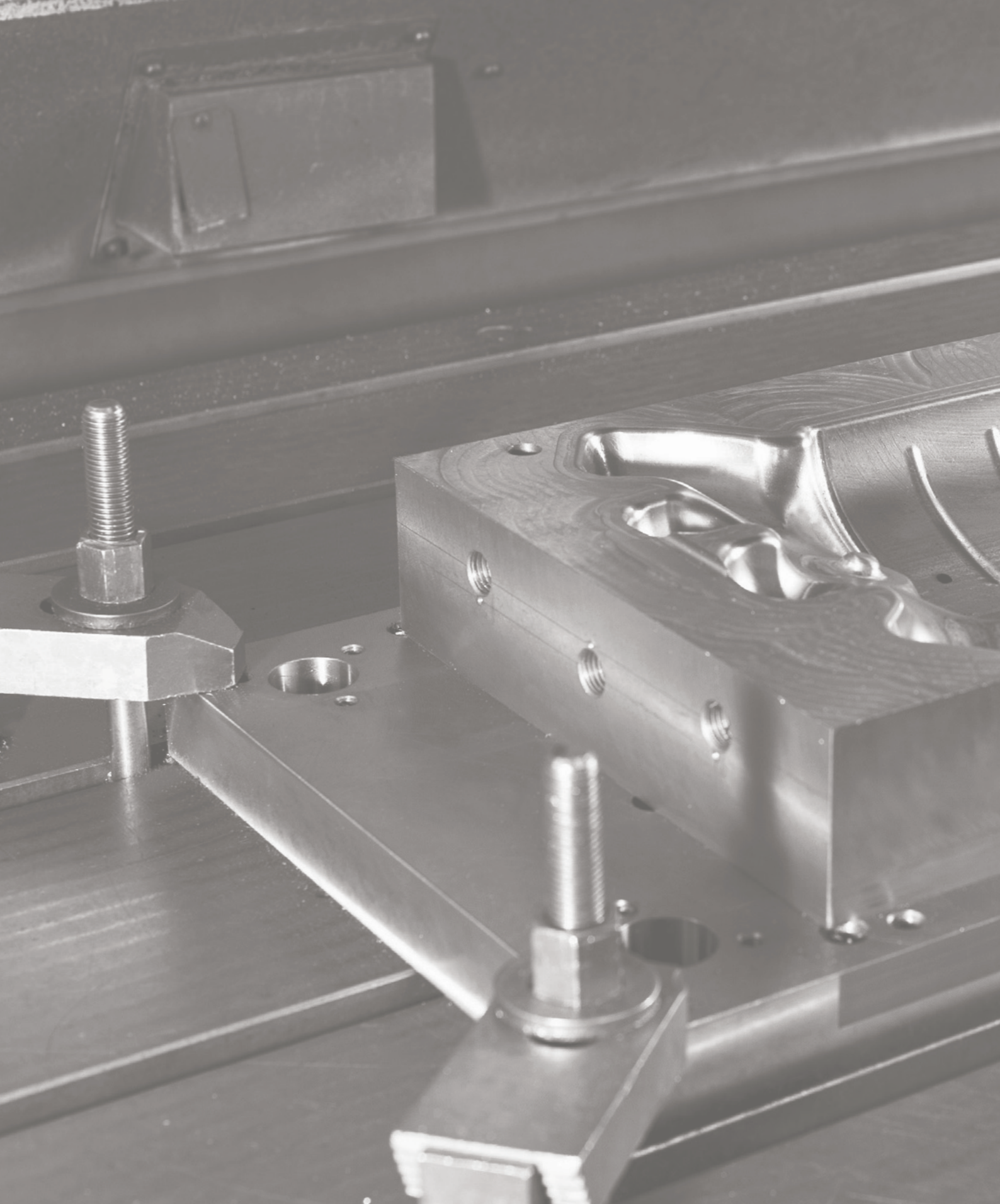
PROVEN.

**sij** | group



**BEST THINGS IN THE WORLD  
CONTAIN SLOVENIAN STEEL**





**SIJ Group**

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1000 Ljubljana  
[www.sij.si](http://www.sij.si)