EN

HIGH PERFORMANCE STEEL

Rodacciai®

HIGH PERFORMANCE STEEL

Rodacciai®

Rodacciai

ALLOY &
CARBON STEELS

FREE-CUTTING
STEELS

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 Trafileria 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 Trafileria 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).
Trasparency, 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 Inodixables

1995-2005

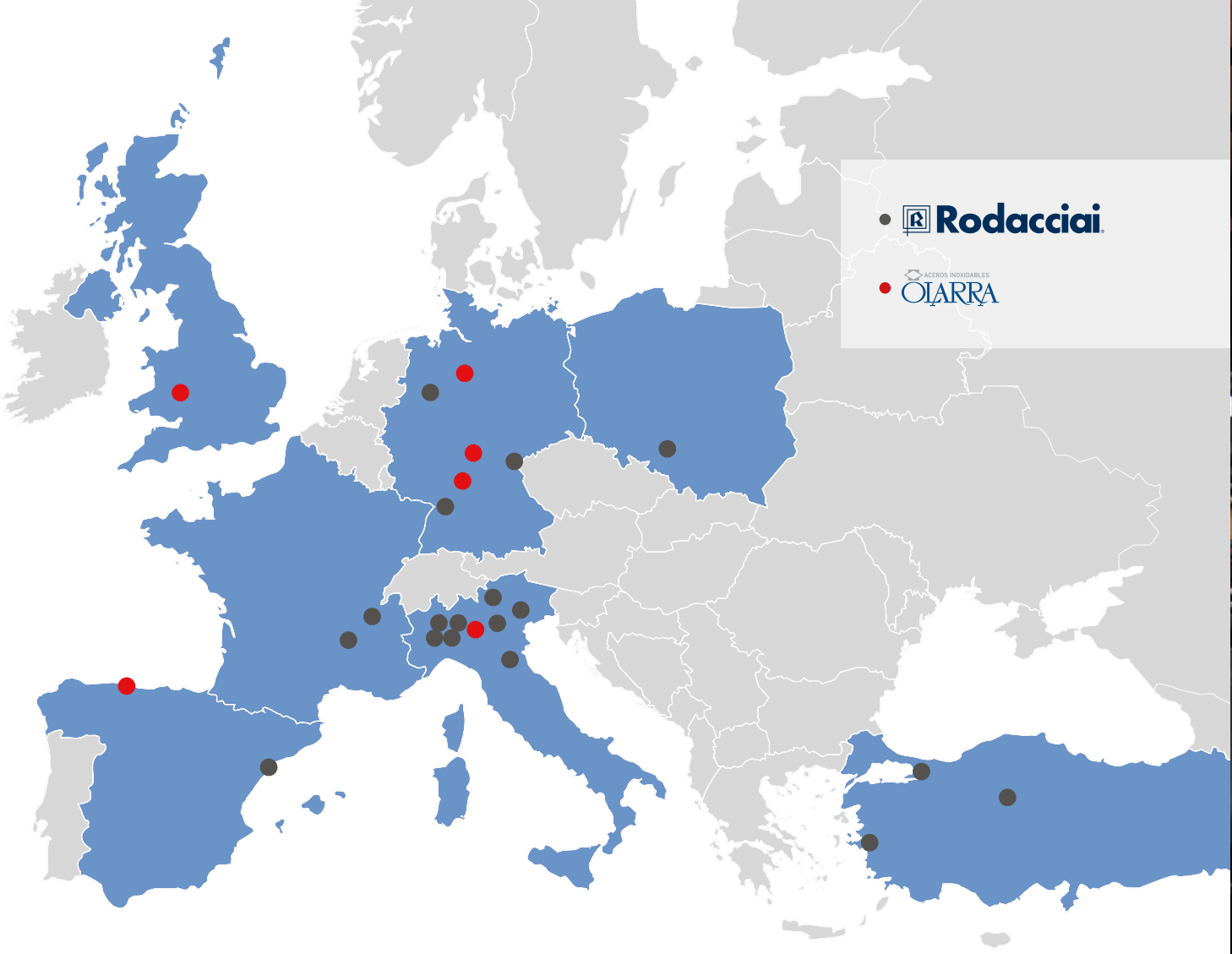
Expansion of the commercial network in Europe and acquisition of smaller companies

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

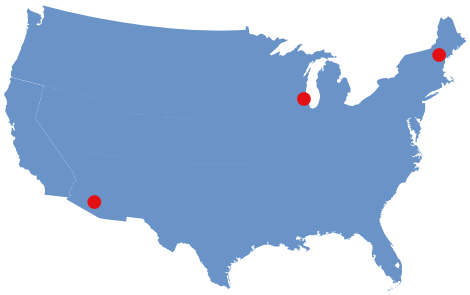
CESI
Country: Italy
N° of distribution centres: 1
City: Piacenza

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

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

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

USA



OLARRA - Italia
Country: Italy
N° of distribution centres: 1
City: Brescia

OLARRA U.K LTD
Country: Great Britain
N° of distribution centres: 1
City: Cleobury Mortimer

Roda Specialty Steel
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 adavantage: 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)*

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.

LABORATORY & CONTROL QUALITY

Rodacciai | LAB

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 | COSTRUCTION

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 TRASMISSION | 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
KV10	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	-
R10S	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
R10PB	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
KV15	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	-
R15PB	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
C16E	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
RM16	16MnCrS5 [1]	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
RM16PB	16MnCrS5 + Pb [1]	1.7139	(51L17)	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
RM20	20MnCrS5 [1]	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
RM20PB	20MnCrS5 + Pb[1]	1.7149	(48L20)	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
RN0	12NiCr3 [3]	-	-	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
RN0PB	12NiCr3 + Pb[3]	-	-	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
RN2	16NiCrS4 [2]	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
RN2PB	16NiCrS4 + Pb [2]	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
RN3	20CrNi4 [3]	-	-	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
RD4	18CrMoS4 [1]	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
RG2	16NiCr11 [4]	(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
RCO'S'	20NiCrMoS2-2 [1]	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
RC2	17NiCrMoS6-4 [1]	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
RC2 PB	17NiCrMoS6-4 + Pb[1]	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
20MNV6	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

[1] EN ISO 683-3:2019/EN 10277:2018 [2] EN 10084:2008 / EN 10277-4:2008 [3] UNI 7846-78 [4] 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

Those 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
RE60S	(E335+S) (E335GC)	(1.0060) (1.0543)	-	0,37÷0,45	≤0,50	≤1,40	≤0,045	-	0,080÷0,120	≤0,012	-
RE37	S235JR S235JRC	1.0038 1.0122	(K02502)	0,17	-	≤1,40	≤0,035	≤0,55	≤0,035	≤0,012	-
RE52D	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
SB4	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	-
CB10FF	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	-
32CrB4	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
36CrB4	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
100CR6	EN ISO 683-17:2014 100Cr6	B1	(52100-L3)	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
A105 K105	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
A193-B7 A193-B7M	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	-
A193 B16	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
A320-L7 A320-L7M	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
KV20	C22E [1]	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	-
R20Pb	C22R + Pb [1]	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
KV30	C30E [1]	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	-
R30S	C30R [1]	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
KV35	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	-
R35Pb	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
KV40	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	-
R40S	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
R40Pb	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
KV45	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	-
C48TI	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
R45Pb	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
KV50	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	-
R55	C55 [1]	1.0535	1055	0,52÷060	≤ 0,40	0,60÷0,90	≤0,030	0,020÷0,040	≤ 0,40	≤ 0,10	≤ 0,40	-	-
C60R	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 [1] EN10083-1+A1:1996

QUENCHED AND TEMPERED STEELS ALLOYES

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	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	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	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	41Cr4	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	41CrS4	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	36CrMn5 [2]	-	-	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	36CrMn5 + Pb [2]	-	-	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 [4]	-	(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	(4135)	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	(41L35)	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	(4140-4142)	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	(4140-4142)	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	(41L40)	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	(4147)	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 [1]	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 [1]	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)	4340-L43	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 [3]	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	(6150)	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
21CRMOV5.7	21CrMoV5-7 [4]	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 [1]	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 [1]	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 [1] EN10083-3:2006 / EN10277-5:2008 [2] UNI 7845-78 [3] EN10085:2001 [4] 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 HARDENEDSTEELS 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
R33S	(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	-
R43TI	(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	-
R43Pb	(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
R48TI	(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
R53TI	(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

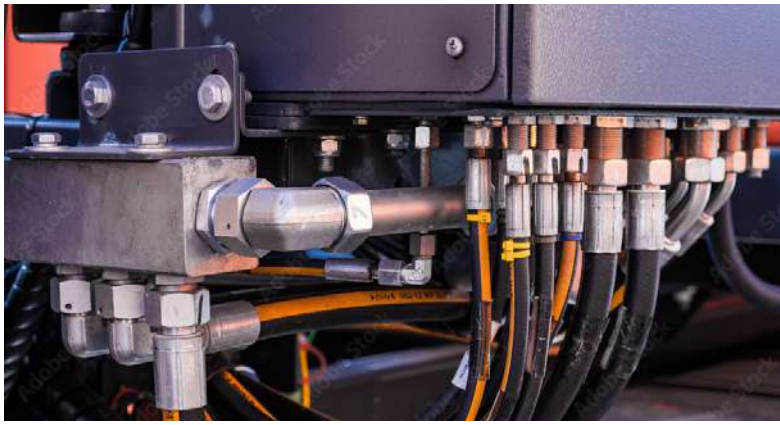
	EXECUTION	PROFILE	RANGE (MM)	FINISH	TOLERANCES
Bars	Hot rolled	Round	20÷105	As rolled, rough peeled	-
	Cold-drawn	Round Hexagonal Square Special	2÷80 4÷80 4÷70	Bright	ISA h9-h10-h11
	Smooth-turned	Round	20÷100	Bright	ISA h9-h10-h11
	Ground	Round	3÷100	Bright	ISA h6-h7-h8-h9-h10-h11
Coils	Cold-drawn	Round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

FREE-CUTTING STEEL APPLICATIONS

AUTOMOTIVE INDUSTRY | HYDRAULIC & FLUID | FASTENERS | OIL & GAS | COSTRUCTION | 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
11SMN30	11SMn30	1.0715	(1215)	≤ 0,14	0,05	0,90÷1,30	0,11	0,27÷0,33	-	-
1215	-	-	1215	≤ 0,09	-	0,75÷1,05	0,04÷0,09	0,26÷0,35	-	-
AVZ	11SMn37	1.0736	-	≤ 0,14	0,05	1,00÷1,50	0,11	0,34÷0,40	-	-
LED108	11SMnPb30	1.0718	(12L14)	≤ 0,14	0,05	0,90÷1,30	0,11	0,27÷0,33	0,20÷0,35	-
12L14	(11SMnPb30)	(1.0718)	12L14	≤ 0,15	-	0,85÷1,15	0,04÷0,09	0,26÷0,35	0,15÷0,35	-
PS113	11SMnPb37	1.0737	-	≤ 0,14	0,05	1,00÷1,50	0,11	0,34÷0,40	0,20÷0,35	-
TELYX	(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
TELBY	(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
TELBYPLUS	(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
PR60	-	-	-	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
10SPb20	10SPb20	1.0722	(1215)	0,07÷0,13	0,40	0,70÷1,10	0,060	0,15÷0,25	0,20÷0,35	-
117	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
35S20	35S20	1.0726	-	0,32÷0,39	0,40	0,70÷1,10	0,06	0,15÷0,25	-	-
45S20	46S20	1.0727	-	0,42÷0,50	0,40	0,70÷1,10	0,06	0,15÷0,25	-	-
45S20PB	46SPb20	1.0757	-	0,42÷0,50	0,40	0,70÷1,10	0,06	0,15÷0,25	0,15÷0,35	-
44SMN28	44SMn28	1.0762	(1144)	0,40÷0,48	0,40	1,30÷1,70	0,06	0,24÷0,33	-	-
1144	-	-	1144	0,40÷0,48	-	1,35÷1,65	0,40	0,24÷0,33		
SAE1144PB	44SMnPb28	1.0763	(11L44)	0,40÷0,48	0,40	1,30÷1,70	0,06	0,24÷0,33	0,15÷0,35	-
PR40	(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
PR80 SAE1137PB	36SMnPb14	1.0765	(11L37)	0,32÷0,39	0,40	1,30÷1,70	0,06	0,10÷0,18	0,15÷0,35	-
36SMn14	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.

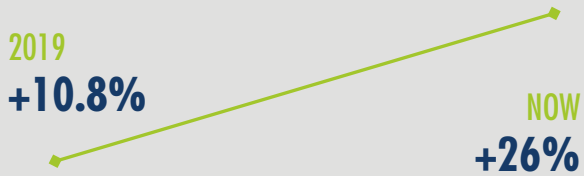
Roadjob: inaugurated in 2019, it is a non-profit foundation composed of 26 other companies and 11 training institutions. The main activity consists in the provision of professionalizing training courses, mainly dedicated to unemployed, precarious young people and high school students. Rodasteel offers 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)

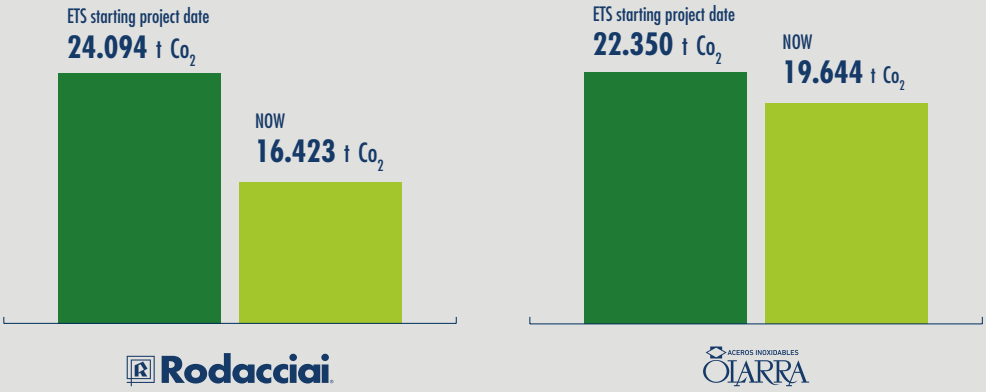
PLANET

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_2 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.
  Continous 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 trough PPA contracts or equipped with Guarantees of Origin guaranteeing the lowest possible carbon footprint.
- Efficiency improvement.
  Continous 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_2- 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

www.rodacciai.com

Rodacciai®

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HIGH PERFORMANCE STEEL

Rodacciai®

Rodacciai

ALLOY & CARBON STEELS

FREE-CUTTING STEELS

COMPANY PROFILE

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 Trafileria 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 Trafileria 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).
Trasparency, 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 Inodixables

1995-2005

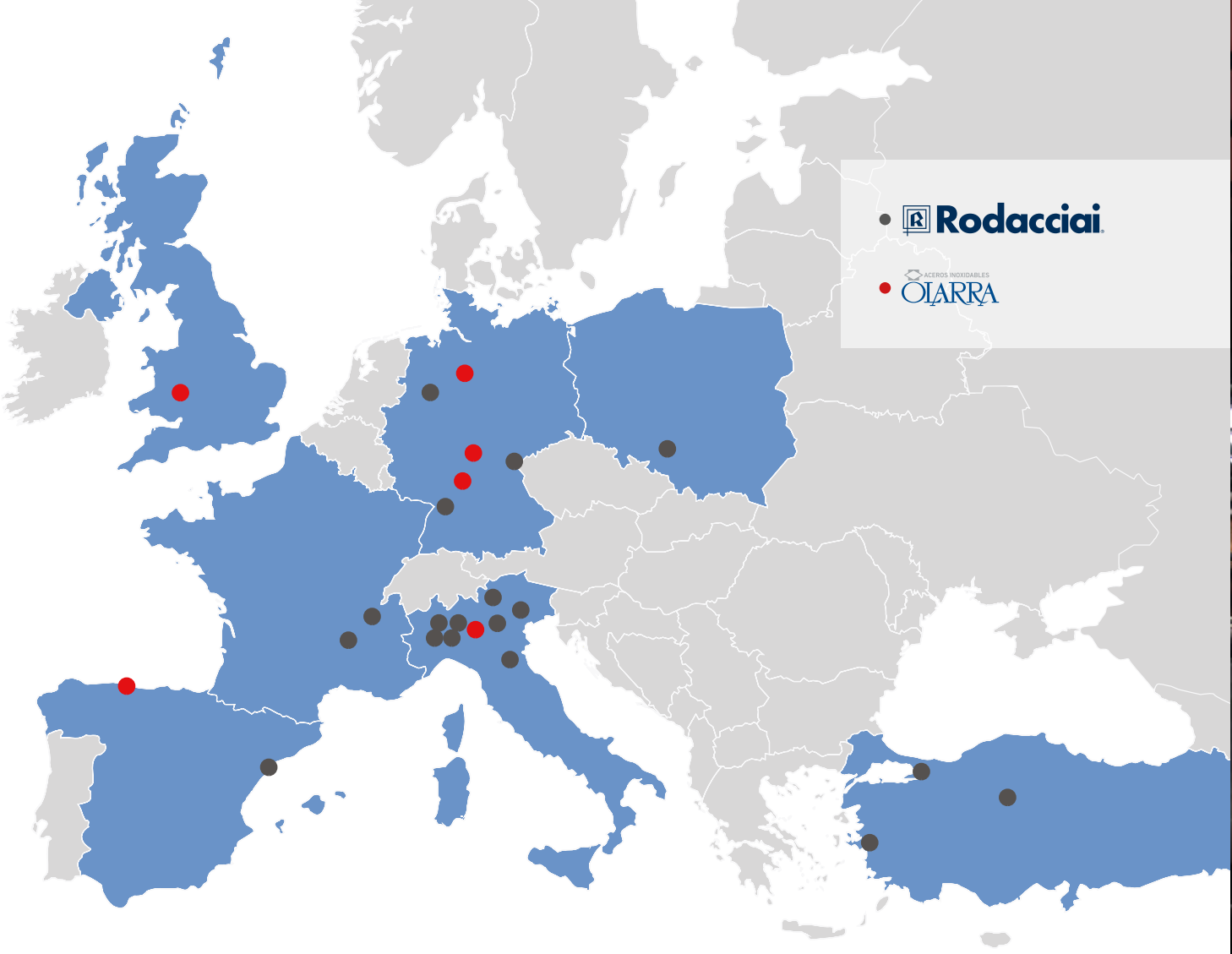
Expansion of the commercial network in Europe and acquisition of smaller companies

2007-2016

Investments for production expansion

TODAY

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, 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

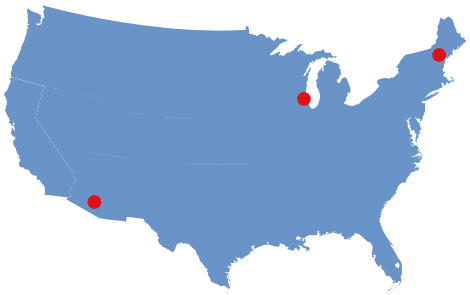
CESI
Country: Italy
N° of distribution centres: 1
City: Piacenza

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

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

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

USA



OLARRA - Italia
Country: Italy
N° of distribution centres: 1
City: Brescia

OLARRA U.K LTD
Country: Great Britain
N° of distribution centres: 1
City: Cleobury Mortimer

Roda Specialty Steel
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 adavantage: 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)*

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.

LABORATORY & CONTROL QUALITY

Rodacciai | LAB

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 other elements, so called alloying elements, can be modified.

Common or unalloyed steel is an alloy in which the quantity of 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	TOLERANCE
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 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 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 | COSTRUCTION

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 TRASMISSION | 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
KV10	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	-
R10S	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
R10PB	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
KV15	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	-
R15PB	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
C16E	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. 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**.

®	Name	N°	AISI	C	Si	Mn	P (Max)	S	Cr	Al	Other Elements
RM16	16MnCrS5 [1]	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
RM16PB	16MnCrS5 + Pb [1]	1.7139	(51L17)	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
RM20	20MnCrS5 [1]	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
RM20PB	20MnCrS5 + Pb[1]	1.7149	(48L20)	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
RN0	12NiCr3 [3]	-	-	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
RN0PB	12NiCr3 + Pb[3]	-	-	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
RN2	16NiCrS4 [2]	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
RN2PB	16NiCrS4 + Pb [2]	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
RN3	20CrNi4 [3]	-	-	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
RD4	18CrMoS4 [1]	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
RG2	16NiCr11 [4]	(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
RCO'S'	20NiCrMoS2-2 [1]	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
RC2	17NiCrMoS6-4 [1]	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
RC2 PB	17NiCrMoS6-4 + Pb[1]	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
20MNV6	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

[1] EN ISO 683-3:2019/EN 10277:2018 [2] EN 10084:2008 / EN 10277-4:2008 [3] UNI 7846-78 [4] 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 European standard EN 10025, for the creation of welded, bolted and riveted structures and the construction of objects used in the building sector.
In addition to 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
RE60S	(E335+S) (E335GC)	(1.0060) (1.0543)	-	0,37÷0,45	≤0,50	≤1,40	≤0,045	-	0,080÷0,120	≤0,012	-
RE37	S235JR S235JRC	1.0038 1.0122	(K02502)	0,17	-	≤1,40	≤0,035	≤0,55	≤0,035	≤0,012	-
RE52D	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

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.

	NORM	N°	AISI	C	Si	Mn	P	S	Al	Other Elements
SB4	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	-
CB10FF	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	-
32CrB4	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
36CrB4	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
100CR6	EN ISO 683-17:2014 100Cr6	B1	(52100-L3)	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 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 oil and gas industry.
Alloyed steels are generally supplied in quenched and tempered state, with specific mechanical characteristics for each application.

	ASTM	C	Si	Mn	P	S	Cr	Mo	Al	Other Elements
A105 K105	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
A193-B7 A193-B7M	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	-
A193 B16	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
A320-L7 A320-L7M	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 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 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.

QUENCHED 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 quenching and tempering heat treatment**.

Non-alloyed quenched and tempered steels have limited temperability and, because of their transformed grain structure, can not be used on pieces with elevate thickness

	Name	N°	AISI	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Other Elements
KV20	C22E [1]	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	-
R20Pb	C22R + Pb [1]	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
KV30	C30E [1]	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	-
R30S	C30R [1]	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
KV35	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	-
R35Pb	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
KV40	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	-
R40S	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
R40Pb	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
KV45	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	-
C48TI	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
R45Pb	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
KV50	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	-
R55	C55 [1]	1.0535	1055	0,52÷060	≤ 0,40	0,60÷0,90	≤0,030	0,020÷0,040	≤ 0,40	≤ 0,10	≤ 0,40	-	-
C60R	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 [1] EN10083-1+A1:1996

QUENCHED AND TEMPERED STEEL ALLOYS

Steels with alloy elements, temperable

Alloyed quenched and tempered steels **contain alloying elements** (manganese, chromium, nickel, molybdenum) in variable quantities and proportions that permit to achieve required temperability.
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 required 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 this way it is possible to obtain 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.

®	NAME	N°	AISI	C	Si	Mn	P	S	Cr	Al	Mo	Cu	Other Elements
34Cr4	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	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	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	41Cr4	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	41CrS4	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	36CrMn5 [2]	-	-	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	36CrMn5 + Pb [2]	-	-	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 [4]	-	(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	(4135)	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	(41L35)	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	(4140-4142)	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	(4140-4142)	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	(41L40)	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	(4147)	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 [1]	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 [1]	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)	4340-L43	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 [3]	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	(6150)	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
21CRMOV5.7	21CrMoV5-7 [4]	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 [1]	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 [1]	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 [1] EN10083-3:2006 / EN10277-5:2008 [2] UNI 7845-78 [3] EN10085:2001 [4] 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 through this treatment is **directly proportional to the steel's carbon content**. All of these special steels have a balanced chemical composition that ensures **good machinability** (S = 0.020 – 0.040).
Another advantage is the **excellent repeatability of the heat treatment** due to the constant austenitic grain (Al = 0.020 – 0.050). The required hardness values can only be reliably obtained after removing the surface layer of the bar 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 contain no alloying elements, only trace amounts that may be introduced by the scrap used to melt the steel. The carbon content of these steels determines the resulting mechanical properties and their potential applications..

	AISI	C	Si	Mn	P (Max)	S	Cr	Ni	Cu	Al	Other Elements
R33S	(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	-
R43TI	(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	-
R43Pb	(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
R48TI	(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
R53TI	(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

Steels for high-speed machining, commonly known as free-cutting steels, have been specially designed to be machined with high productivity through chip removal processes. These steels, which are widely used in industries such as automotive manufacturing and household appliances, contain sulfur and other elements, including tellurium, bismuth, and lead, which enhance machinability.

In particular, the sulfur ensures the fragmentation of the chip, lead reduces the friction between the tool and workpiece, extending tool life and the tellurium and bismuth further improve these machinability 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	TOLERANCE
Bars	Hot rolled	Round	20÷105	Rolled, rough peeled	-
	Cold-drawn	Round Hexagonal Square Special	2÷80 4÷80 4÷70	Bright	ISA h9-h10-h11
	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 Hexagonal Square Special	2÷22 3÷12 4÷12	Bright, coated	ISA h9-h10-h11 EN 10218-2 T1-T2-T3-T4-T5

FREE-CUTTING STEEL APPLICATIONS

AUTOMOTIVE INDUSTRY | HYDRAULIC & FLUID | FASTENERS | OIL & GAS | COSTRUCTION | AGRICULTURE

FREE-CUTTING STEELS NOT INTENDED FOR HEAT TREATMENT

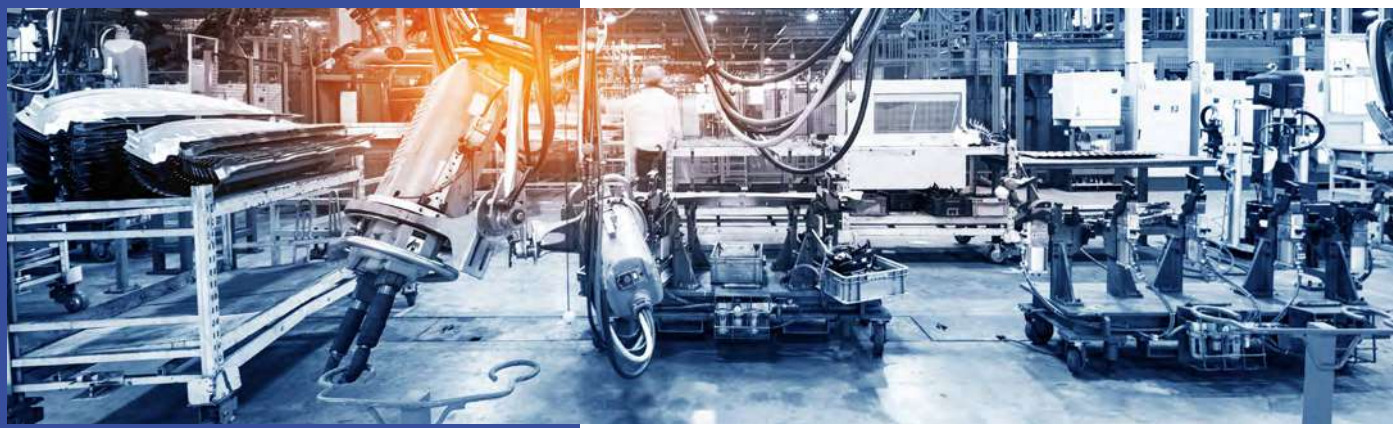
The low carbon content of these steels ensures optimal machinability, making them ideal for high-speed mechanical processing.
These steels can be used to manufacture nuts and bolts, and they are suitable for chip removal processes. They are commonly used in applications that do not require specific mechanical properties.

CARBURIZED FREE-CUTTING STEELS

This family is particularly suitable for the production of large mechanical components, such as gears, axles, cones, pins, bushings, pinions, camshafts, drive shafts, and axle shafts used in 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, as well as special screws, nuts and bolts.



FREE-CUTTING STEELS NOT INTENDED FOR HEAT TREATMENT

Steels with High-Machinability and a low carbon content

Free-cutting steels not intended for heat treatment are characterized by a low carbon content, which ensures excellent machinability and makes them ideal for high-speed machining operations. These steels are typically used in the same thermal condition in which they are supplied, with no need for additional heat treatments.

However, it is becoming increasingly common to subject them to certain thermochemical surface hardening processes. In such cases, a thorough understanding of the treatment process and appropriate precautions are essential. Rodacciai offers a comprehensive range of free-cutting steels not intended for heat treatment, designed to meet a wide variety of machining needs.

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

CARBURIZED FREE-CUTTING STEELS

Steels with High-Machinability by hardening of the surface layer

Components 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
10SPb20	10SPb20	1.0722	(1215)	0,07÷0,13	0,40	0,70÷1,10	0,060	0,15÷0,25	0,20÷0,35	-
117	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 Enhanced Mechanical Properties

Quenched and tempered free-cutting steels contain a higher carbon content compared to standard free-cutting steels, while still maintaining good machinability due to a controlled amount of sulfur.
These steels can be supplied in the quenched and tempered condition before drawing or peeling, allowing for further heat treatment after machining, if necessary.

Once quenched and tempered, these steels exhibit excellent mechanical properties and are suitable for applications that demand higher strength and toughness than what is offered by non-heat-treated free-cutting steels.

	EN ISO 683-4:2018 EN 10277:2018	N°	ASTM A29	C	Si (max)	Mn	P (Max)	S	Pb	Other elements
35S20	35S20	1.0726	-	0,32÷0,39	0,40	0,70÷1,10	0,06	0,15÷0,25	-	-
45S20	46S20	1.0727	-	0,42÷0,50	0,40	0,70÷1,10	0,06	0,15÷0,25	-	-
45S20PB	46SPb20	1.0757	-	0,42÷0,50	0,40	0,70÷1,10	0,06	0,15÷0,25	0,15÷0,35	-
44SMN28	44SMn28	1.0762	(1144)	0,40÷0,48	0,40	1,30÷1,70	0,06	0,24÷0,33	-	-
1144	-	-	1144	0,40÷0,48	-	1,35÷1,65	0,40	0,24÷0,33		
SAE1144PB	44SMnPb28	1.0763	(11L44)	0,40÷0,48	0,40	1,30÷1,70	0,06	0,24÷0,33	0,15÷0,35	-
PR40	(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
PR80 SAE1137PB	36SMnPb14	1.0765	(11L37)	0,32÷0,39	0,40	1,30÷1,70	0,06	0,10÷0,18	0,15÷0,35	-
36SMn14	36SMn14	1.0764	(1137)	0,32÷0,39	0,40	1,30÷1,70	0,06	0,10÷0,18	-	-

SUSTAINABILITY

BUILDING A LONG-LASTING FUTURE

"SUSTAINABILITY', A STRATEGIC ELEMENT OF RODACCIAI

Rodacciai has proudly established its three fundamental pillars, drawing inspiration also from the United Nations' 2030 Sustainable Development Goals (SDGs): people, planet, and performance. These cornerstones reflect the company's steadfast commitment to sustainability, social responsibility, and excellence.

PEOPLE

At Rodacciai, creating a dynamic and empowering work environment full of talented individuals is our priority. Our mission is to inspire and engage professionals, fostering a culture where people are not only enticed to join us but also feel deeply motivated to stay and grow with the company for years to come.

PLANET

Rodacciai considers environmental preservation to be a pillar of its production activities and an integral component of its ambitious growth objectives. Rodacciai also places strong emphasis on energy efficiency, viewing these efforts as pivotal to its decarbonization goals. This unwavering commitment reflects the company's determination to align its progress with sustainability at every level.

PERFORMANCE

Rodacciai focuses on optimizing production processes and improving product quality to ensure sustainable progress and superior results. By integrating market signals, stakeholder feedback, and international development policies, the company strengthens its stability and business continuity while upholding responsible governance and ESG principles for ethical and sustainable growth.

2030

PEOPLE

Rodacciai stands out as a virtuous example of social commitment and sustainability through a series of initiatives aimed at promoting the culture of merit, professional development, solidarity, and inclusion.

The company operates with a long-term vision, striving to create a positive impact for local communities, institutions, schools, and the most vulnerable sectors of society, using education, training, and cultural support as key tools for transformation.

One of the pillars of its commitment is the promotion of the culture of merit through the "Giuseppe Roda" Scholarships, rewarding the most deserving students from local schools and universities, with the aim of encouraging excellence in studies and fostering social empowerment. The scholarships are awarded at local institutions and non-profit organizations, strengthening the bond between the company and the territory.

The Rodacciai Academy and related initiatives, such as Academy Road PM in collaboration with RoadJob, represent an important step forward in the professional (re)integration of unemployed and precarious youth. Thanks to qualifying training courses, qualification and requalification activities, and partnerships with local companies, schools, and universities, these projects support the future employment prospects of younger generations.

Rodacciai is also committed to promoting STEM disciplines and technical excellence. Through the HR Excellence project, internship activities, contests, and company visits are offered to students to bring them closer to technical professions and to encourage a corporate culture of excellence.

A notable initiative is the participation in the SIfaSTEM roundtable, aimed at overcoming gender prejudices in scientific and technological subjects and promoting leadership roles in STEM disciplines among female students.

In line with its commitment to innovation and sustainability, the company collaborated on projects such as the Innovation Day to stimulate a critical mindset in young people regarding the use of digital technologies.

Additionally, it supported the first Higher Technical Education and Training (IFTS) course in Italy focused on steel processing, facilitating the employment of trainees through apprenticeships.

The tangible economic support to communities during emergencies caused by natural disasters or similar situations also reflects Rodacciai's commitment to human values. This approach underlines that the company does not limit its efforts to its local context but extends its solidarity to broader realities, responding effectively and promptly to emerging needs.

At the same time, attention to employee well-being is a cornerstone of the company's philosophy.

The HEART and HEALTH initiative represents a concrete commitment to improving the quality of life of its personnel, offering cardiovascular health monitoring to employees over 45.

This is complemented by innovative policies, such as additions to the National Collective Labour Agreement (CCNL), ensuring the opportunity to take paid leaves for personal or family health reasons, proving genuine care for individual and family well-being.

In summary, Rodacciai's commitment to social sustainability is evident in its continuous investment in education, training, and inclusion, but, above all, in its consistent focus on people: fostering the growth and well-being of communities, as well as its own employees.

These initiatives not only reflect the company's values but represent also a model for a fairer, more innovative, and more supportive future.

PLANET

Rodacciai considers environmental conservation a fundamental pillar of its production activities and growth objectives.

The company is fully committed to continuously monitoring and evaluating its environmental impacts to devise innovative strategies that mitigate and reduce adverse effects. A key element of this approach is the responsible management of raw materials: by predominantly using steels sourced from scrap metal within its supply chain—scrap that can be re-melted without any loss of properties—Rodacciai is steadily reducing its reliance on virgin raw materials, whose extraction is highly impactful. **Waste management** is an integral part of the group's sustainability philosophy. In line with circular economy principles, Rodacciai has implemented projects aimed at the valorization, where permissible, of industrial by-products, thereby reducing the volume of waste destined for disposal.

These efforts reflect the company's ongoing commitment to improving and optimizing resources.

Water resource management plays a crucial role in Rodacciai's environmental strategy. The company diligently monitors water consumption and has equipped its facilities with closed-loop systems that incorporate purification and water recovery processes. Within regulatory and technological limits, it also preserves water consumption from the aqueduct, allocating groundwater for production purposes.

Equally important is the attention given to controlling pollutant emissions.

Through monitoring plans and the adoption of appropriate technological solutions, Rodacciai ensures that atmospheric emissions remain under control, guaranteeing that its operations comply with environmental standards and contribute to a healthier ecosystem.

Energy consumption is addressed with the same level of commitment.

The company focuses on both the nature and quantity of energy used, enhancing the efficiency of production processes and evaluating sourcing from renewable energy sources.

This commitment materializes through the technological modernization of facilities, the limitation of energy waste, and the optimization of operational processes, whose results are documented via an automated performance monitoring system. These measures culminate in the decarbonization plan with targets for 2030, guiding the company towards a reduced environmental impact linked to its production processes.

These integrated initiatives in the management of raw materials, water, waste, emissions, and energy not only improve operational resilience but also underscore Rodacciai's commitment to environmental stewardship and sustainable growth.

PERFORMANCES

Rodacciai is deeply committed to the optimization of production processes and the enhancement of product quality, ensuring sustainable progress and superior results across all operations.

These principles, coupled with the incorporation of market signals, stakeholder feedback, and adherence to international development policies, are essential to ensuring business continuity and strengthening the company's stability.

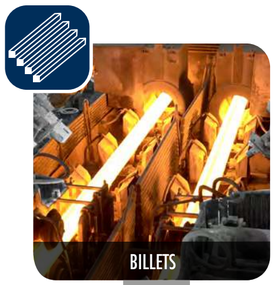
This comprehensive approach reflects Rodacciai's dedication to responsible governance and alignment with Environmental, Social, and Governance (ESG) standards, reinforcing its commitment to sustainable growth and ethical business practices. To support these goals, the company places a strong emphasis on strategic business planning, including the development of comprehensive multi-year growth plans. These plans serve as a roadmap for achieving long-term objectives while adapting to evolving market conditions and global trends.

Rodacciai also prioritizes the measurement and monitoring of its performance through the implementation of Key Performance Indicators (KPIs).

This system enables the company to track progress, ensure transparency, and drive continuous improvement across all areas of its operations, further reinforcing its role as a leader in sustainable and resilient business practices.

IN HOUSE MANUFACTURING STRATEGY

ROLLING MILL
COLD FINISHING


BILLETS


FURNACE


ROLLING MILLS


HOT ROLLED BARS


WIRE ROD


HEAT TREATMENT


PEELING - DRAWING


DRAWING - PEELING


GRINDING

ROLLING MILL

COLD FINISHING

FURTHER PRODUCTION PROCESSES (IF NECESSARY)

Rodasteel Corporation has always distinguished itself trough 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 *(cold finishing plant)*

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