

# HIGH PERFORMANCE STEEL

**Rodacciai**<sup>®</sup>



# **HIGH PERFORMANCE STEEL**

**Rodacciai®**





## ALLOY & CARBON STEELS

## FREE-CUTTING STEELS



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# COMPANY PROFILE



## ALMOST 70 YEARS OF EXPERIENCE IN STEEL BUSINESS

Today the Rodasteel Group is an international leader in the production and processing of steel. Our production and sales locations on three continents (Europe, Asia and America) provide Rodasteel with a widespread sales network to distribute finished products in stainless steels, alloy steels and carbon steels all over the world. The secret of this success is based on an extensive and diversified range of high quality products, on paying attention to the customers, on the ability to innovate continuously and on the experience of Rodasteel people, who know how to identify upcoming market shifts and opportunities.

**1956**

Foundation of  
Trafileria Roda & C.  
by Giuseppe Roda

**1960**

Introduction of lead alloy  
steel processing, considered  
to be the best in the world

**1971**

Construction of  
the new plant  
in Bosisio Parini

**1981**

Construction of the  
Sirone plant, with the  
rolling mill

**1984**

Trafileria Roda & C  
becomes  
Roda Acciai company

Rodacciai was born in Pusiano (Como) in 1956, when Trafiliera Roda & C. was founded by the charismatic and innovative entrepreneur Giuseppe Roda. Started as a small local company for steel bar cold drawing, in 1960 Trafiliera Roda & C. embarked on a path of production verticalisation along the steel processing chain. Thanks to the installation of a hot-working plant, the company expanded its original offer beyond semi-finished cold pressed products, becoming, during the

years, an international group in the steel processing sector. The group is made by two companies: Rodacciai S.p.A. (Italy) and Aceros Inoxidables Olarra S.A. (Spain). Transparency, integrity and passion are the main values for the entire group, based on them every decision and action are taken. These principles drive all Rodasteel activities and are the basis of the group's Code of Ethics.



**1994**

Acquisition of the company Olarra Aceros Inoxidables

**1995-2005**

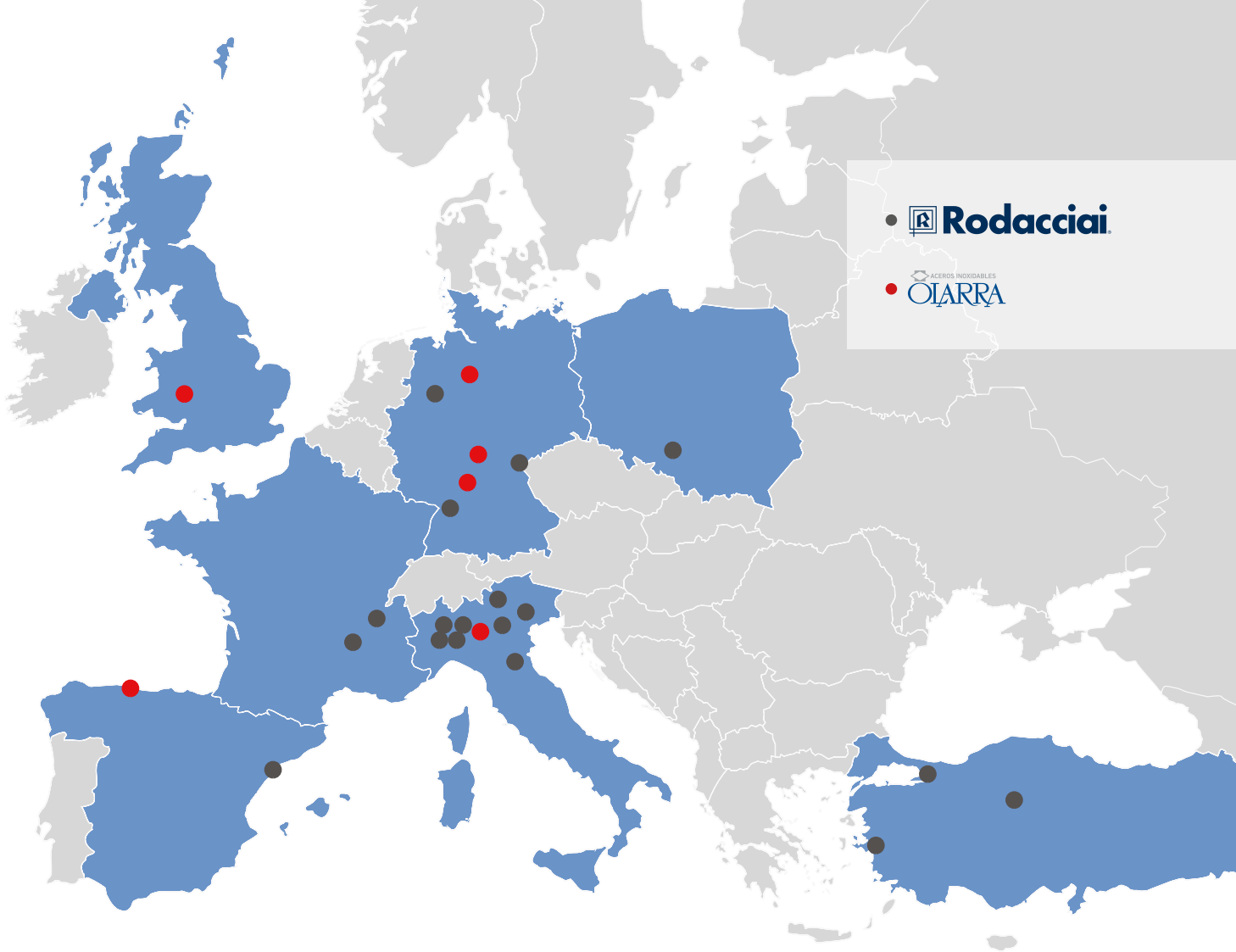
Expansion of the commercial network in Europe and acquisition of smaller companies

**2007-2016**

Investments for production expansion

**2024**

Today, Rodasteel Group is a benchmark in the steel production and processing sector



8 covered nations



27 distribution centres

## EUROPE

### **Rodacciai**

Country: Italy  
N° of distribution centres: 6  
Cities: Bosisio Parini, Torino, Bergamo, Brescia, Padova, Bologna

### **Rodastahl**

Country: Germany  
N° of distribution centres: 3  
Cities: Deisslingen, Hagen, Oelsnitz

### **Rodastal PL**

Country: Poland  
N° of distribution centres: 1  
City: Gliwice

### **Rodacciai S L**

Country: Spain  
N° of distribution centres: 1  
City: Barcelona

### **BİMEKS ÇELİK**

Country: Turkey  
N° of distribution centres: 3  
Cities: Istanbul, Ankara, Izmir

### **Euroda Aciers**

Country: France  
N° of distribution centres: 2  
Cities: Cluses, Chasse sur Rhône

### **COESI**

Country: Italy  
N° of distribution centres: 1  
City: Piacenza

### **ALFER**

Country: Italy  
N° of distribution centres: 1  
City: San Giuliano Milanese

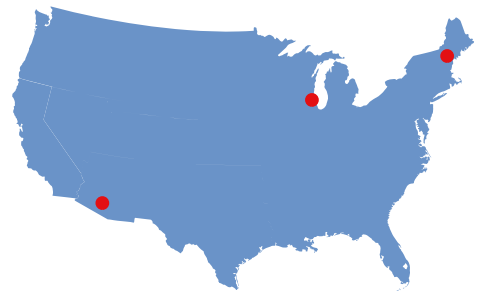
### **ISM**

Country: Germany  
N° of distribution centres: 3  
Cities: Mulhem, Vaihingen, Francoforte

### **OIARRA**

Country: Spain  
N° of distribution centres: 1  
City: Bilbao

## USA



### **OIARRA - Italia**

Country: Italy  
N° of distribution centres: 1  
City: Brescia

### **OIARRA U.K LTD**

Country: Great Britain  
N° of distribution centres: 1  
City: Cleobury Mortimer

### **RodaSpecialtySteel**

Country: USA  
N° of distribution centres: 3  
Cities: Los Angeles, Chicago, New Jersey





## DINAMICITY, INNOVATION AND RESILIENCE

The vertical integration achieved over the years by Rodasteel, thanks to the strategical investment of a own rolling mill plant, offers an important competitive advantage: Rodacciai can control the material from the billet to the cold finished product.

Thanks to the synergy of the two production sites the company offers a wide range of “high performance steel”.



**Rodacciai,**  
**Bosisio Parini** (*cold finishing plant*)



**Rodacciai,**  
**Sirone** (*rolling mill*)

A photograph of a large industrial building with a curved roof. The word 'Rodacciai' is written in large, blue, 3D block letters on the side of the building.

**Rodacciai**

## IN-HOUSE MANUFACTURING CONTROL STRATEGY & BUSINESS PROCESS REENGINEERING

The strategic choices, made in the past, have been allowing the Group to differentiate itself over the time.

It is precisely starting from these choices that the company is today a leader in the cold finished steel market. Our strategy is composed by: IN-HOUSE manufacturing, to guarantee our customers continuous product and process improvement. Each phase is monitored and tracked.

Business Process Reengineering logic identifies 8 phases, including the redefinition of processes, identification of the levels for change, the development of concrete objectives and actions for continuous improvements.

Rodacciai LAB, an important investment in our laboratory and R&D Dept., creates a high value for both the above explained strategy, helping the company to continuous monitoring the products in each singular step.



# QUALITY CONTROL SYSTEM



Rodacciai works with innovative machinery and optimized production processes to guarantee constant and repeatable high quality products over time. Since 1990 the company has obtained the ISO 9001 system certification, which certifies full compliance with the standards relating to the Quality Management Systems. In the continuous development of its Quality Policy, Rodacciai, through its production lines, is able to comply with all the necessary certifications for its products.



## Rodacciai | LAB

# LABORATORY & CONTROL QUALITY

Rodacciai LAB is a recent and big investment, dedicated to the R&D and to the continuous improvement of the products. It is composed by a laboratory fully furnished with all the necessary equipment and testing machines calibrated in accordance with the requirements of ISO 9001 standards. This allows to produce the majority of tests and reports inside the company.


# ALLOY & CARBON STEELS



Steel is mainly made up of iron and carbon, but can contain also further elements such as chromium, molybdenum or silicon, which, in specific quantities, change its features. Indeed, starting from the main alloy, the quantity of carbon and of other elements, so called alloying elements, can be modified.

Common or unalloyed steel is an alloy in which the quantity of the other elements, which are usually added to improve some of its mechanical and physical characteristics depending on its final use, is very low.

## PRODUCTION RANGE AND EXECUTIONS

	EXECUTION	PROFILE	RANGE (MM)	FINISH	TOLERANCES
Bars	Hot rolled	Round	20÷200	Raw, rough peeled	-
	Drawn	Round Hexagonal Square	3÷70 3÷70 4÷60	Polished	ISA h9-h10-h11
	Peeled - rolled	Round	20÷100	Polished	ISA h9-h10-h11
	Ground	Round	3÷100	Polished	ISA h6-h7-h8-h9-h10-h11
Coils	Drawn	Round Hexagonal Square	2÷22 3÷12 4÷12	Polished, phosphated	ISA h9-h10-h11 EN 10218-2 T1-T2-T3-T4-T5



Therefore, steels can be classified in three groups, based on the elements that define their chemical composition:

**CARBON STEELS:** In this group of steels, there is no alloying element. For this reason, carbon steels can be also referred to as unalloyed steels.

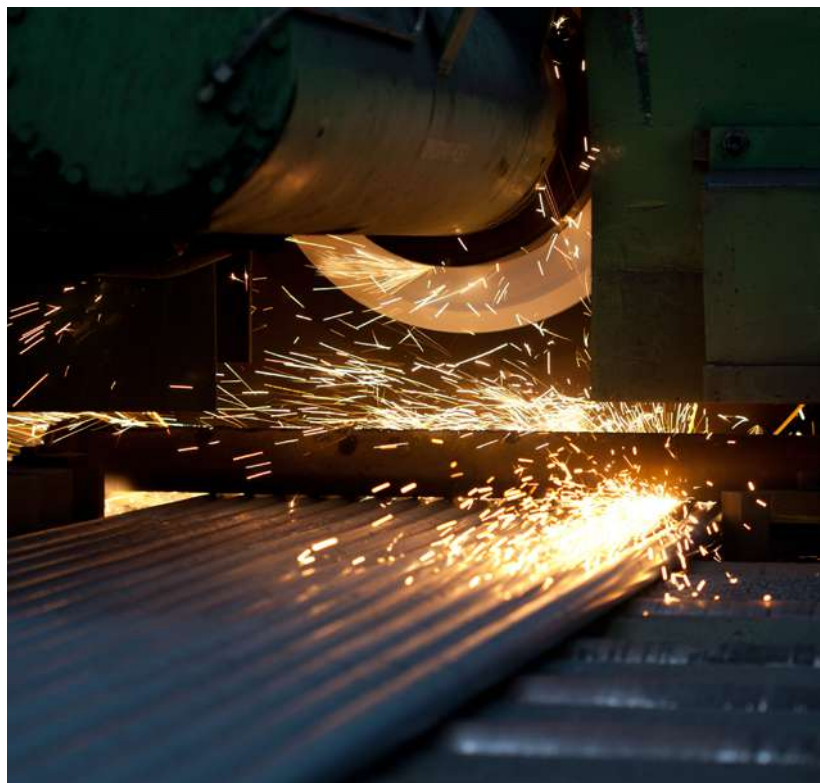
They can be further divided into different categories, depending on the percentage of their carbon content, which defines their hardness.

**LOW ALLOY STEELS:** Low alloy steels are so defined, as their content of alloying elements is lower than 5%. Thanks to that, their mechanical characteristics are higher than the ones of simple carbon steels.

Alloying elements increase steel hardenability in order to optimize its mechanical properties and strength after the heat treatment.

**HIGH ALLOY STEELS:** Unlike low alloy steels, in this group the alloy content is higher than 5%.

Among the most well-known high alloy steels, there is the stainless steel, but there are also further groups such as high strength Nickel-Cobalt steels and maraging (martensite-aging) ones.



# ALLOY & CARBON STEEL APPLICATIONS



AUTOMOTIVE



WIND ENERGY



FASTENERS



CONSTRUCTION



## CASE-HARDENING STEELS

Thanks to the high surface hardness obtained through a cementation treatment, these steels are used to produce all the mechanical organs which require a significant surface hardness, such as gears, pins, bushings, shafts and every component necessary for motion transmission.

## SPECIAL STEELS

Special steels are used for multiple purposes and can meet the particular and specific needs of many users.

Among the most well-known steels, there are those for structural uses (welded, bolted, and nailed structures or for the construction of components used in the building field), for cold forming and for bearings (ball bearings, roller bearings, rings).



OIL & GAS



HYDRAULIC & FLUID



POWER TOOLS



POWER TRANSMISSION



POWERTRAIN

### QUENCHED AND TEMPERED STEELS

These types of steels are generally used for the construction of mechanical devices that undergo significant static and dynamic loading and which must bear bending, tensile, compressive, torque strength and shear stress.

For this reason, they are widely used in the mechanical engineering industry.

### SURFACE HARDENED STEELS

Thanks to the treatment that these steels undergo, which increases their mechanical characteristics in a specific area, they are suitable to be used for engines, suspensions, motor components and moulds.



# CASE HARDENING STEELS

## ALLOY & CARBON STEELS

### Steels designed for the hardening of the surface layer

With low carbon content, carburized steels combine internal toughness with high surface hardness. After mechanical processing and the carburization treatment, these steels are ideal for gears, pins, bushings, shafts and any other parts necessary for the transmission of motion.

The heat treatments available for this type of steel, to be confirmed on a case-by-case basis according to customer requirements and material specifications, are: hot rolled, annealed, isothermal annealed, globular annealed, normalized and quenched and tempered.


## CASE HARDENING STEELS NON ALLOYED

### Carbon-only steels for surface hardening

These case hardening steels do not contain specific alloying elements other than carbon.

They are often tempered in water and are therefore, only suitable for the production of pieces with simple shapes and applications that are not complex, such as some pins and bushings.

Some steels are offered with the addition of lead to enhance machineability, such as R10Pb.

	EN ISO 683-3:2019 EN 10277:2018	N°	AISI	C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Other Elements
<b>KV10</b>	C10E	1.1121	(1010)	0,07±0,13	0,15±0,40	0,30±0,60	≤0,025	≤0,035	≤0,40	≤0,40	≤0,10	≤0,30	-
<b>R10S</b>	C10R	1.1207	(1010)	0,07±0,13	0,15±0,40	0,30±0,60	≤0,025	0,020±0,040	≤0,40	≤0,40	≤0,10	≤0,30	Al= 0,020±0,050
<b>R10PB</b>	C10 +Pb	1.1207	(10L10)	0,07±0,13	0,15±0,40	0,30±0,60	≤0,025	0,020±0,040	≤0,40	≤0,40	≤0,10	≤0,30	Pb=0,15±0,30 Al= 0,020±0,050
<b>KV15</b>	C15E	1.1141	(1015)	0,12±0,18	0,15±0,40	0,30±0,60	≤0,025	≤0,035	≤0,40	≤0,40	≤0,10	≤0,30	-
<b>R15PB</b>	C15R +Pb	1.1140	(10L15)	0,12±0,18	0,15±0,40	0,30±0,60	≤0,025	0,020±0,040	≤0,40	≤0,40	≤0,10	≤0,30	Pb=0,15±0,30 Al= 0,020±0,050
<b>C16E</b>	C16E	1.1148	(1016)	0,12±0,18	0,15±0,40	0,60±0,90	≤0,025	≤0,035	≤0,40	≤0,40	≤0,10	≤0,30	-



## CASE HARDENING STEEL ALLOYED

### Steels with alloy elements, for surface hardening

Alloyed carburized steels contain some characterizing elements that confer different characteristics depending on the applications. After machining, carburizing and tempering, usually performed in oil, these steels have high surface hardness characteristics and notable core toughness.

The alloy elements (manganese, chromium, nickel and molybdenum), added individually or in combination with each other, allow a steel to be used in relation with specific needs.

The temperability increases with the increase of the alloy elements and therefore it is possible to obtain core transformed structures into increasingly larger pieces. In particular, chromium tends to increase the core hardness, while the nickel improves toughness and resistance to impacts.

Thanks to the complex range of alloyed carburized steels, Rodacciai can provide steel for different applications, from small pieces to the biggest ones. Some of these steels are available in the leaded version, which **facilitates machining by chip removal**.

	Nome	N°	AISI	C	Si	Mn	P (Max)	S	Cr	Al	Other Elements
<b>RM16</b>	16MnCrS5 <sup>1</sup>	1.7139	(5117)	0,14÷0,19	0,15÷0,40	1,00÷1,30	0,025	0,020÷0,040	0,80÷1,10	0,020÷0,050	Cu=0,40
<b>RM16PB</b>	16MnCrS5 + Pb <sup>1</sup>	1.7139	(5117)	0,14÷0,19	0,15÷0,40	1,00÷1,30	0,025	0,020÷0,040	0,80÷1,10	0,020÷0,050	Pb=0,15÷0,30 Cu=0,40
<b>RM20</b>	20MnCrS5 <sup>1</sup>	1.7149	(4820)	0,17÷0,22	0,15÷0,40	1,10÷1,40	0,025	0,020÷0,040	1,00÷1,30	0,020÷0,050	Cu=0,40
<b>RM20PB</b>	20MnCrS5 + Pb <sup>1</sup>	1.7149	(4820)	0,17÷0,22	0,15÷0,40	1,10÷1,40	0,025	0,020÷0,040	1,00÷1,30	0,020÷0,050	Pb=0,15÷0,30 Cu=0,40
<b>RN0</b>	12NiCr3 <sup>3</sup>	-	-	0,09÷0,15	0,15÷0,40	0,30÷0,60	0,035	0,020÷0,035	0,40÷0,70	0,020÷0,050	Mo≤0,10 Ni=0,50÷0,80
<b>RNOPB</b>	12NiCr3 + Pb <sup>3</sup>	-	-	0,09÷0,15	0,15÷0,40	0,30÷0,60	0,035	0,020÷0,035	0,40÷0,70	0,020÷0,050	Pb=0,15÷0,30 Mo≤0,10 Ni=0,50÷0,80
<b>RN2</b>	16NiCrS4 <sup>2</sup>	1.5715	-	0,13÷0,19	≤0,40	0,70÷1,00	0,025	0,020÷0,040	0,60÷1,00	0,020÷0,050	Ni=0,80÷1,10
<b>RN2PB</b>	16NiCrS4 + Pb <sup>2</sup>	1.5715	-	0,13÷0,19	≤0,40	0,70÷1,00	0,025	0,020÷0,040	0,60÷1,00	0,020÷0,050	Ni=0,80÷1,10 Pb=0,15÷0,30
<b>RN3</b>	20CrNi4 <sup>3</sup>	-	-	0,18÷0,23	0,15÷0,40	0,80÷1,10	0,035	0,020÷0,035	0,90÷1,20	0,020÷0,050	Mo≤0,10 Ni=0,90÷1,20
<b>RD4</b>	18CrMoS4 <sup>1</sup>	1.7244	-	0,15÷0,21	0,15÷0,40	0,60÷0,90	0,025	0,020÷0,040	0,90÷1,20	0,020÷0,050	Mo=0,15÷0,25 Cu≤0,40
<b>RG2</b>	16NiCr11 <sup>4</sup>	(1.5752)	-	0,12÷0,18	0,15÷0,40	0,30÷0,60	0,035	0,020÷0,035	0,60÷0,90	0,020÷0,050	Mo≤0,10 Ni=2,50÷3,00
<b>RCO'S'</b>	20NiCrMoS2-2 <sup>1</sup>	1.6526	(8620)	0,17÷0,23	0,15÷0,40	0,65÷0,95	0,025	0,020÷0,040	0,35÷0,70	0,020÷0,050	Mo=0,15÷0,25 Ni=0,40÷0,70 Cu=0,40
<b>RC2</b>	17NiCrMoS6-4 <sup>1</sup>	1.6569	-	0,14÷0,20	≤0,40	0,60÷0,90	0,025	0,020÷0,040	0,80÷1,10	0,020÷0,050	Mo=0,15÷0,25 Ni=1,20÷1,50
<b>RC2 PB</b>	17NiCrMoS6-4 + Pb <sup>1</sup>	1.6569	-	0,14÷0,20	≤0,40	0,60÷0,90	0,025	0,020÷0,040	0,80÷1,10	0,020÷0,050	Pb=0,15÷0,30 Mo=0,15÷0,25 Ni=1,20÷1,50
<b>20MNV6</b>	20MnV6	1.5217	K0313	0,16÷0,22	0,10÷0,50	1,30÷1,70	0,035	≤0,035	-	-	V=0,10÷0,25

<sup>1</sup> EN ISO 683-3:2019/EN 10277:2018

<sup>2</sup> EN 10084:2008 / EN 10277-4:2008

<sup>3</sup> UNI 7846-78

<sup>4</sup> UNI5331-64



# SPECIAL STEELS

## ALLOY & CARBON STEELS

### Steels with different end uses

Rodacciai's production range is completed by different types of special steels intended for multiple uses, which can satisfy the specific needs of many users.


The heat treatments available for this type of steel – to be checked on a case-by-case basis according to the different qualities – are: rolled natural, workable annealed, isothermal annealed, globular annealed, normalized and quenched and tempered.

## SPECIAL STEEL FOR STRUCTURAL USES

### Steels used in welded, bolted and riveted structures and in the building sector

These steels are destined for structural uses in accordance with the European standard EN 10025, for the creation of welded, bolted and riveted structures and for the construction of objects used in the building sector.

In addition to the base steel Re37, Re52D type is used at low temperatures, while Re60S type is suitable for machining by chip removal.

	EN ISO 683-1:2018 EN 10025-2:2019 EN 10277:2018	N°	AISI	C	Si	Mn	P	Cu	S	N	Al
<b>RE60S</b>	(E335+S) (E3356C)	(1.0060) (1.0543)	-	0,37±0,45	≤0,50	≤1,40	≤0,045	-	0,080±0,120	≤0,012	-
<b>RE37</b>	S235JR S235JRC	1.0038 1.0122	(K02502)	0,17	-	≤1,40	≤0,035	≤0,55	≤0,035	≤0,012	-
<b>RE52D</b>	S355J2 S355J2C	1.0577 1.0579	(K0311) (K0314)	0,20	≤0,55	≤1,60	≤0,025	≤0,55	≤0,025	-	0,020±0,060




## SPECIAL STEELS FOR COLD FORMING AND STEELS FOR BEARINGS

### Steels suitable for cold forming and steels for the production of bearing parts

The steels for cold deformation have a chemical composition with low carbon and an analytical balance that improves the possibility of obtaining cold forged pieces even with large deformations.

Rodacciai can offer the most commonly used steel range for the production of ball bearings, rollers, rings and pieces for bearings, both by chip removal and cold deformation.


	NORMA	N°	AISI	C	Si	Mn	P	S	Al	Other Elements
<b>SB4</b>	EN 10263-2:2017 C4C	1.0303	-	0,02÷0,06	≤0,10	0,20÷0,40	≤0,020	≤0,025	0,020÷0,060	-
<b>CB10FF</b>	EN 10263-2:2017 (C10C)	1.0214	(1012)	0,08÷0,12	≤0,10	0,30÷0,50	≤0,025	≤0,025	0,020÷0,060	-
<b>32CrB4</b>	EN 10263-4:2017 32CrB4	1.7076	-	0,30÷0,34	≤0,30	0,60÷0,90	≤0,025	≤0,025	0,020÷0,060	Cr=0,90÷1,20 Cu=0,25 B=0,0008-0,005
<b>36CrB4</b>	EN 10263-4:2017 36CrB4	1.7077	-	0,34÷0,38	≤0,30	0,70÷1,00	≤0,025	≤0,025	0,020÷0,060	Cr=0,90÷1,20 Cu=0,25 B=0,0008-0,005
<b>100CR6</b>	EN ISO 683-17:2014 100Cr6	B1	(52100L3)	0,93÷1,05	0,15÷0,35	0,25÷0,45	≤0,025	≤0,015	≤0,050	Cr=1,35÷1,60 Mo=≤0,10

## SPECIAL STEELS CONFORMING TO THE ASTM AMERICAN STANDARDS

### Steels for use in oil and gas components

The material of this category, non-alloyed and alloyed steels adhering to some ASTM American standards, is used for the production of flanges, fittings and linkages for the oil and gas industry.

Alloyed steels are generally supplied in the quenched and tempered state, with specific mechanical characteristics for each application.

	ASTM	C	Si	Mn	P	S	Cr	Mo	Al	Other Elements
<b>A105 K105</b>	A105	≤0,35	0,10÷0,35	0,60÷1,05	≤0,035	≤0,040	≤0,30	≤0,12	0,020÷0,050	Ni=≤0,40 V=≤0,08 Cu=≤0,40
<b>A193-B7 A193-B7M</b>	B7 B7M	0,38÷0,48	0,15÷0,35	0,75÷1,00	≤0,035	≤0,040	0,80÷1,10	0,15÷0,25	0,020÷0,050	-
<b>A193 B16</b>	B16	0,36÷0,47	0,15÷0,35	0,45÷0,70	≤0,035	≤0,040	0,80÷1,15	0,50÷0,65	≤0,015	V=0,25÷0,35
<b>A320-L7 A320-L7M</b>	L7 L7M	0,38÷0,48	0,15÷0,35	0,75÷1,00	≤0,035	≤0,040	0,80÷1,10	0,15÷0,25	0,020÷0,050	-

# QUENCHED AND TEMPERED STEELS

## ALLOY & CARBON STEELS

### Steels with elevated mechanical characteristics

Quenched and tempered steels have a chemical composition that has been specifically designed to guarantee the best performance after quenching and tempering heat treatment. This process makes the pieces particularly hard and tough, making them suitable for use in even severe conditions.

Temperability is the capacity of a steel subjected to rapid cooling (usually in oil or water) to more or less completely transform its structure, even on larger pieces.

The quenching and tempering treatment is generally carried out on pieces during the final stage of finishing, after most of the mechanical processing. In this case the semi-finished raw material can be provided in its natural rolling state or annealed for workability, depending on the type of steel.

Thanks to the technologies available, **Rodacciai can also offer these products in the quenched and tempered state**: the treatment is carried out on the rolled semi-finished product before drawing or peeling, so that the delivered product has in any case the appearance and typical surface characteristics of the cold-finished product.

The complete range of quenched and tempered steels, diversified in terms of chemical composition and, therefore, temperability, **satisfies both the metallurgic and mechanical needs of all customers**.

The heat treatments available for this type of steel — to be checked on a case-by-case basis according to the different qualities — are: rolled natural, workable annealed, isothermal annealed, globular annealed, normalized and quenched and tempered.




# QUANCHED AND TEMPERED STEELS NON-ALLOYED

## Carbon-only steels, temperable

These various types of non-alloyed steels (without the addition of alloying elements) differ from each other by the percentage of carbon content.

**The higher the carbon content, the greater the hardness after a quench and tempering heat treatment.** Non-alloyed quenched and tempered steels have a limited temperability and do not allow for well transformed grain structure to be obtained on pieces with an elevated thickness.

	Nome	N°	AISI	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Other Elements
<b>KV20</b>	C22E <sup>1</sup>	1.1151	(1020-1023)	0,17÷0,24	≤ 0,40	0,40÷0,70	≤0,030	≤0,035	≤0,40	≤0,10	≤0,40	≤0,30	-
<b>R20Pb</b>	C22R + Pb <sup>1</sup>	1.1149	(1020-1023)	0,17÷0,24	≤ 0,40	0,40÷0,70	≤0,030	0,020÷0,040	≤0,40	≤0,10	≤0,40	≤0,30	Al = 0,020÷0,050 Pb = 0,15÷0,30
<b>KV30</b>	C30E <sup>1</sup>	1.1178	(1030)	0,27÷0,34	0,10÷0,40	0,50÷0,80	≤0,025	≤ 0,035	≤0,40	≤0,10	≤0,40	≤0,30	-
<b>R30S</b>	C30R <sup>1</sup>	1.1179	(1030)	0,27÷0,34	0,10÷0,40	0,50÷0,80	≤0,025	0,020÷0,040	≤0,40	≤0,10	≤0,40	≤0,30	Al = 0,020÷0,050
<b>KV35</b>	C35E	1.1181	1035	0,32÷0,39	0,10÷0,40	0,50÷0,80	≤0,025	≤ 0,035	≤0,40	≤0,10	≤0,40	≤0,30	-
<b>R35Pb</b>	C35R + Pb	1.1180	10L35	0,32÷0,39	0,10÷0,40	0,50÷0,80	≤0,025	0,020÷0,040	≤0,40	≤0,10	≤0,40	≤0,30	Al = 0,020÷0,050 Pb = 0,15÷0,30
<b>KV40</b>	C40E	1.1186	(1040)	0,37÷0,44	0,10÷0,40	0,50÷0,80	≤0,025	≤ 0,035	≤0,40	≤0,10	≤0,40	≤0,30	-
<b>R40S</b>	C40R	1.1189	(1040)	0,37÷0,44	0,10÷0,40	0,50÷0,80	≤0,025	0,020÷0,040	≤0,40	≤0,10	≤0,40	≤0,30	Al = 0,020÷0,050
<b>R40Pb</b>	C40R + Pb	1.1189	(10L40)	0,37÷0,44	0,10÷0,40	0,50÷0,80	≤0,025	0,020÷0,040	≤0,40	≤0,10	≤0,40	≤0,30	Al = 0,020÷0,050 Pb = 0,15÷0,30
<b>KV45</b>	C45E	1.1191	(1045)	0,42÷0,50	0,10÷0,40	0,50÷0,80	≤0,025	≤ 0,035	≤0,40	≤0,10	≤0,40	≤0,30	-
<b>C48TI</b>	C45R	1.1201	(1045)	0,42÷0,50	0,10÷0,40	0,50÷0,80	≤0,025	0,020÷0,040	≤0,40	≤0,10	≤0,40	≤0,30	Al = 0,020÷0,050
<b>R45Pb</b>	C45R + Pb	1.1201	(10L45)	0,42÷0,50	0,10÷0,40	0,50÷0,80	≤0,025	0,020÷0,040	≤0,40	≤0,10	≤0,40	≤0,30	Al = 0,020÷0,050 Pb = 0,15÷0,30
<b>KV50</b>	C50E	1.1206	1050	0,47÷0,55	0,10÷0,40	0,60÷0,90	≤0,025	≤ 0,035	≤ 0,40	≤ 0,10	≤ 0,40	≤ 0,30	-
<b>R55</b>	C55 <sup>1</sup>	1.0535	1055	0,52÷0,60	≤ 0,40	0,60÷0,90	≤0,030	0,020÷0,040	≤ 0,40	≤ 0,10	≤ 0,40	-	-
<b>C60R</b>	C60R	1.1223	1060	0,57÷0,65	0,10÷0,40	0,60÷0,90	≤0,025	0,020÷0,040	≤ 0,40	≤ 0,10	≤ 0,40	≤ 0,30	-

EN ISO 683-1:2018 / EN 10277:2018

<sup>1</sup> EN10083-1+A1:1996

# QUENCHED AND TEMPERED STEELS ALLOYS

## Steels with alloy elements, temperable

Alloyed quenched and tempered steels **contain alloying elements** (manganese, chromium, nickel, molybdenum) in variable quantities and proportions that allow for desired temperability to be achieved.

Larger pieces can be produced with structures transformed even to the core and suitable to the most demanding applications. Alloying elements are chosen in relation with the desired characteristics.

**Chromium** improves hardness and toughness. **Nickel** has beneficial effects on resilience and resistance to fatigue. **Molybdenum** reduces the phenomenon of fragility upon tempering.

These steels are usually **quenched and tempered in oil**, in that way it is possible to make finished products in basic and complex shapes. The fields of application are quite varied: shaft components, gears, linkages, fasteners and mechanical components of all types.

☐	NOME	N°	AISI	C	Si	Mn	P	S	Cr	Al	Mo	Cu	Other Elements
	34Cr4	1.0733	(5132)	0,30÷0,37	0,10÷0,40	0,60÷0,90	≤0,025	≤0,035	0,90÷1,20	0,020÷0,050	-	≤0,40	-
	34CrS4	1.0737	(5132)	0,30÷0,37	0,10÷0,40	0,60÷0,90	≤0,025	0,020÷0,040	0,90÷1,20	0,020÷0,050	-	≤0,40	-
	37CrS4	1.7038	(5135)	0,34÷0,41	0,10÷0,40	0,60÷0,90	≤0,025	0,020÷0,040	0,90÷1,20	0,020÷0,050	-	≤0,40	-
	RK4	1.0735	(5140)	0,38÷0,45	0,10÷0,40	0,60÷0,90	≤0,025	≤0,035	0,90÷1,20	0,020÷0,050	-	≤0,40	-
	RK4S	1.0739	(5140)	0,38÷0,45	0,10÷0,40	0,60÷0,90	≤0,025	0,020÷0,040	0,90÷1,20	0,020÷0,050	-	≤0,40	-
	RKS	36CrMnS <sup>2</sup>	-	0,33÷0,40	0,15÷0,40	0,80÷1,10	≤0,035	≤0,035	1,00÷1,30	0,020÷0,050	-	-	-
	RKS Pb	36CrMnS + Pb <sup>2</sup>	-	0,33÷0,40	0,15÷0,40	0,80÷1,10	≤0,035	≤0,035	1,00÷1,30	0,020÷0,050	-	-	Pb = 0,15÷0,30
	RK0	30CrMo4 <sup>4</sup>	(4130)	0,27÷0,34	0,15÷0,40	0,40÷0,70	≤0,035	≤0,035	0,80÷1,10	0,020÷0,050	0,15÷0,25	-	-
	RK0S	25CrMoS4	1.7213	0,22÷0,29	0,10÷0,40	0,60÷0,90	≤0,025	0,020÷0,040	0,90÷1,20	0,020÷0,050	0,15÷0,30	≤0,40	-
	RK0S Pb	25CrMoS4 + Pb	1.7213	0,22÷0,29	0,10÷0,40	0,60÷0,90	≤0,025	0,020÷0,040	0,90÷1,20	0,020÷0,050	0,15÷0,30	≤0,40	Pb = 0,15÷0,30
	RD6	34CrMoS4	1.7226	0,30÷0,37	0,10÷0,40	0,60÷0,90	≤0,025	0,020÷0,040	0,90÷1,20	0,020÷0,050	0,15÷0,30	≤0,40	-
	RD6 Pb	34CrMoS4 + Pb	1.7226	0,30÷0,37	0,10÷0,40	0,60÷0,90	≤0,025	0,020÷0,040	0,90÷1,20	0,020÷0,050	0,15÷0,30	≤0,40	Pb = 0,15÷0,30
	RK1	42CrMoS4	1.7227	0,38÷0,45	0,10÷0,40	0,60÷0,90	≤0,025	0,020÷0,040	0,90÷1,20	0,020÷0,050	0,15÷0,30	≤0,40	-
	1.7225	42CrMo4	1.7225	0,38÷0,45	0,10÷0,40	0,60÷0,90	≤0,025	≤0,035	0,90÷1,20	0,020÷0,050	0,15÷0,30	≤0,40	-
	RK1 Pb	42CrMoS4 + Pb	1.7227	0,38÷0,45	0,10÷0,40	0,60÷0,90	≤0,025	0,020÷0,040	0,90÷1,20	0,020÷0,050	0,15÷0,30	≤0,40	Pb = 0,15÷0,30
	50CrMo4	50CrMo4	1.7228	0,46÷0,54	0,10÷0,40	0,50÷0,80	≤0,025	≤0,035	0,90÷1,20	0,020÷0,050	0,15÷0,30	≤0,40	-
	RB2	39NiCrMo3 <sup>1</sup>	1.6510	0,35÷0,43	≤0,40	0,50÷0,80	≤0,025	≤0,035	0,60÷1,00	0,020÷0,050	0,15÷0,25	-	Ni = 0,70÷1,00
	RB2 Pb	39NiCrMo3 + Pb <sup>1</sup>	1.6510	0,35÷0,43	≤0,40	0,50÷0,80	≤0,025	≤0,035	0,60÷1,00	0,020÷0,050	0,15÷0,25	-	Pb = 0,15÷0,30 Ni = 0,70÷1,00
	34CrNiMo6	34CrNiMo6	1.6582	0,30÷0,38	0,10÷0,40	0,50÷0,80	≤0,025	≤0,035	1,30÷1,70	0,020÷0,050	0,15÷0,30	≤0,40	Ni = 1,30÷1,70
	30CrNiMo8	30CrNiMo8	1.6580	0,26÷0,34	0,10÷0,40	0,50÷0,80	≤0,025	≤0,035	1,80÷2,20	0,020÷0,050	0,30÷0,50	≤0,40	Ni = 1,80÷2,20
	L43	(43CrNiMo6)	(1.6582)	0,38÷0,43	0,15÷0,35	0,60÷0,90	≤0,035	≤0,040	0,70÷0,90	-	0,20÷0,30	-	Ni = 1,65÷2,00
	46CrB2	46CrB2	1.7075	0,42÷0,50	0,15÷0,40	0,60÷0,90	≤0,035	0,020÷0,040	0,30÷0,60	-	-	-	Ni ≤ 0,30 B = 0,001÷0,005
	31CRMOV9	31CrMoV9 <sup>3</sup>	1.8519	0,27÷0,34	≤0,40	0,40÷0,70	≤0,025	≤0,035	2,30÷2,70	-	0,15÷0,25	-	V=0,10÷0,20
	51CRV4	51CrV4	1.8159	0,47÷0,55	0,10÷0,40	0,60÷1,00	≤0,025	≤0,025	0,80÷1,10	-	-	≤0,40	V=0,10÷0,25
	21CRMV5.7	21CrMoV5.7 <sup>4</sup>	1.7709	0,17÷0,25	≤0,40	0,40÷0,80	≤0,025	≤0,030	1,20÷1,50	≤0,030	0,55÷0,80	-	Ni≤0,60 V=0,20÷0,35
	27MnCrB5-2	27MnCrB5-2 <sup>1</sup>	1.7182	0,24÷0,30	≤0,40	1,10÷1,40	≤0,025	≤0,035	0,30÷0,60	-	-	-	B=0,0008÷0,005
	20MnV6	20MnV6 <sup>1</sup>	1.5217	0,16÷0,22	0,10÷0,50	1,30÷1,70	≤0,035	≤0,035	-	-	-	-	V=0,10÷0,20

EN ISO 683-3:2018 / EN 10277:2018 <sup>1</sup>EN10083-3:2006 / EN10277-5:2008 <sup>2</sup>UNI 7845-78 <sup>3</sup>EN10085:2001 <sup>4</sup>EN10269:2013

# SURFACE HARDENED STEELS

## ALLOY & CARBON STEELS


### Steels for surface hardening by induction

The series of carbon steels for surface tempering includes four types of materials with an increasing carbon content. The hardness obtained on the surface with this treatment is **directly proportional to the steel's carbon content**. All of these special steels have a balanced chemical composition that allows a **good machinability** ( $S = 0.020 - 0.040$ ). Another benefit is **excellent repeatability of the heat treatment** due to the constant austenitic grain ( $Al = 0.020 - 0.050$ ). The required hardness values can only be obtained with certainty after the removal of the bar's surface layer to eliminate any decarburization. The heat treatments available for this type of steel according to customer requirements and material specifications are: hot rolled, annealed, isothermal annealed, globular annealed, normalized and quenched and tempered.

## SURFACE HARDENED STEELS NON-ALLOYED

### Carbon-only steels for induction hardening

Non-alloyed steels do not have alloy elements but only traces possibly introduced by the scrap used to melt the steel. The carbon content of these steels defines the resulting mechanical properties and the applications.

	AISI	C	Si	Mn	P (Max)	S	Cr	Ni	Cu	Al	Other Elements
<b>R33S</b>	(1035)	0,30÷0,36	0,10÷0,40	0,60÷0,90	0,035	0,020÷0,040	≤ 0,25	≤ 0,25	≤ 0,40	0,020÷0,050	-
<b>R43TI</b>	(1040)	0,40÷0,46	0,10÷0,40	0,60÷0,80	0,030	0,020÷0,035	≤ 0,25	≤ 0,25	≤ 0,40	0,020÷0,050	-
<b>R43Pb</b>	(10L40)	0,40÷0,46	0,10÷0,40	0,60÷0,80	0,030	0,020÷0,035	≤ 0,25	≤ 0,25	≤ 0,40	0,020÷0,050	Pb=0,15÷0,30
<b>R48TI</b>	(1045)	0,45÷0,52	0,10÷0,40	0,50÷0,80	0,030	0,020÷0,035	≤ 0,40	≤ 0,40	≤ 0,40	0,020÷0,050	Mo=≤0,10
<b>R53TI</b>	(1050)	0,52÷0,57	0,10÷0,40	0,60÷0,80	0,030	0,020÷0,035	≤ 0,20	≤ 0,25	≤ 0,40	0,020÷0,050	Mo=≤0,050

UNI7847-87 EN10083-2:2006 EN10277-5:2008 FIAT52503-90 FIAT52504-90



# FREE CUTTING STEELS




The steels for high-speed machining, commonly called free-cutting steels, have been specially designed to be machined by chip removal with high productivity. Free-cutting steels – which are commonly used in many mass production fields such as the automobile industry and household appliances – contain sulfur and some other elements, including tellurium, bismuth and lead, which promote machinability.

In particular, the sulfur ensures the fragmentation of the chip, lead reduces the friction between the tool and piece, extending the life of the tools, and the tellurium and bismuth further accentuate these characteristics.

Free-cutting steels are usually supplied in bars or rolls without heat treatment; some of these can however be tempered, normalized or annealed before finishing.

## PRODUCTION RANGE AND EXECUTIONS

	EXECUTION	PROFILE	RANGE (MM)	FINISH	TOLERANCES
Bars	Hot rolled	Round	20÷105	As rolled, rough peeled	-
	Cold-drawn	Round	2÷80	Bright	ISA h9-h10-h11
		Hexagonal	4÷80		
		Square Special	4÷70		
Smooth-turned	Round	20÷100	Bright	ISA h9-h10-h11	
	Ground	Round	3÷100	Bright	ISA h6-h7-h8-h9-h10-h11
Coils	Cold-drawn	Round	2÷22	Bright, coated	ISA h9-h10-h11 EN 10218-2 T1-T2-T3-T4-T5
		Hexagonal	3÷12		
		Square	4÷12		
		Special			

# FREE-CUTTING STEEL APPLICATIONS



AUTOMOTIVE  
INDUSTRY



HYDRAULIC  
& FLUID



FASTENERS



OIL & GAS



CONSTRUCTION



AGRICULTURE

## FREE-CUTTING STEELS NOT INTENDED FOR HEAT TREATMENT

The low carbon content of these steels allows reaching the best machinability; therefore, they are suitable for high-speed mechanical processing.

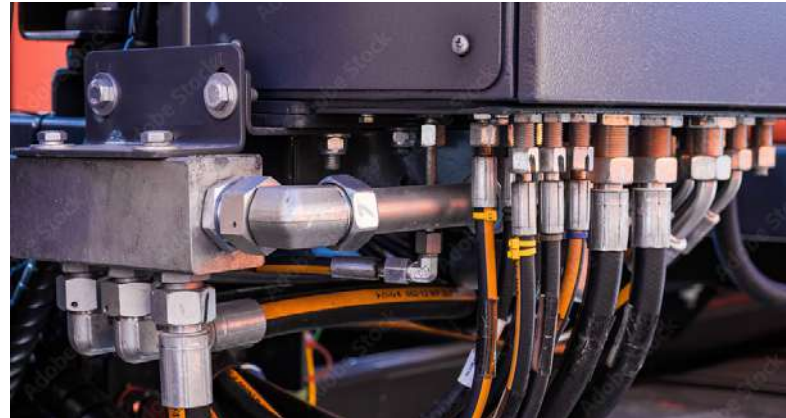
These steels can be used to make nuts and bolts; they can be manufactured by chip removal and used for applications that do not require particular mechanical characteristics.

## CARBURIZED FREE-CUTTING STEELS

This family is particularly suitable for the production of large mechanical components such as any type of gears, axles, cones, pins, bushings, pinions, camshafts, drive shafts and axle shafts of motor vehicles.

## FREE-CUTTING STEELS FOR QUENCHING AND TEMPERING

Their most common application fields are: starter motor shafts, fittings in general, brake couplings, hydraulics, lubricators, low-quality bearings, special screws, nuts and bolts.






## FREE-CUTTING STEELS NOT INTENDED FOR HEAT TREATMENT

### Steels with high workability and a low carbon content

**Free-cutting steels not intended for heat treatment** are steels in which the low carbon content allows the maximum workability to be achieved and are therefore suitable for high-speed machining.

Among the most common in the free-cutting steel category, they are designed to be **implemented at the thermal state in which they are provided**, without further treatments.

It is increasingly customary to also use these steels for some thermochemical treatments of surface hardening: in this case, an in-depth knowledge of the process and some precautions is necessary. Rodacciai offers a range of free-cutting steels not intended for heat treatment that are able to satisfy various machining requirements.

	EN ISO 683-4:2018 EN 10277:2018	N°	ASTM A29	C	Si (max)	Mn	P (Max)	S	Pb	Other elements
<b>11SMN30</b>	11SMn30	1.0715	(1215)	≤ 0,14	0,05	0,90÷1,30	0,11	0,27÷0,33	-	-
<b>1215</b>	-	-	1215	≤ 0,09	-	0,75÷1,05	0,04÷0,09	0,26÷0,35	-	-
<b>AVZ</b>	11SMn37	1.0736	-	≤ 0,14	0,05	1,00÷1,50	0,11	0,34÷0,40	-	-
<b>LED108</b>	11SMnPb30	1.0718	(12L14)	≤ 0,14	0,05	0,90÷1,30	0,11	0,27÷0,33	0,20÷0,35	-
<b>12L14</b>	(11SMnPb30)	(1.0718)	12L14	≤ 0,15	-	0,85÷1,15	0,04÷0,09	0,26÷0,35	0,15÷0,35	-
<b>PS113</b>	11SMnPb37	1.0737	-	≤ 0,14	0,05	1,00÷1,50	0,11	0,34÷0,40	0,20÷0,35	-
<b>TELYX</b>	(11SMnPb37 +Te)	(1.0737)	-	≤ 0,14	0,05	1,00÷1,50	0,11	0,34÷0,40	0,20÷0,35	Te=0,005÷0,030
<b>TELYB</b>	(11SMnPb30 +Te +Bi)	(1.0718)	(12L14+Te+Bi)	≤ 0,14	0,05	0,90÷1,30	0,11	0,27÷0,33	0,20÷0,35	Te=0,010÷0,050 Bi=0,06÷0,09
<b>TELYPLUS</b>	(11SMnPb37 +Te +Bi)	(1.0737)	-	≤ 0,14	0,05	1,00÷1,50	0,11	0,34÷0,40	0,20÷0,35	Te=0,010÷0,050 Bi=0,06÷0,09
<b>PR60</b>	-	-	-	0,25÷0,30	0,30	1,10÷1,60	0,10	0,24÷0,32	0,15÷0,30	-


## FREE-CUTTING STEELS CARBURIZED

### Steels with high workability by hardening of the surface layer

Pieces obtained from carburized free-cutting steels with a low carbon content can be subjected, after machining, to surface hardening treatments through carburizing or other thermochemical treatments.

Automatic sulfur manganese steel: the limited % of sulfur allows the good treatment of hardening after cementation.

The most common used are:

	EN ISO 683-4:2018 EN 10277:2018	N°	ASTM A29	C	Si (max)	Mn	P (Max)	S	Pb	Other elements
<b>10SPb20</b>	10SPb20	1.0722	(1215)	0,07÷0,13	0,40	0,70÷1,10	0,060	0,15÷0,25	0,20÷0,35	-
<b>117</b>	15SMn13	1.0725	1215	0,14÷0,18	0,40	1,00÷1,30	0,030	0,08÷0,13	-	-


# FREE-CUTTING STEELS FOR QUENCHING AND TEMPERING

## High machinability steels with elevated mechanical characteristics

Quenched and tempered free-cutting steels have a higher carbon content than other free-cutting steels, while maintaining a good machinability thanks to the presence of sulfur in smaller quantities.

This type of steel can be prepared with the quenching and tempering before drawing or peeling, so it can be possible to heat-treat the pieces after machining.

When quenched and tempered, these steels have elevated mechanical characteristics and can also be used for parts that require greater resistance and toughness than those of steels without heat treatment.

	EN ISO 683-4:2018 EN 10277:2018	N°	ASTM A29	C	Si (max)	Mn	P (Max)	S	Pb	Other elements
<b>35S20</b>	35S20	1.0726	-	0,32÷0,39	0,40	0,70÷1,10	0,06	0,15÷0,25	-	-
<b>45S20</b>	46S20	1.0727	-	0,42÷0,50	0,40	0,70÷1,10	0,06	0,15÷0,25	-	-
<b>45S20PB</b>	46SPb20	1.0757	-	0,42÷0,50	0,40	0,70÷1,10	0,06	0,15÷0,25	0,15÷0,35	-
<b>44SMN28</b>	44SMn28	1.0762	(1144)	0,40÷0,48	0,40	1,30÷1,70	0,06	0,24÷0,33	-	-
<b>1144</b>	-	-	1144	0,40÷0,48	-	1,35÷1,65	0,40	0,24÷0,33	-	-
<b>SAE1144PB</b>	44SMnPb28	1.0763	(11144)	0,40÷0,48	0,40	1,30÷1,70	0,06	0,24÷0,33	0,15÷0,35	-
<b>PR40</b>	(38SMn28 +Se)	(1.0760)	-	0,35÷0,40	0,40	1,20÷1,50	0,06	0,24÷0,33	-	Se=0,010÷0,020
<b>PR80 SAE1137PB</b>	36SMnPb14	1.0765	(11137)	0,32÷0,39	0,40	1,30÷1,70	0,06	0,10÷0,18	0,15÷0,35	-
<b>36SMn14</b>	36SMn14	1.0764	(1137)	0,32÷0,39	0,40	1,30÷1,70	0,06	0,10÷0,18	-	-



# SUSTAINABILITY PRESERVING THE FUTURE



## “SUSTAINABILITY”, A STRATEGIC ELEMENT OF RODASTEEL

Based on the guidelines given by the United Nation Climate Conferences, Rodacciai coined its own three pillars: people, planet and performances.



### PEOPLE

It is important for Rodasteel to create a work environment that attracts more and more talented individuals and retains those already present



### PLANET

Rodasteel places environmental conservation as a fundamental aspect of its production activities and growth objectives



### PERFORMANCE

Rodasteel pays particular attention to the efficiency and reduction of its energy consumption

2030





# PEOPLE

Since people are the basis of our success, it is important for Rodasteel to create a work environment that attracts more and more talented individuals and retains those already present for as long as possible.

For this reason, Rodacciai invests in people trainings represented by two main projects: Rodacciai Academy and Rodajob.

**Rodacciai Academy:** inaugurated in 2015, it deals with the development and skills of the company’s human resources in collaboration with stakeholders and the local area. The goal is the transmission and development of knowledge and professional experience, with specific programs dedicated to employees, school and university students and unemployed.

**Rodajob:** inaugurated in 2019, it is a non-profit foundation composed of 26 other

companies and 11 training institutions. The main activity consists in the provision of professionalizing training courses, mainly dedicated to unemployed, precarious young people and high school students. Rodasteel offers and guarantees equal opportunities to all its employees regardless of gender, geographic origin, disability or any other difference. Respect for diversity and combating discrimination are also central to the Rodacciai Code of Ethics, alongside other social topics such as the promotion and support of human rights.

Moreover, Rodacciai supports its employees by investing in welfare services. Rodacciai Welfare is a platform aimed at promoting people health and safety.

This tool gives people the access to special services in order to improve their work-life balance and possibilities.

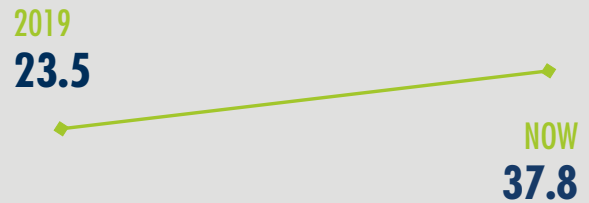
## HIRING RATE

Hiring rate increase (expressed in percentage)



## TRAINING RATE

Total training hours per employee (expressed in hours per capita)





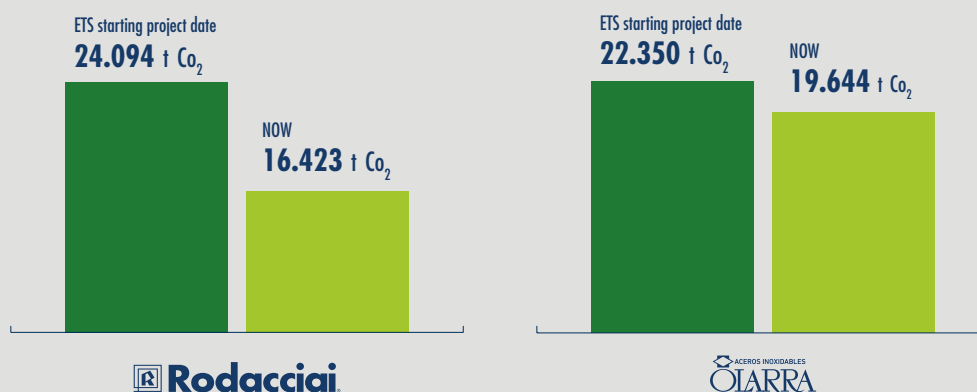
## PLANET

Rodasteel places environmental conservation as a fundamental aspect of its production activities and growth objectives. The company is committed to continuously monitoring and evaluating its environmental impacts to identify winning strategies and innovative solutions to mitigate and reduce them. Responsible **management of raw materials** is a fundamental point for Rodacciai environmental strategy plan. Even though steel is originally created from virgin ferrous minerals, nowadays it can be considered both durable and permanent. In fact, the most used raw material is scrap metal that is 100% recyclable and capable of being remelted without ever losing any of its characteristic properties. For this reason, Rodasteel is gradually reducing the consumption of virgin raw materials and limiting the production of waste through recovery and reuse.

**Waste management** is extremely important for a company that aspires to monitor and consequently reduce its environmental impacts. According to that aspect, in line with the Group's principle of implementing circular economy initiatives, Olarra concluded in 2021 the project aimed at enhancing the waste produced and reducing the consumption of virgin materials: the Tarcinox project. The initiative aimed at recovering three of the main types of waste produced by Olarra: slag and dust in steelworks and sludge produced in rolling mills. The project is a continuation of an earlier industrial waste initiative (PIVASI) and the starting point of a new plan for the next period, focused on the recovery of the metals contained in the settling sludge as well as in the search for alternatives for the management and valorisation of steel slag. This path demonstrated the continuous improvements and developments put in place by the corporation.

## GREENHOUSE GAS (GHG) EMISSIONS

Values of greenhouse gas emissions (expressed in Co<sub>2</sub> tonnage). The reference period is from the ETS (Emission Trading System) starting project date for the production plant to today.



Rodasteel pays particular attention to the efficiency and reduction of its **energy consumption**. With this purpose, Rodacciai carried out maintenance activities on the heating system of the furnace used for billet processing. In addition, the upgrade of lighting systems with LED lamps was promoted. For the Group it is also important the monitoring of **pollutants emissions** into the atmosphere. In order to obtain an annual estimate of air emissions for each pollutant the Group first carried out sampling at each site and then multiplied the average concentrations measured at each chimney by the average flows recorded at the time of sampling and by the yearly operating hours of the systems.

Moreover, in order to reduce its **greenhouse gas (GHG) emissions** and to improve the environmental impact the Group made the following investments:

- Burners were revamped (Sirone Plant);
- Construction of a regasifier for the use of biogas (Sirone plant);

- Improvement of two heat treatment furnaces (Olarra plant);
  - The purchase and installation of a new bell furnace for roll treatment (Olarra plant);
- With an on going perspective, Rodasteel Group, as a member of ETS is defining its road map with the aim of reducing atmospheric emissions and using resources increasingly from renewable sources, in accordance to the goal defined by the European community.

As for **electricity consumption**, the installation of solar panels in all production halls and the office building continues.

Responsible management of **water resources** is another important objective for environmental sustainability within the steel industry.

Therefore, Rodasteel Group adopted a global strategy with specific projects for all its production sites. For instance, about 346 thousand cubic meters of water were withdrawn in 2022, a 16% decrease from the previous year (-7% from 2020).



## PERFORMANCES

The environmental sustainability of production processes is a priority for the industrial world and Rodacciai's mission is to accompany its customers in the sustainable steel supply chain.

With this purpose, the Group has planned a path based on some key points:

- Definition of a Sustainability and Decarbonisation Committee
- Increasing the energy efficiency of production processes
- Conservation of water resources
- Sourcing from renewable or more sustainable sources
- Optimisation of waste management
- Development of an automatic performance monitoring system
- Development of the fifth sustainability report for 2023
- Launch of a decarbonisation plan to 2030
- Maintaining the ISO 14001 standard



# REDUCTION PROJECT

## SCOPE 1

- Rolling Mill Furnace fuel supply: a new regasifier for BioGNL  
It will supplement the energy needs of the billet heating furnace reducing the consumption of natural gas.
- Forklift fuel supply: turning from Diesel to Biodiesel.  
Thanks to this project, implemented in the first two months of 2024, it is possible to use Biodiesel fuel for forklifts.
- GOs: Green Energy Procurements.  
The group favors the supply of natural gas, which guarantees the lowest possible carbon footprint.
- Efficiency improvement.  
Continuous upgrading of productions facilities.



## SCOPE 2

- Renewable power generation and self-consumption: Solar Power plants  
Since 2013 the company has been accommodating solar power plants that produce renewable power for the national grid. Moreover, it is planned to install other solar power plants for the self-consumption.
- PPA e GO: green power procurement.  
The group is planning to gradually increase the consumption of renewable electrical energy through PPA contracts or equipped with Guarantees of Origin guaranteeing the lowest possible carbon footprint.
- Efficiency improvement.  
Continuous upgrading of productions facilities.



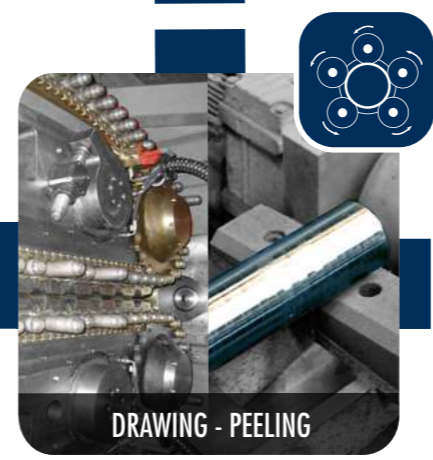
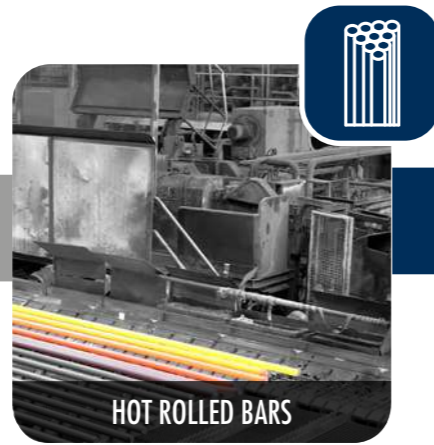
## SCOPE 3

- Multimodal goods transport : Road – Rail – Sea  
The company selects the transport service providers verifying that they adopt multi-modal solutions that guarantee excellent performance in terms of CO<sub>2</sub>-equivalent reduction.
- Truck fuel supply: turning from Diesel to Biodiesel  
The group has engaged one of main road transport service partners to ensure the use of Biodiesel to power the vehicles used to transport our goods.






**ROLLING MILL  
COLD FINISHING**



-  **ROLLING MILL**
-  **COLD FINISHING**
-  **FURTHER PRODUCTION PROCESSES (IF NECESSARY)**

Rodasteel Corporation has always distinguished itself through the choice to have a own rolling mill. The IN HOUSE MANUFACTURING strategy, from the billet to the finished product, can guarantee constant monitoring of each step of the production cycle and a meticulous selection of the best raw materials. This aspect is always accompanied by a continuous focus on quality and the certification of products and processes.

 **Rodacciai, Sirone** (rolling mill)  
**Rodacciai, Bosisio Parini** (steel mill)

**IN HOUSE  
MANUFACTURING  
STRATEGY**

[www.rodacciai.com](http://www.rodacciai.com)

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