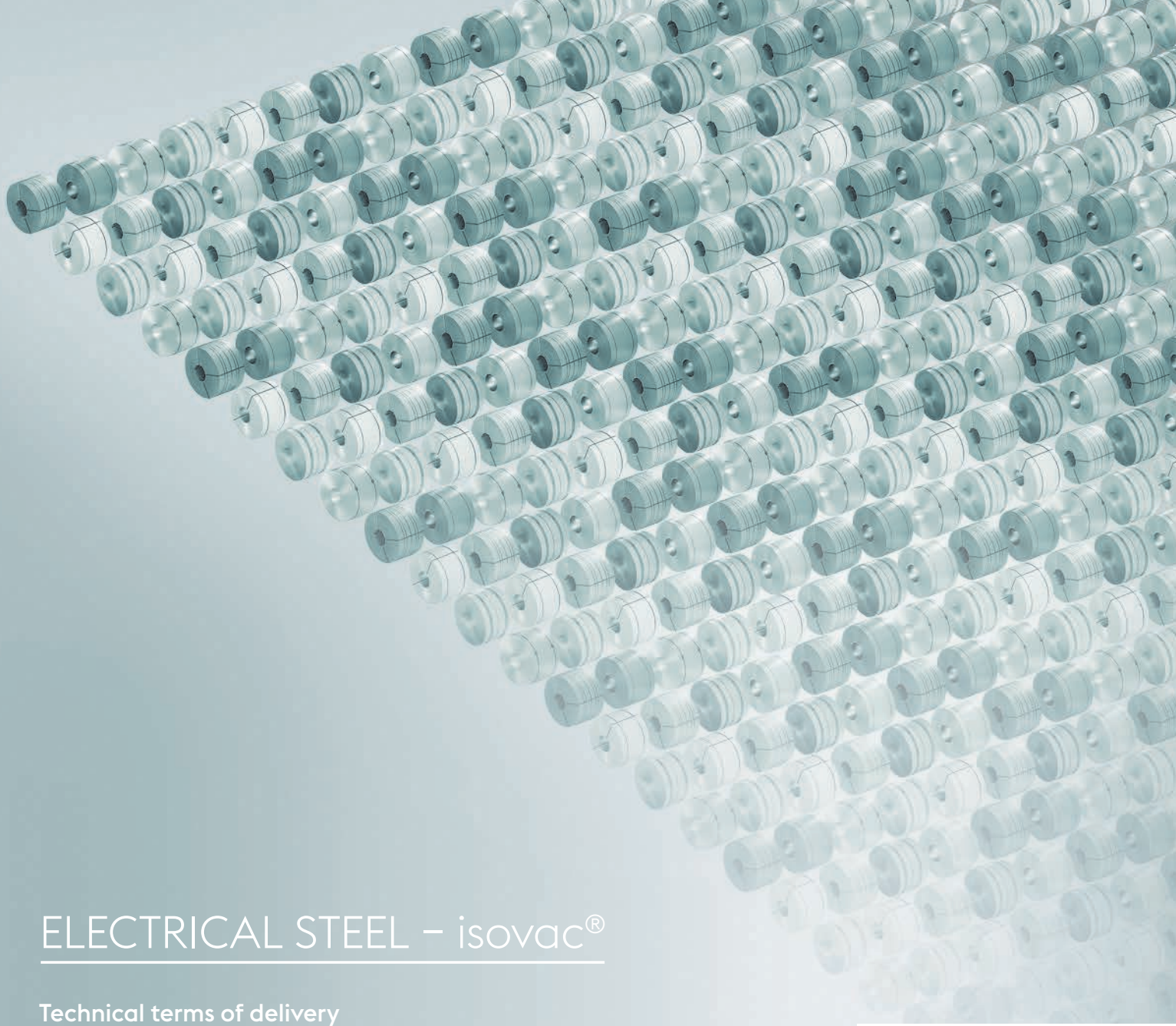

ELECTRICAL STEEL – isovac®

Technical terms of delivery
1 January 2026

greentec steel

PREMIUM QUALITY
WITH REDUCED
CARBON FOOTPRINT

voestalpine Steel Division
www.voestalpine.com/steel

voestalpine
ONE STEP AHEAD.

These general terms apply to all electrical steel 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.

CONTENT

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 of **electrical steel**. 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

isovac® ELECTRICAL STEEL BY voestalpine

Electrical steel made by voestalpine is sold under the isovac® brand name.

As a standard, the **isovac** name is added to the grade name in all company documents. Other names are subject to special agreement between the customer and voestalpine.

PRODUCT RANGE

FULLY PROCESSED ELECTRICAL STEEL
» isovac® grades
» isovac® high-perm grades
» isovac® high-strength grades

SEMI PROCESSED ELECTRICAL STEEL
» isovac® grades
» isovac® high-efficiency grades
» isovac® high-perm grades

ELECTRICAL STEEL FOR USE AT MEDIUM FREQUENCIES
» isovac® NO grades

HOT-ROLLED POLE SHEETS
(included in the technical terms of delivery for hot-rolled steels found at www.voestalpine.com)

FULLY PROCESSED ELECTRICAL STEEL

After stamping, final-annealed electrical steel strip is generally used for creating rotor or stator stacks without previous heat treatment. The adjustment of the electromagnetic properties is carried out primarily by carefully adapting the alloying elements and the annealing parameters.

With regard to geometric properties, tolerances and surface types, all fully processed products made by voestalpine are subject to the stipulations of **(EN 10106 as well as EN 10303).**

To the extent that no other standard is explicitly indicated, the currently applicable standard **(EN 10106 or 10303)** shall apply. All other parameters not defined in the standard are subject to separate agreement.

isovac® high-perm grades (HP)
isovac® high-perm grades feature a special microstructure and texture achieved in a special annealing process. This achieves higher magnetizability throughout the entire magnetic range and in higher flux density.

isovac® high-strength grades (HS)
isovac® high-strength grades achieve higher strengths through special annealing and a precisely defined microstructure.

isovac® NO grades
isovac® NO grades were developed specially for applications in high-speed machinery in the automotive industry. NO grades are fully processed and do not have to be final annealed at the customer. NO grades comply with **EN 10303** or a similar standard.

The guaranteed magnetic and mechanical properties of grades not set forth in the standards are subject to special agreement between the customer and voestalpine.

SEMI-PROCESSED ELECTRICAL STEEL

Semi-processed electric steel strip is delivered in cold-rolled (skin-passed) condition. Skin-pass rolling creates optimum processing properties in as-delivered condition and an optimized microstructure during final annealing at the customer. Individual laminations and finished stacks can be final annealed.

Final annealing is performed at the customer in order to attain specific electromagnetic properties, to decarbonize the material and to apply a thin oxide layer that acts as an insulating surface between the punching parts.

The product range of semi-processed electrical steel includes grades governed by conventional standard **(EN 10341)** as well as special grades with special properties.

To the extent that no other standard is explicitly indicated, the currently applicable standard **(EN 10341)** shall apply. All other parameters not defined in the standard are subject to separate written agreement.

All semi-processed products made by voestalpine are subject to the provisions of **EN 10341** with respect to geometric properties, tolerances and surface type. All parameters not contained in the standard are subject to special written agreement between the customer and voestalpine.

isovac® high-perm grades (HP)
isovac® high-perm grades feature a precisely defined microstructure and texture achieved through special annealing. This results in higher magnetizability throughout the entire magnetic range and in higher flux density.

isovac® high-efficiency grades (HE)
isovac® high-efficiency grades are highly decarbonized in as-delivered condition, a factor which shortens the final annealing time at the customer. The continuous annealing process and the relatively low alloy content lead to lower losses and high material magnetizability.

The guaranteed magnetic and mechanical properties of grades not set forth in the standards are subject to special agreement between the customer and voestalpine.

SURFACE

SURFACE

The conventional standards **(EN 10106, EN 10303, EN 10341)** apply to all fully finished and semi-finished voestalpine products. Deviations from the aforementioned standards must be agreed with voestalpine in advance in written form.

SURFACE FINISH

Fully finished electrical steel is delivered in non-skin-passed condition. Semi-finished electrical steel is delivered as a standard with a skin-pass-rolled surface. The average roughness value Ra is determined pursuant to **DIN EN 10049** and is performed only on semi-annealed electrical steel.

PRESERVATION

Electric steel is delivered in unoiled condition.

INSULATION SYSTEMS/COATINGS

Depending on the customer requirements, voestalpine supplies several insulating varnish systems that do not contain any toxic, carcinogenic or mutagenic constituents and comply with all the provisions of the **RoHS Directive 2011/65/EU**. Insulation systems are free of chromium and chromate compounds. Insulation systems free of formaldehyde compounds according to the manufacturers specification are available upon request.

COATING GROUPS PURSUANT TO EN 10342

C-3	C-3	C-5	C-6
Organic insulation system	Self-bonding insulation system	Inorganic/organic insulating varnish system	Inorganic/organic insulating varnish system

Varnish properties can be found in the technical data sheets. These can be provided by voestalpine upon request.

The coating thickness is measured for C-3, C-5 and Backlack using beta backscatter methods **(EN ISO 3543)** and for C-6 using magnetic inductive measuring techniques **(EN ISO 2178).**

The insulation resistance is determined pursuant to **EN IEC 60404-11,** Procedure A. As a result of the chemical composition of the varnishes, insulation resistance cannot be guaranteed for C-3 and Backlack insulation systems, irrespective of layer thicknesses, nor for C-5 insulation systems on each side with varnish layers below 1 µm in thickness.

When using Backlack, the customer must ensure compliance with the specifications in the processing guidelines. This document can be accessed under the following link:
www.voestalpine.com/isovac/en/Downloads/Downloadcenter

Special varnish property requirements are subject to special agreement between the customer and voestalpine.

ORDER QUANTITIES AND MANUFACTURED UNITS

ELECTRICAL STEEL AS WIDE STRIP (COIL)

- The minimum order quantity per line item is one coil production unit (depending on the steel grade, between approx. 16 kg/mm and approx. 19 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.

ELECTRICAL STEEL AS SLIT STRIP OR CUT SHEETS

- The minimum order quantity per line item is one coil production unit, which ranges roughly between approx. 16 kg/mm and approx. 19 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.
  - Subdivision to ≤ 6 t is possible for cut sheets and packages of tailored blanks.
- Overdelivery and underdelivery is permitted up to +/–10%.

WEIGHTS

- The maximum weight per coil of steel strip is 30 tons.
- The maximum weight per package of cut sheets is 6 tons.

AVAILABLE DIMENSIONS

Fully processed electrical steel is supplied pursuant to **(EN 10106, EN 10303),** and semi-processed electric steel pursuant to **EN 10341.** Limited tolerances and other parameters not contained in the standard are subject to special written agreement between the customer and voestalpine.

Products made of electrical steel are supplied in the following forms:

» Wide strip (coil), with mill edge or cut edge
» Longitudinally slit strips with cut edges
» Sheets with cut edges

Detailed information on available dimensions can be found in the product information.

ELECTRICAL STEEL AS WIDE STRIP (COIL)

Product variant	Thickness [mm]	Width max. [mm]	Outer diameter max. [mm]	Inner diameter [mm]
isovac®	0.25–1.00	1600	2000	600 *

Available combinations of widths and thicknesses vary depending on the steel grade.
* Indicated references are standard values.

ELECTRICAL STEEL IN SLIT STRIPS

Product variant	Thickness [mm]	Strip width max. [mm]	Outer diameter max. [mm]	Inner diameter [mm]
isovac®	0.25–1.00	19–1600	850–2000	500/600 *

Available combinations of widths and thicknesses vary depending on the steel grade.
* Indicated references are standard values.

ELECTRICAL STEEL CUT TO LENGTH IN SHEETS AND TAILORED BLANKS

Product variant	Thickness [mm]	Width max. [mm]	Length max. [mm]	Package weight max. [t]
isovac®	0.25–1.00	300–1550	300–5000	6

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

Please use the following link to find the maximum respective prematerial width in the respective product data sheet for each grade: www.voestalpine.com/isovac/en/product-overview/data-sheets

INSPECTIONS

Characterization of electrical steel with respect to test units, sampling and performance of inspection tests is pursuant to the stipulations contained in the respective order standards and/or specific agreements at the time of the order. Additional tests are subject to special agreement between the customer and voestalpine and must be included in written form in the order.

MAGNETIC AND MECHANICAL PROPERTIES

The magnetic properties of fully processed electrical strip **(based on EN 10106 or EN 10303)** are determined in as-delivered condition **EN 60404-2** or **IEC 60404-10.** The density pursuant to **EN 10106,** Table 1, or pursuant to **EN 10303,** Table 2, is to be used for the magnetic test.

The magnetic properties of semi-finished electrical steel strip are the result of a test conducted subsequent to heat treatment in accordance with **EN 10341.** The test is performed pursuant to **EN 60404-2,** whereby the density based on **EN 10341,** Table 1, is to be used.

The mechanical properties are determined at room temperature pursuant to **EN ISO 6892-1,** Method B.

TEST CERTIFICATES

A request for test certificates as set forth in **EN 10204** may be specified in written form. A 2.2 test certificate based on **EN 10204** is the standard.

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

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

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. 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 an order is placed, 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 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.

ADDITIONAL INFORMATION

WELD SEAMS

If not otherwise agreed at the time of the order, electrical steel may feature weld seams after cold rolling. Should the customer specification designate that weld seams resulting from cold rolling are not acceptable, voestalpine shall reserve the right to laser-join strip ends after eliminating errors. Laser-joined strip ends are also admissible for underweight coils. As a result of the highly localized heat input in electrical steel, laser joints are characterized by only slight increases in hardness and geometric thickness. Non-acceptance of laser joints is subject to special written agreement between the customer and voestalpine. In cases, voestalpine cannot make any commitment to any lower limits for coil weights or outer diameter.

PROCESSING INSTRUCTIONS AND GUIDELINES

SPECIAL PROCESSING INSTRUCTIONS FOR SEMI-PROCESSED ELECTRICAL STEEL

Resulting from the manufacturing method and supply in the form of coils or slit strips, semi-processed electrical steel in accordance with **EN 10341** and semi-processed isovac®-grades in as-delivered condition may feature residual curvature inner tension. Preventive measures must be taken by the consumer to minimize or eliminate the effects of these properties during processing or application of the product.

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.

BACKLACK PROCESSING GUIDELINES

Special precautions must be taken when storing and processing Backlack-coated material, which are summarized in the Backlack Processing Guidelines. These are available at www.voestalpine.com/isovac/en/Downloads/Downloadcenter or can be requested from your Technical Account Manager.

MARKING

Electrical steel is delivered by voestalpine without a strip mark.

PACKAGING

Products can be supplied with inner diameters of approximately 500 or 600 mm. Packaging guidelines are to be agreed upon between the customer and voestalpine. Selected products may require single-row coil storage as a result of their weight, strip thickness and insulation or a combination of these properties. The customer must ensure that coils designated as such are stored accordingly. Any damage resulting from non-compliance with these regulations shall not be compensated by voestalpine.

The inner and outer windings of coils and slit strips are considered to be packaging and are not representative of the properties in the remaining windings of the coil or slit strip.

TRANSPORT AND STORAGE

» Transport in dry condition
» Manipulate only with suitable hoisting devices
» The material must be stored in a dry place and protected from the weather
» Protect against condensation (avoid excessive temperature differences)
» Use proper supports
» Avoid local pressure loads
» Keep storage times short

The provisions of the Backlack Processing Guidelines shall apply to Backlack-coated material. 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.

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 pre-materials 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:

- Designation of the applicable customer specification
- Steel grades as defined by standards or customer specification
- Dimensions
- Edge condition
- Order quantity
- Type of insulation, including thickness in µm
- For coils and slit strip
  - Max. outer diameter
  - Max. coil/ring weight or max. kg/mm strip width
  - Max. package weight (packing unit)
- For cut sheets
  - Max. package weight
  - Max. package height (with or without pallets)
- Packaging
- 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

01/2026

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