Swiss Steel
Creating values with steel
Welcome to S+Bi. We offer the solution. All the time.

An ambitious claim. We live up to it because we are more than “just” a company that produces steel. At the heart of Europe, we produce what our customers need for success in hard-fought markets: integrated solutions in high-quality steel. Our own production companies and sales + services, enable us to operate, as a solution provider, a technology driver – and, above all, a reliable and quality-conscious global partner for our customers.

Nevertheless, size, performance capability and a global presence are not ends in themselves. Like everything we do, these serve constantly to expand and strengthen our position as a provider of solutions in steel, expertise and services from a single source. Wherever you are. Whatever you need – we are the solution. This is our mission and how we see ourselves.

Steel featuring the widest array of properties: highly ductile and yet ultra-strong for the plastics industry. Exceedingly corrosion-resistant for offshore plants. Or able to withstand extreme dynamic stresses for engine components.

It all begins with steel: the steel that you as our customer need to be successful in your market. Steel in a certain quality.

You need a reliable supply, in very small or very large quantities, with precise, consistent reproducible quality, and you need it quickly. Mostly just-in-time. Delivery delays or failures are not an option.
A warm welcome to Swiss Steel AG

Swiss Steel is the centre of excellence for the production of high-grade steels used in the automobile industry and the machinery, plant and equipment sectors. Networking throughout the entire value chain means that we can tailor our production precisely to the requirements of processors and finishers, enabling us to play our part in their market success.

When steel should inspire – we have the solution.

**Our leading idea – our top standard**
All our efforts are focused on fulfilling customers’ requests. Advice and service are therefore the core of our activity. Continuous improvement is our main aim in all business processes. Highest satisfaction of the customers is achieved by assured quality in products and services.

Quality, the result of our efforts, is reaching from the initial customer contact to product development, manufacturing and utilization at the customers. Active quality assurance in all ranges is effected by highly qualified experts.

Our personnel is integrated into the entrepreneurial responsibilities of the company and has a high degree of autonomy and conclusive competence. Decisions are taken on the level where the necessary information is provided and the consequences widely estimated.

For solutions with engineering steel we are your partner.

**Our Certificates**
- Quality Management System
  ISO 9001:2008
- Environmental Management System
  ISO 14001:2004
- Occupational Health and Safety Management System
  OHSAS 18001:2007
- Quality Management System
  ISO/TS 16949:2009
  Particular requirements for the application of ISO 9001:2008 for automotive production and relevant service part organizations
- Testing laboratory for mechanical, metallographical and spectrometrical tests on metals
  ISO IEC 17025
- Quality label of the Foundation Natur & Economy
Applications

Customer-specific analysis resulting in the right product for your application

With Swiss Steel AG you can be sure to receive the best material for your processing purposes. Choose your utilization purpose, and you will receive an overview on the most important steel qualities suitable for you from our comprehensive range of products.

- Swiss Steel grades for drawing mills
- Swiss Steel grades for cold heading / cold extrusion
- Swiss Steel grades for forging
- Swiss Steel grades for chain production
- Swiss Steel grades for construction / mining

**Swiss Steel grades for drawing mills**
- common structural steels, e.g. S355J2G3
- C steels, C10 – C60
- Mn steels, e.g. 21Mn5
- MnAl steels, e.g. 21Mn4Al
- Cr steels, e.g. 41Cr4
- MnCr steels, e.g. 16MnCr5
- CrMo steels, e.g. 42CrMo4
- CrV steels, e.g. 50CrV4
- B steels, e.g. 22B2
- MnB steels, e.g. 30MnB4
- CrB steels, e.g. 32CrB4
- S steels, e.g. 46S20
- SMn steels, e.g. 11SMn30
- SMnPb steels, e.g. 11SMnPb37

**Swiss Steel grades for cold heading / cold extrusion**
- common structural steels, e.g. E355
- C steels, C10 – C60
- Mn steels, e.g. 21Mn5
- Cr steels, e.g. 41CrS4
- MnCr steels, e.g. 16MnCrS5
- CrMo steels, e.g. 42CrMoS4
- B steels, e.g. 23B2
- MnB steels, e.g. 30MnB4
- CrB steels, e.g. 32CrB4
- MnCrB steels, e.g. 35MnCrB4
- MnNiCrB steels, e.g. 28MnNiCrBS22
- MnV steels, e.g. 17MnV7
- CrV steels, e.g. 51CrV4
- SMnPb steels, e.g. 11SMnPb30
- Specialty product: Swissbain-7MnB8
More than 180 Steel grades adapted to your process

**Swiss Steel grades for forging**
- common structural steels, e.g. S235JR
- C steels, C10 – C60
- Mn steels, e.g. 52Mn5
- Cr steels, e.g. 41Cr4
- MnCr steels, e.g. 16MnCr5
- CrNi steels, e.g. 16CrNi54
- CrMo steels, e.g. 42CrMo54
- CrV steels, e.g. 31CrV3
- B steels, e.g. 22B2
- MnB steels, e.g. 30MnB5
- S steels, e.g. 46S20
- SMn steels, e.g. 11SMn30
- SMnPb steels, e.g. 11SMnPb30

**Swiss Steel grades for chain production**
- common structural steels, e.g. S253JR
- Mn steels, e.g. 21Mn5
- MnSi steels, e.g. 27MnSi5
- MnNiCr steels, e.g. 18MnNiCr422
- MnNiMo steels, e.g. 20MnNiMo522
- MnNiCrMo steels, e.g. 23MnNiCrMo544
- CrNi steels, e.g. 17CrNi66
- B steels, e.g. 23B2
- MnB steels, e.g. 20MnB4
- MnNiCrB steels, e.g. 28MnNiCrB522
- Nb steels, e.g. C22B+Ni
- MnV steels, e.g. 18MnV5
- CrV steels, e.g. 51CrV4

**Swiss Steel grades for construction / mining**
- Top12 Reinforcing steel with increased corrosion resistance
- Top700 High strength reinforcing steel
- formwork screwable tie steel St 900/1100
Wire rod

5.5

up to

44 mm

Products

A wide range of dimensions for the most diverse needs

A specific analysis ensures that you use the right grade with the required properties for special requirements.

We offer steel bar and wire rod in an optimal size range for our customers. Our finishing options are also suited to your needs.

Our range of diameters:

- Wire rod in coils of 5.5 - 44.0 mm (round)
- Wire rod in coils of 17.7 - 42.5 mm (hexagonal)
- Special wire, D: 6.0 - 14.0 mm (ribbed)
- Bars in bundles of 16.0 - 66.0 mm (round)
- Bars in bundles of 17.7 - 62.0 mm (hexagonal)
- Special merchand bar, D: 16.0 - 40.0 mm (ribbed)
Areas of application

With a vast programme of high-grade, bright and free-cutting steel we have achieved an outstanding position in the European automotive, engineering and apparatus construction industry. Consistent quality, high delivery performance and efficient logistics are strengths which in turn ensure that our customers have a strong position in their own markets.

Our production programme includes steels for various purposes:

- General structural steel
- Heat treatable steel
- Case hardening steel
- Free-cutting steel
- Steel with improved cold forming properties
- Micro alloyed steel
- Chain steel
- Construction / Mining

General structural steel
Structural steels usually find their application according to their tensile strength and yield point. With similar requirements to their mechanical properties the individual quality groups are (among other criteria) distinguished according to the chemical composition, liability to brittle fracture and ability for welding.

Heat treatable steel
Heat treatable steels are used according to their application properties: austenitization, quenching and tempering. In a quenched and tempered condition, heat treatable steels have a minimum range of tensile strength of approx. 470 - 1250 N/mm². Besides a good tensile strength, heat treatable steels are also remarkable for their high yield and ductility. The properties of the end product should be as homogeneous as possible over the whole cross section. High-grade steels not only have low phosphorus and sulphur contents, but also more consistent properties, e.g. after heat treatment.

Case hardening steel
Case hardening steels are usually steels with low carbon contents, intended for carburisation or carbonitriding, followed by hardening. After hardening, case hardening steels are marked by a surface layer with a high level of hardness and a tough core. The inhomogeneous property profile is accommodating for the inhomogeneous stress profile. The most important parameter to be considered is its hardenability which is influenced by the chemical composition. In this respect we also distinguish between quality steel and high-grade steel.

Free-cutting steel
The group of free-cutting steels has resulted from the demand for automated machining. Good machinability and chip breakability are achieved amongst other things by alloying with sulphur, manganese, lead, tellurium and bismuth. Depending on the material requirements steels are classified into soft free cutting steels, free-cutting case hardening steels and free cutting heat treatable steels – all with low phosphorus and sulphur contents.

Steel with improved cold forming properties
For this purpose, steels with a low yield stress, low hardening tendencies during the forming process as well as a high deformability are required. Besides these characteristics, these steels should be free of internal and external defects, in order to provide an optimal cold heading product. Depending on the steel grade, a special annealing treatment, adapted to the deformation method can be applied to achieve lower final tensile properties. Speciality product: Swissbain-7MnB8

Micro-alloyed steel
With micro-alloyed steels, the strengthening effect is exploited by adding micro-alloyed elements, such as vanadium, titanium, niobium and aluminium. These elements ranging from 10⁻³ to some 10⁻¹ weight % form precipitations within the steel matrix, which have an influence both on the preheating and reformation process and on the microstructural transformation of the steel.
Chain steel
Besides strength, brittle fracture resistance and ductility are dominant factors for chain steels. Furthermore, aging and wear resistance, weldability, cold shearing and cold formability are very important. The weldability limits the carbon content to about 0.25 %. To enhance the strength with such a low carbon content, additional alloys of manganese, chrome, nickel and molybdenum produces strengths of up to 1500 N/mm² in the chain. Aluminium is alloyed for better aging resistance and grain refinement. Good ductility is achieved by a lowest possible content of accompanying elements, like phosphorus and sulphur.

Construction / Mining
Swiss Steel AG develops and produces special products for construction and mining applications. Our latest development includes the corrosion resistant reinforcing steel Top12, the micro-alloyed reinforcing steel for enhanced static requirements Top700 and the formwork tie steel St 900/1100.

The reinforcing steel Top12 is suitable for constructional elements exposed to splash water and stationary water (use of defrosting salt) and for areas jeopardized by carbonisation. Top12 presents a reliable and economic solution for improving the corrosion resistance of reinforced concrete significantly and thus extending its lifetime. Top12 can be projected and handled according to the methods developed for black rebars. No special treatment on the construction site is necessary.

Top700 is a new micro-alloyed reinforcing steel exhibiting a yield stress exceeding 700 N/mm². The steel therefore meets high static requirements and opens up new options in reinforced concrete construction.

The formwork tie steel St 900/1100 is a screwable steel exhibiting a yield stress exceeding 900 N/mm².

All products fulfil the relevant norms and are being monitored by independent certificate bodies.
Execution

The correct steel for your required execution

**Wire rod**
The following types of wire rod can be supplied according to requirements:

- Untreated
- Treated thermomechanically
- In-line surface treated (shot blasted, Zn- or Ca-phosphated, limed, soaped or polymer coated)

**Steel bars**
The standard of our steel bars with regard to straightness and absence of surface and internal defects is high. The following types of steel bars can be supplied according to requirements:

- Untreated
- Normalized rolled
- Straightened / cutted
- Crack tested
- Ultrasonic tested
- Demagnetised
- Material identification tested

Systematic controls guarantee the consistent quality of the steel supplied.
Production processes

Production processes  
Scrap  EAF  LF  VD  Continuous casting machine

- Furnace
- Rolling mill with Loop (L) and Kocks
- Reducing and Sizing Mill (K)
- Cooling line
- Bar
- Garrett
- Stelmor

Production

From scrap to high-grade steel

Steel production at Swiss Steel is the beginning of a valuable recycling process, and therefore also an important factor of our economy and society from an ecological aspect.

Iron scrap of good quality – mainly of Swiss origin – is melted in our 80 tons electric arc furnace.

The secondary metallurgical processes pass off in the ladle furnace:

- Alloy and micro-alloy of the cast
- Temperature adjustment
- Stirring

After treatment in the ladle furnace, for particularly high-quality demanding steel goods there follows a secondary metallurgical treatment in the vacuum machine. This treatment reduces the oxygen and nitrogen content of the steel through powerful rinsing in a vacuum.

The continuous casting machine then produces the 11 m steel billets of 150 mm square, forming the billets from which the steel is rolled into bars or wire rod.

The entire production process is liable to an effective quality assurance, either by technological processes, or by continuous testing.
Testing Facilities of Laboratory

We carry out chemical, mechanical and metallographic tests in our accredited test laborato-
ries. Swiss Steel AG ensures a continual improvement in the individual departments due to
the continuous feedback of process and test data to the process. Quality Assurance provides
proof of the process quality through the accompanying inspections, which are mostly
performed in the central test laboratories.

The key areas of our labs are accredited (STS026) according to ISO/IEC 17025. The current
scope of accreditation includes mechanical tests, metallography and spectrometry. Sample
preparation permits the mechanical production of various types of samples to standards or
customer specifications for subsequent testing. The test and measuring equipment monitor-
ing department verifies all the test and measuring equipment (gauges, micrometers, etc.)
at the production site in Emmenbrücke as well as for various external customers.

Our laboratories with their modern facilities are available for analyses and tests commis-
sioned by external customers.
Sustainability as a corporate philosophy

For SCHMOLZ + BICKENBACH, a responsible approach to all aspects of the environment and sustainable economic activity is of central importance. The principles of our activities are the conservation of resources, energy efficiency, product recyclability, minimising emissions, safety in the workplace, continuous innovation and an open dialogue with our stakeholders.

Our sustainability principles:

» SCHMOLZ + BICKENBACH considers the personal and professional development of employees an important and strategic factor of success.

» We act in a responsible manner and create new training positions for young people.

» Involvement in continuous further training is an important corporate philosophy for SCHMOLZ + BICKENBACH, which secures the company’s economic success for the long term.

» Our employees are extremely important to us, which is why we demand and ensure an ongoing review and improvement of health and safety in the workplace.

» Our local management teams ensure that we are as close as possible to the market and our customers – around the world.

» We firmly believe that an open and transparent dialogue with employee organisations is the best way to continuously raise the value of our company.

» We constantly improve our production processes and our environmental measures, which reduces our environmental footprint.

» The material steel is one of the few 100% recyclable materials there is. By using steel scrap as a basic resource, SCHMOLZ + BICKENBACH ensures the sustainable conservation of resources.

» Our compliance regulations are part of our company philosophy.
We reserve the right to make changes and technical improvements without notice. Errors and omissions excepted. The product-specific data sheets take priority over the details given in the catalogue.

The desired performance characteristics are only binding if they had been agreed upon exclusively at the time that the contract was made.