



HOT-ROLLED STEEL STRIP

Technical terms of delivery
1 September 2019

These general terms apply to all hot-rolled steel strip supplied by companies in the voestalpine Steel Division. Please use the following link to find a list of the companies affiliated with the Steel Division:

www.voestalpine.com/stahl/en/Companies

The names of companies in the voestalpine Steel Division are referred to simply as **voestalpine** in this document.

Printed copies cannot be updated on a regular basis. Please refer to the most recent content in the online data sheets found on our home page. Technical changes are reserved. Errors and misprints are excepted. No part of this publication may be reprinted without explicit written permission by voestalpine Stahl GmbH.

INDEX

- 4 Introduction
- 5 Quality management
 - 5 » Comprehensive quality management
 - 5 » State-of-the-art testing techniques
- 6 Steel grade overview
- 7 Order quantities and manufactured units
 - 7 » Hot-rolled steel as wide strip (coil)
 - 7 » Hot-rolled steel as slit strip or cut sheets
 - 7 » Weights
- 8 Available dimensions
 - 8 » Hot-rolled steel as wide strip (coil)
 - 8 » Hot-rolled steel as slit strip
 - 8 » Hot-rolled steel as cut-to-length sheets
- 9 Inspections
- 10 Labeling
- 11 Technical review of inquiries, homologation, initial samples and serial supply
- 12 Surface
 - 12 » Oiling
- 13 Additional information
 - 13 » Processing information
 - 13 » Marking
 - 13 » Packaging
- 14 » Transport and storage
- 15 » General terms of sale
- 16 Order data

INTRODUCTION

voestalpine operates one of Europe's most modern steelmaking facilities in Linz. Each of the modern lines required for the production of high-quality steel strip is located next to related facilities and is highly integrated into the works.

Our goal is to innovate and go beyond standard steels, to continually offer high-quality products. The most modern manufacturing technologies, continuous quality control systems as well as intense research and development guarantee optimum product quality.

These technical terms of delivery provide information on the ordering and processing of **hot-rolled steel strip**. Please direct any of your questions to your responsible sales personnel or technical specialist at voestalpine.

QUALITY MANAGEMENT

voestalpine is a quality leader in a challenging market environment, and it has become the company philosophy to meet the justified expectations and requirements of both the market and the customer with respect to every possible aspect of quality. Comprehensive quality management is a central component of the company strategy. In addition to this comprehensive quality management system, production monitoring using the most modern testing systems is also a necessity. These systems are inspected on a regular basis by external and independent agencies.

COMPREHENSIVE QUALITY MANAGEMENT

The voestalpine companies meet the highest standards of quality management and are certified pursuant to **Lloyd's Register QA Ltd.** in the United Kingdom as well as **ISO 9001** and **IATF 16949**.

This has been confirmed by numerous customer awards presented for best quality performance. Focus has been continually on this pursued path as well as on consistent implementation of all quality standards.

STATE-OF-THE-ART TESTING TECHNIQUES

voestalpine uses the most modern testing techniques and methods, laboratory information and management systems equipped with state-of-the-art technologies. The technical expertise of our testing and inspection laboratories is certified in accordance with international standards, e.g. **ISO/IEC 17025** and **ISO/IEC 17020**, and is accredited by Austrian national standards.

STEEL GRADE OVERVIEW

MILD (UNALLOYED) STEELS FOR COLD FORMING

These steels are generally delivered in accordance with **EN 10111**. They are used in applications in which formability is more important than strength.

STRUCTURAL STEELS

These steels are included in **EN 10025**. One of their fields of application is in machinery. The steels are characterized by minimum yield strength, a margin for tensile strength and minimum fracture elongation. They are used for light drawing stress, forming and bending.

alform® STEELS

- » Normalized rolled steels
- » Thermomechanically rolled steels
- » Thermomechanically rolled steels with improved formability
- » Ultra-high-strength thermomechanically rolled steels

The alform® steel grades feature excellent cold formability. They are frequently used in the machinery industry. They are comprised of unalloyed, mild, normalized-rolled and thermomechanically rolled steels.

durostat® STEELS

durostat® grades are special steels that feature high hardness achieved through accelerated cooling directly from the rolling heat. They are characterized by a high degree of wear resistance and are especially suited to applications with high mechanical stress and high levels of abrasion.

CASE-HARDENING AND HEAT-TREATABLE STEELS

Case-hardening and heat-treatable steels pursuant to **DIN EN ISO683-1** and **EN 10084** as well as the voestalpine standard are implemented in direct-processing applications or are used for re-rolling. These steels generally undergo heat treatment in order to achieve the desired processing and component properties. They are used in applications that must strike an optimum balance between hardness and toughness.

LINEPIPE STEELS

We supply pipe steel based on **API-5L X42** through **X70** and according to customer specifications. Dimensions and further information are available upon request.

ENAMELING STEELS

Based on material analysis and rolling parameters, these special steels are suitable for both wet-type and powder enameling. They also feature a very broad range of strengths.

POLE SHEETS

Pole sheets are thermomechanically rolled steels with guaranteed magnetic properties. Standard grades are pursuant to Euronorm **EN 10265:1995** (corresponding to **IEC 404-8-5**). Ultra-high-strength special voestalpine grades are also supplied.

ORDER QUANTITIES AND MANUFACTURED UNITS

HOT-ROLLED STEEL AS WIDE STRIP (COIL)

- » The minimum order quantity per line item is one coil production unit (depending on the steel grade, between approx. 18 kg/mm and approx. 20 kg/mm strip width) and/or its multiple.
- » It is possible to subdivide these coil units into smaller coils.
- » The target is fulfillment of customer orders with respect to the requested coil weight. It is permissible to fall below the ordered coil weight by up to a maximum of 30%.
- » The weight tolerance of line items whose ordered weight exceeds 100 tons is plus/minus a typical coil production unit typical for this item.

HOT-ROLLED STEEL AS SLIT STRIP OR CUT SHEETS

- » The minimum order quantity per line item is one coil production unit, which ranges roughly between approx. 18 kg/mm and approx. 20 kg/mm strip width and/or its multiple, depending on the steel grade.
- » This coil production unit can be subdivided.
 - » Possible in small coils for slit strip, e.g. 19, 9.5, 4.75 kg/mm
 - » Packages of sheets can be divided into units \leq 10 tons
- » Overdelivery and underdelivery is permitted up to \pm 10%.

WEIGHTS

- » The maximum weight of steel strip is 35 tons per coil.
- » The maximum weight per package of cut-to-length sheets is 10 tons.

All available steel grades and dimensions can generally be supplied with a specific coil weight of between approx. 18 and approx. 20 kg/mm strip width.

AVAILABLE DIMENSIONS

Hot-rolled steel strip is generally delivered in accordance with **EN 10051**. Limited tolerances or tolerances based on other standards are subject to special agreement between the customer and voestalpine and must be included in written form in the order.

The precise available limit dimensions are found in the product data sheets of the corresponding steel grade groups and the at the product information portal: www.voestalpine.com/pro

A symmetric tolerance zone position is generally a prerequisite for the ordered thickness. Products made of hot-rolled strip are supplied in the following forms:

- » Wide strip (coil), with mill edge or cut edge
- » Longitudinally slit strips with cut edges
- » Cut-to-length sheet with mill edge or cut edge

The products can be ordered by steel grade and dimension in unpickled or pickled condition.

HOT-ROLLED STEEL AS WIDE STRIP (COIL)

Product variant	Thickness [mm]	Width max. [mm]	Outer diameter max. [mm]	Inner diameter [mm]
Hot-rolled Steel Strip	2.00 ¹⁾ -20.00	900-1750	2000	500, 600, 720-760 *

Available combinations of widths and thicknesses vary depending on the steel grade.

¹⁾ Lower material thickness upon request
* Indicated references are standard values.

HOT-ROLLED STEEL AS SLIT STRIP

Product variant	Thickness [mm]	Strip width max. [mm]	Outer diameter max. [mm]	Inner diameter [mm]
Hot-rolled Steel Strip	2.00-8.00	50-1650	2000	500 ¹⁾ /600/760 *

Available combinations of widths and thicknesses vary depending on the steel grade.

¹⁾ Only up to 7 mm in thickness
* Indicated references are standard values.

HOT-ROLLED STEEL AS CUT-TO-LENGTH SHEETS

Product variant	Thickness [mm]	Width max. [mm]	Length max. [mm]	Package weight max. [t]
Hot-rolled Steel Strip	2.00-20.00	900-1750	1250-18000	10

Available combinations of widths and thicknesses vary depending on the steel grade.

Cut-to-length sheets in < 3.0 mm thickness and slit strip in < 4.5 mm thickness can be preprocessed upon request in the slitting and cut-to-length lines for cold-rolled material.

INSPECTIONS

In accordance with the provisions of **EN 10204**, requests for material test certificates are subject to special agreement between the customer and voestalpine and must be included in written form in the order. With respect to test units, sampling and performance of inspection tests, the stipulations contained in the respective order standards and/or special agreements during ordering are applicable.

LABELING

Standard labeling consists of a tag per package unit and indicates the following:

- » Supplier
- » Recipient
- » Order number
- » Strip number (identification number)
- » Heat number
- » Part or package number
- » Steel grade
- » Dimension
- » Number of units
- » Weights
- » Date of production

Additional data or marking directly on the material (coil, package or bundle marking) is subject to agreement.

A color marking can be used additionally for cut-to-length sheets.

TECHNICAL REVIEW OF INQUIRIES, HOMOLOGATION, INITIAL SAMPLES AND SERIAL SUPPLY

ORDERS ACCORDING TO CONVENTIONAL INTERNATIONAL STANDARDS

The customer informs voestalpine of the standard applicable to the order. All materials of an individual order are supplied exclusively according to a single material standard. Any limitations to standard provisions are subject to special agreement between the customer and voestalpine and must be included in written form in the order. They are subject to confirmation and approval by voestalpine. Any further technical testing is performed exclusively based on the adopted standardization.

ORDERS BASED ON EXISTING CUSTOMER SPECIFICATIONS

Prior to each initial sampling process, customers are required to submit their final material specification for technical review. voestalpine then issues a technical opinion along with a signed copy of the customer specification. The customer reviews this technical opinion and returns the signed document to voestalpine.

Should any content of the technical opinion not be acceptable to the customer, renegotiation between the customer and voestalpine is required until an agreement is reached. In the event that the customer does not sign or return the technical opinion and a trial sample is produced, this shall be deemed to constitute acceptance of the technical opinion. In such cases, voestalpine shall not accept subsequent complaints pertaining to any deviations from the customer specification.

TRIAL SAMPLES, TRIAL DELIVERIES, APPROVALS OF TRIAL SAMPLES AND SERIAL PRODUCTION

For each initial order prior to serial production, material samples and separate varnish samples are provided by voestalpine to the customer. Trial material serves as an opportunity to compare measuring systems between voestalpine and the customer and as a basis for subsequent processing. Following this testing at the customer, the customer orders initial samples for processing on an industrial scale and indicates **trial sample** in the order. After processing the material, the customer submits a written approval of the trial sample to voestalpine. In the event that the customer fails to submit this written approval and a new order is triggered at voestalpine, the trial sample is automatically deemed to be homologated material for serial supply. This is independent of pertinent customer specifications.

SURFACE

Generally in accordance with **EN 10111**, **EN 10025** and **EN 10163**. Special requests for surface quality, shapes, thickness tolerances and flatness can also be taken into consideration upon request.

OILING

PICKLED MATERIAL

The type of oiling is to be prescribed at the time of ordering. The following options are available:

- » Unoiled
- » Oiled
- » Oiled edges

The following standard data apply to oil amounts on coils and slit strip.

HOT-ROLLED STRIP IN COILS

- » Slightly oiled, roughly 1.0 g/m²
- » Oiled, roughly 1.5 g/m²
- » Heavily oiled, roughly 1.8 g/m²

SLIT STRIP

- » Slightly oiled, roughly 1.2 g/m²
- » Oiled, roughly 1.8 g/m²
- » Heavily oiled, roughly 2.5 g/m²

Oil quantities are adjusted to customer specification. A three-month warranty against material corrosion can be granted provided that at least 1.0 g/m² of protection oil has been applied and the material was transported and stored in compliance with the provisions of the section entitled "General Information." Formation of external rust films cannot be completely excluded, especially when metal bands are used in the packaging. No warranty is granted with respect to corrosion in unoiled material or material with oiled edges only.

Emulsifying rolling oil can be applied upon request to non-slit hot-rolled steel strip, to the exclusion of any guarantee against material corrosion.

UNPICKLED MATERIAL

As a rule, unpickled material is only supplied in unoiled condition.

ADDITIONAL INFORMATION

PROCESSING INFORMATION

In the event that recurrent defects become apparent during the unwinding of a coil or a slit coil, suggesting that the entire coil or slit coil will result in greatly increased scrap during processing, the processor shall discontinue use of the coil and notify the supplier immediately.

Steel strip absorbs tension when it is coiled, and this can lead to deviations in strip flatness when it is uncoiled (roll bending, chuck bending etc.). These deviations usually do not interfere with strip processing. Customers who require completely flat strip must employ a tension leveler that is suitable for the respective material.

MARKING

voestalpine reserves the right to deliver marked or unmarked material in the event that the customer when placing the order does not provide any explicit information with respect to marking.

PACKAGING

The desired packaging type, package or coil weight and additional requests with respect to packaging, labeling and loading are subject to special agreement between the customer and voestalpine and must be included in written form in the order.

The first inside and last outside winding of coiled hot-rolled and slit strip are deemed to be part of the packaging. They are not representative of the properties in the remaining windings of the coil.

The standardized packaging for hot-rolled steel strip includes steel straps. The following packaging types are also recommended as required for corrosion protection during transport and storage as well as to protect the material from damage and contamination:

HOT-ROLLED STEEL STRIP AND SLIT HOT-ROLLED STRIP

Treatment/destination	Unpickled	Pickled and oiled	Pickled and unoiled
Zone 1	Steel strip	Steel strip	Film layer
Zone 2	Steel strip	Film layer	Upon request
Zone 3	Steel strip	Film layer	Upon request

HOT-ROLLED CUT SHEETS

Treatment/destination	Unpickled	Pickled and oiled	Pickled and unoiled
Zone 1	Steel strip	Steel strip	Film layer
Zone 2	Steel strip	Film layer	Film layer
Zone 3	Steel strip	Seaworthy packing	Seaworthy packing

Zone 1 Austria, neighboring countries, Benelux countries, France
Zone 2 Other European countries without sea transport
Zone 3 Overseas

Complaints arising from a lower quality of packing than that recommended will not be honored.

TRANSPORT AND STORAGE

- » Transport in dry condition
- » Store in a dry environment and protected from the weather, preferably indoors in a suitable warehouse
- » Protect against condensation (avoid excessive temperature differences)
- » Use proper supports
- » Avoid local pressure loads
- » Keep storage times short

The material must be protected against any corrosion from salts, acids, alkaline fluids or other substances containing such.

In the event that the customer discovers that packaging has become wet, the coil shall be immediately unpacked and wiped dry. Quick action is required in such a case. Before it is processed, the material shall be stored in a dry and well ventilated environment. In every such case, the responsible technical specialist at voestalpine shall be contacted immediately in order to be able to initiate appropriate measures.

The supplied material, including packaging, shall be checked for product quality (identification, packaging and product condition) by the recipient of the material upon arrival. In the event that material damage or any inadmissible characteristic is discovered in the material at the time it is inspected upon arrival, this shall be documented as accurately as possible in the corresponding freight documentation:

- » Trucks: CMR
- » Railway CIM: Assessment of current condition by responsible railway company
- » Waterborne vessels: Bill of lading/deletion log

Anomalies encountered on the means of transport or in the course of unloading the material shall be documented using photographs sent to the responsible contact person at voestalpine. Such documentation excludes the possibility of the material being damaged by the consignee in the warehouse and provides evidence that the delivered material was damaged before it arrived.

Temporary surface protection (oil) is applied by the manufacturer to hot-rolled steel strip at the end of the production line. This surface protection measure guarantees temporary resistance to corrosion during transport and storage. The protective effect is only temporary (valid for a period of three months) and is subject to proper storage, transport, loading and packaging in accordance with VDEh Data Sheet 114 and VDEh Data Sheet 130. (The material shipment date ex works shall apply.) Warranties shall not apply to any corrosion on non-surface-protected material.

The actual duration of protection depends on atmospheric conditions (particularly those in the warehouse). The surface protection applied in the production line may have an effect on subsequent processes such as painting or phosphating. The customer is responsible for verifying suitability of the respective surface protection for each application.

GENERAL TERMS OF SALE

To the extent that individual technical properties and specifications are not specifically defined by the customer, e.g. by means of meaningful measurements and limit values, such properties and specifications shall merely serve as technical guidelines and non-binding target values unless otherwise agreed. voestalpine shall not grant any warranty nor be held liable for properties and/or specifications other than those explicitly agreed upon. This also applies to the suitability and applicability of hot-dip galvanized steel strip for certain applications as well as to the further processing of materials. All application risks and suitability risks are borne by the customer.

Please use the following link to find the applicable **general terms of sale for goods and services of the voestalpine Steel Division**: www.voestalpine.com/stahl/en/The-Steel-Division/General-Terms-of-Sale

ORDER DATA

The following information is required in each order:

- » Steel grades as defined by standards or explicit specifications
- » Dimensions, tolerances
- » Edge condition
- » Material test certificates, if desired; acceptance conditions upon request
- » Order quantity
- » Processing, application, photo included where possible, sketch, drawing or sample
- » Are the sheets coated, how and with what?
- » Preservation
- » For coils and slit strip
 - » Inner diameter
 - » Min./max. outer diameter
 - » With or without weld seam
 - » Min./max. coil/ring weight or min/max. kg/mm strip width
 - » Max. package weight (packing unit)
 - » Max. package width
- » For cut sheets
 - » Max. package weight
 - » Max. package height (with or without pallets)
- » Packaging
- » Labeling, marking, stamping
- » Type of transport, forwarder, customs forwarder
- » Type of truck or railcar
- » Mode of unloading, means of unloading and possible restrictions
- » Desired delivery date
- » Destination
- » Terms of delivery (Incoterms)
- » Material application

09/2019

voestalpine Steel Division
voestalpine-Straße 3
4020 Linz, Austria
productmanagement@voestalpine.com
www.voestalpine.com/steel

voestalpine
ONE STEP AHEAD.