
PACKAGING MANUAL

For Deliveries to the J.M. Voith SE & Co. KG | VTA Plant in Garching/Munich

In order to enable an effective handling of the large amounts of goods that arrive at our plant in Garching/Munich, we make extensive use of standardized packaging material.

The use of our packaging is integrated into the overall flow of materials - from the packaging process at your, i.e. the suppliers' facilities to the shipping, transport and goods receipt stages and any processing in production and storage, all the way up to the removal for assembly. It is therefore very important that you closely observe the systems and procedures described in this manual that result from the integration.

This manual is a compilation of the descriptions and instructions that relate to the use of our packaging. These instructions and information should be of mutual benefit during your deliveries to us. Furthermore, we would like to refer to the overarching directive of Voith Turbo "Global logistics directive".

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1 General

Packaging is nowadays an important factor for efficient logistics. In order to live up to this status, we wish to work with our suppliers to establish an effective and economical stock turnover system.

We hope that the following pages will contain answers for you as the supplier to questions that may arise in the context of using packaging.

We would be happy to provide you with any further information.

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Delivery times:

Garching plant: 7 am – 3 pm

Goals of the packaging system:

- More efficient handling
- Flexibility
- Lower costs
- Effective protection of goods
- Reliability in delivery
- Environment

Unit continuity

Unit continuity means that one and the same part number is always packed in the same manner (with added palletizing pictures if appropriate). The goods handling system can thus run according to a plan.

Specified use

This packaging manual regulates the use of Voith-approved packaging. Written authorization must be obtained for deviations from these specifications prior to delivery.

Supplier's responsibility

Even if no packaging specifications have been agreed with the supplier, damage-free delivery of the parts must be guaranteed. This must be adhered to according to VDA Recommendation 5000.

The supplier is additionally responsible for:

- Procurement of supplier-owned containers
- Providing information in case of changes to container utilization
- Communication in the event of changes to the delivery location for empty containers
- Transportation and development of packaging for sample components or pre-series parts.
- Cooperation with regard to sample packaging

2 General requirements for packaging and packaging aids**Small load carriers**

The permissible weight for single cartons is at most 10 kg. In exceptional cases, the weight can be a maximum 15 kg if an appropriately stable carton is used. Outer packaging (containers, boxes) and additional packaging (foil, foil bags, workpiece carriers, etc.) guarantee protection of the parts from mechanical damage and corrosion. By default, standardized and pooling-capable VDA small load carriers complying with DIN 30 820 or VDA Recommendation 4500 must be used. For parts with larger dimensions or bulky geometry, the following special reusable packaging is possible:

- Mounting frames for euro pallets or industrial pallets
- Stackable special containers/workpiece carriers

Large load carriers

If transport in a pallet cage is necessary, this is only possible following consultation.

When carrying out the packaging, you must make sure that the goods can be stacked. The size of the packaging should be fully utilized, i.e. the pallets should be completely and uniformly filled with the goods.

In every case: **no mixed pallets, i.e. only one part number per pallet.**

Inner packaging

In order to guarantee that the products are properly handled and also protected, different types of inner packaging must be used in small load carriers, transport cases or in pallets with mounting frames.

They are subdivided into:

- Reusable inner packaging
 - Blister cards
 - Plastic intermediate layers
- Disposable inner packaging
 - Deep drawn molds of plastic
 - Cardboard cutouts
 - Foils
 - Corrosion protection paper

2.1 Permissible packaging materials

"Only reusable packaging made from recyclable materials should be used. For all disposable packaging, environmentally-compatible, recyclable materials that are widely accepted for recycling must be used

VCI foil may be used only if not colored. See VDA Recommendation 5000, part 3, 2003

Packaging material made from food (e.g. popcorn) should not be used. Goods tags must not deform the packaging material in such a way that the material can no longer be recycled. (see VDA Recommendation 5000). The following table displays an overview of permissible packaging materials.

Type	Recommended material	Example of non-recommended material
Cardboard	Papers and cardboard free of substances harmful to paper production	Papers and cardboard with water-insoluble coatings or glues
Corrosion-protection paper	VCI papers that have been shown to be recyclable together with paper/cardboard	Paper with incompatible additives, incompatibly impregnated paper
Plastics	Molded parts: PE, PP Protective caps: PE Foil: PE (colorless) Foamed materials: PE, PP, PS Strapping belts: PP (black)	Plastic mixtures, rubber compounds, metal-plastic composite foils, incompatibly impregnated and VCI plastic foils, colored VCI foil
Metals	Steel including galvanized or painted, aluminum	
Wood	Non-impregnated solid wood and plywood, wood wool	Chipboard, coated or painted wood
Textile	Cellulose fibers (including cotton, sisal, hemp)	Oilcloth
Glass	Only if absolutely necessary for chemical compatibility with the filling material	Glass wool
Minerals	Activated clay, perlite, silica gel, vermiculite	Mineral wool

Table 1 : see VDA Recommendation 5000, 2003

2.2 Preservation and storage

The goods must be preserved in accordance with the order and delivery specification, or according to the requirements of the packaging data sheet in such a way that they do not corrode.

Even if there are no precise requirements in the packaging data sheet, corrosion-susceptible parts made from steel and cast iron must nevertheless be protected throughout against corrosion by using solvent-free corrosion-preventing oil (e.g. Castrol Rustilo 650).

Corrosion-susceptible spare parts made from steel and cast iron must be protected against corrosion over the entire surface by dipping into solvent-free corrosion-preventing oil (e.g. Castrol Product 498/1).

If VCI film is used, the outer packaging must exclude any damage to the VCI foil during transport.

Corrosion protection must be applied to clean, dry surfaces free of chips and burrs. Special instructions for use of the anti-corrosive agent in question must be observed. Protection must be maintained for at least 6 months. No wax-based protection agents may be used.

All parts made of corrosion-proof materials (e.g. stainless steel, aluminum, bronze, plastic, etc.) are not preserved. They must be clean and free of burrs and chips.

2.3 Load securing

Responsibility

- The operating company for the vehicle is responsible for proper packaging and load securing; see German Road Traffic Regulations (StVO).
- The operating company may only use vehicles that are in proper condition.
- The operating company must take care that the load-securing means are approved, inspected and in proper condition.
- The driver is responsible for performing the load-securing measures.

Regulations and resources

- VDI 2700 contains the guidelines for load securing.
- Load securing must reflect the state of the art.
- VDI 2700 stipulates among other things that the vehicle owner is obligated to provide sufficient load-securing means such as anti-slip mats and suitable slings.
- Slings must be certified with a permanent label as per DIN EN 12195-2.
- The driver must carry out the load-securing on the basis of VDI 2700. They are also obligated to check the load-securing after moving off and make any corrections if necessary.

In the event of questions regarding packaging, please contact:

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3 Packaging planning and specification process

The supplier must always cooperate in packaging planning (see VDA 5000). The supplier must send a packaging proposal to the Packaging Planning team at Voith Turbo. It is important in this regard to use existing containers from the packaging catalogue (see section 7) as far as possible. If the required containers are not offered, containers from VDA Recommendation 4500 should be used, as far as possible. It is possible that the Supplier may receive the appropriate packaging materials from Voith in order to carry out a packaging test. The packaging proposal must be documented (in writing and visually) in the Voith packaging data sheet. The packaging planning process relates to all parts (standard parts, sample parts, series parts, etc). The further course for determining packaging is set out in sections 3.1 to 3.2.

Packaging data sheet

All relevant packaging data will be managed in an ERP system by item number. Controlling and planning systems at Voith will access this data. Packaging data is recorded with the packaging data sheet. During the initial specification and in the event of modification of packaging, the packaging data sheet form must be filled out by the supplier and sent to the packaging planning team. After internal testing with the involved departments, the data from the packaging data sheet is established and imported into the packaging system.

3.1 Standard packaging

Step	Interface	Activity
1	Purchasing	Contract award including definition of the packaging conditions
2	Parts supplier	The supplier sends a packaging proposal with the filled-out packaging data sheet (form) to the packaging planner, using Voith packaging (see section 7) and taking into account legal regulations
3	Packaging planning	Examination of the packaging proposal in coordination with: <ul style="list-style-type: none"> - Material Requirements Planning - Supplier Quality - Assembly Planning - Logistics Planning - Production Planning <p>If approved, step 4; otherwise adjustment of the proposal from the packaging data sheet</p>
4	Packaging planning	Finalization of the packaging data sheet and import of data into Voith's internal system
5	Packaging planning	Sending the packaging data sheet (final specification) to the supplier
6	Parts supplier	Returning the signed packaging data sheet to Packaging Planning within 12 working days

3.2 Special load carriers and workpiece carriers

Step	Interface	Activity
1	Purchasing	Contract award
2	Parts supplier Packaging planning	Joint development of suitable packaging/workpiece carriers
3	Packaging planning	Examination of the packaging proposal in coordination with: <ul style="list-style-type: none"> - Material Requirements Planning - Supplier Quality - Assembly Planning - Logistics Planning - Production Planning
4	Purchasing Parts supplier	Coordination of the cost allocation and procurement of the packaging material
5	Packaging planning	Finalization of the packaging data sheet and import of data into Voith's internal system
6	Packaging planning	Sending the packaging data sheet (final specification) to the supplier
7	Parts supplier	Returning the signed packaging data sheet to Packaging Planning within 12 working days

4 Marking of goods and packaging

In order to enable identification and traceability of subcontracted parts, it is necessary that the transport packaging/load unit as well as the product packaging/inner packaging be provided with valid goods tags in accordance with VDA 4994 V1.1. The goods tags must not be covered by packaging means or other materials.

Transport packaging/load unit:

Containers or packaging items, which are usually loaded and unloaded individually by forklift trucks, are referred to as load units

Product packaging/inner packaging:

Product packaging is understood to mean individual packaging items on the supplier and the customer side that are used until reaching the point of consumption.

In simplified (single-stage) load units, the both aspects are combined. In single-stage packaging, the outer packaging/load unit is simultaneously the inner packaging.

The goods (designation, material number, etc.) must also be labeled in the form of a barcode. A QR code should also be used if possible, but this is not yet expressly required by the Garching plant.

VERSENDER LIEFERANT GMBH WERK BERLIN BERLIN DE-10117 ID: 12345678901234567		EMPFÄNGER KUNDE AG WERK MUENCHEN INDUSTRIEPARK 13 DE 80888 MUENCHEN WERK / ABLADE STELLE / INTERNER BESTIMMUNG SORT 011 / ABLAD123 / LAGER7		S 
URSPRUNGSLAND DE	LIEFERSCHENNUMMER 12345678 LIEFERANTENNUMMER 98765432101234567		KUNDENSPEZIFISCHES ROUTING A1B2C3D4E5F6G7 LINE 15	
SCHLÜSSELNUMMER GFS-123-554-888 				
PACKSTÜCK-ID (LQ) UN 987654321 000123457 		PACKMITTEL TYP 6280RL VERSANDDATUM S 2016-01-14 CHARGENNUMMER CH1234 TEILEGEN.-HARDW. / SOFTW. STAND E234567 / HH123456 / S123456		
LIEFERANTENSPEZIFISCHE DATEN 		KUNDENDATEN ZEILE 1 CUSTOMER DATA LINE 2 KUNDENDATEN ZEILE 3 CUSTOMER DATA LINE 4 KUNDENDATEN ZEILE 5		

Figure 2: Goods tag of a load unit

4.2 Goods tag for small load carriers (product packaging)

Each individual packaging item (small load carrier) must be labeled with the Voith internal material number, barcode, material designation and the filling quantity of the packaging item.

If disposable or reusable containers are utilized that do not allow use of the conventional small load material carrier label due to their size, a label size of 210 x 42 mm (KLT2 as per VDA 4994) can be used.

Small load carriers conforming to VDA

Integrated label holders (see figure), which are to be used for labeling and identification of the small load carrier boxes, are situated on all sides. It is important in this regard **not** to use **self-adhesive labels**. The supplier must take care that the marking of the small load carriers according to VDA Recommendation 4994 is guaranteed.



Figure 3: Small load carrier conforming to VDA

VERSENDER ID 12345678901234567	EMPFANGER KUNDE AG	LIEFERSCHEINNUMMER 12345678		PACKMITTELTYP 6280RL	VERSANDDATUM S 2016-01-14
LIEFERANTE NUMMER 12345678	VERWIRTSCHAFTSSTELLE LINE15	KUNDENSPEZIFIKATION A1B2C3D4E5F6G7		CHARGE NUMMER CH1234	TEILEGENERATIONEN-/HARDWARE-/SOFTWARESTAND E234567 / HH123456 / S123456
SACHTNUMMER WIDERSTAND 50 OHM GFS-123-554-888		1J UN 987654321 000123457		MENGE 1000	KUNDENDATEN ZEILE 1 CUSTOMER DATA LINE 2 KUNDENDATEN ZEILE 3 CUSTOMER DATA LINE 4

Figure 4 : Single label in KLT2

4.3 Goods tags for initial samples

If the Voith order requires a delivery of INITIAL SAMPLES, a yellow goods tag labeled "INITIAL SAMPLE" must also be attached to the delivery unit in addition to the normal goods tag. This goods tag must be mounted on the delivery unit in the same manner as the normal goods tag and to the right of it. The respective goods must also be marked as initial samples.

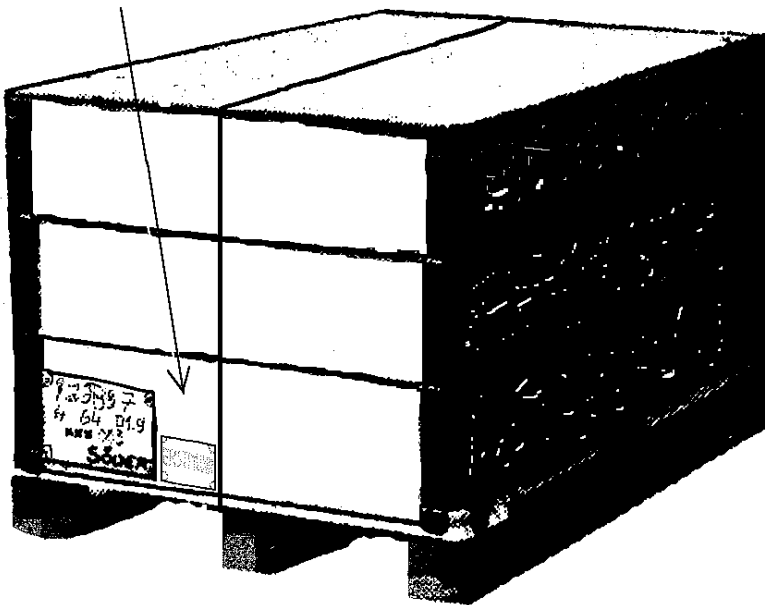


Figure 5: Two goods tags on each pallet unit. The goods tags must not be attached above or underneath the strapping.

5 Delivery note

The delivery note must be enclosed with the shipment as an ancillary shipping document. The supplier must adhere to VDA Recommendation 4913 in this regard. Barcode delivery notes must always be used for shipments to our factory. The barcode is a fixed component of our logistics concept and leads to a considerable simplification in the recording of incoming goods.

6 Cleaning of reusable containers/workpiece containers owned by Voith

Standard load carriers from Voith, as listed under point 7.4, will be cleaned by Voith after removing the parts.

Customized load carriers/workpiece carriers that are not covered by point 7.4 will also be cleaned. There are separate agreements with affected suppliers in these cases.

7 Packaging from Voith Turbo

7.1 Requesting packaging material

The packaging material must be designed such that safe transport and safe reloading is possible with common means of transport.

Container requirements

The stock of reusable packaging material owned by Voith must not be larger than the requirement for 15 working days.

Frames, covers and organizers will be provided by us as needed at no cost and are the property of J.M. Voith SE & Co. KG | VTA, Garching plant. Other packaging material and necessary consumables such as strapping, plastic bags, rust-protective paper and so on must be provided by you (**do not use corrugated board**). The use of special and inner packaging can be found in the part-specific packaging data sheets.

For requesting packaging material please always state:

- Your Voith supplier number
- Complete information on type, size and quantity of packaging
- Delivery address
- Delivery date

Please request required quantities of empty packaging no later than 12 working days before the date needed

Remarks:

In a joint effort to achieve an economical flow of materials, we reserve the right to return deliveries that do not correspond to the specifications at your expense, or to invoice the extra expenses.

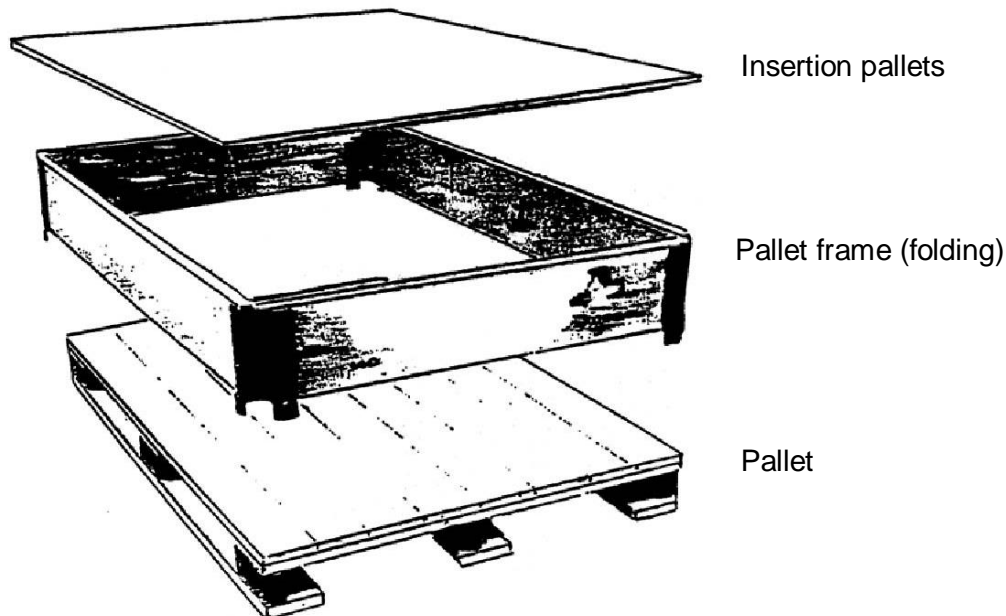
7.2 Components and requirements for a pallet unit

Figure 6: Structure of a pallet unit

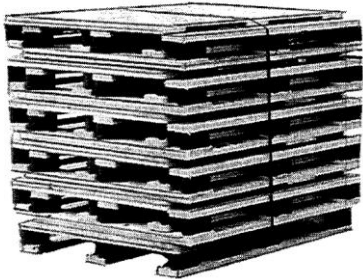
Please note:

- Maximum weight per pallet unit (gross) **700 kg**
- Maximum number of frames per pallet **3 pcs**

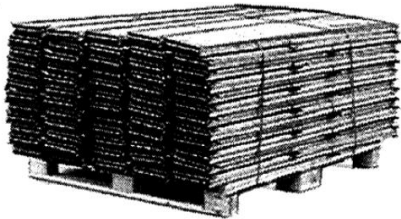
7.3 Large load carriers

Euro pallets

- Exchange via shipper



Frames



- 50 pieces/bundle on a pallet

Article Number	Designation	Material	Length	Width	Height
001.000581	Euro pallet	Wood	1200 mm	800 mm	144 mm
001.000582	Frame for Euro pallet	Wood	1200 mm	800 mm	190 mm
001.002414	Intermediate layer for Euro pallet	Wood	1160 mm	745 mm	
001.000416	Euro pallet cage	Steel	1200 mm	800 mm	920 mm
001.000580	Industrial pallet (VTM)	Wood	1200 mm	1000 mm	144 mm
001.000578	Frame for industrial pallet	Wood	1200 mm	1000 mm	190 mm
001.002014	Intermediate layer for industrial pallet	Wood	1140 mm	940 mm	10 mm
001.000579	Cover for industrial pallet with frame	Wood	1200 mm	1000 mm	
	Wooden intermediate layer for Euro and industrial dimension	Wood			
001.002526	Wire mesh intermediate layer	Plastic	1120 mm	920 mm	2 mm

Table 2 - Large load carrier/intermediate layers

7.4 Small load carriers

Small load carriers conforming to VDA:

Article Number	Designation	Material	Length (external)	Width (external)
001.002927	KLT 3214	Plastic	300 mm	200 mm
001.000576	KLT-4321	Plastic	400 mm	300 mm
001.000548	KLT 4328	Plastic	400 mm	300 mm
001.002734	KLT 4314	Plastic	400 mm	300 mm
001.002735	KLT 6414	Plastic	600 mm	400 mm
001.000618	KLT 6421	Plastic	600 mm	400 mm
001.000583	KLT 6428	Plastic	600 mm	400 mm
001.002156	Cover for small load carrier	Plastic	-	-
001.000691	Small load carrier intermediate plates	Plastic	330 mm	240 mm
001.000575	Small load carrier cover D32	Plastic	300 mm	200 mm
001.000619	Small load carrier cover D64	Plastic	600 mm	400 mm
001.000559	Small load carrier cover 43	Plastic	400 mm	300 mm

Table 3 - Small load carriers conforming to VDA

8 Material without specified packaging

8.1 Disposable packaging

- Disposable packaging must be avoided as much as possible. Exceptions must be coordinated in every case with Voith expert offices.
- Disposable packaging is always provided by the supplier and must satisfy the following requirements:
 - Damage-free, problem-free handling by industrial trucks (DIN 15140)
 - Sealing aids according to size and weight
 - Easy removal of parts
 - Eco-friendly material
 - Moisture protection
 - Standard dimensions of loading unit and modular structure

- Permissible total weight per packaging item may be at most 10 kg

8.2 Packaging/containers if no specification for packaging is available:

- Selection of the smallest possible container from the Voith standard container portfolio.
- High packing density.
- Avoidance of unnecessary extra packaging/filler material.
- Use of required additional packaging must be limited as much as possible.
- Suitable materials, taking into account disposable/reusable solutions.
- The disposable packaging must be designed such that optimal functionality with respect to easy, ergonomic and economical handling of the inner packaging and the parts is achieved.

Independently of the selection of packaging type, the following requirements must be satisfied:

- Damage-free part delivery (no impairment of quality)
- Optimal utilization of the containers and formation of efficient load units
- Marking of each individual container (VDA or Odette label affixed with transparent glue dots or in label holder)
- Transport protection
- Ability to unload the transport vehicles by forklifts without problems
- Observance of the required standard dimensions
- Favorable parts removal
- When delivering parts on (wood) pallets, take care that they do not protrude from the pallet either in the width or the length direction. This also applies to packaged parts (in cartons for example).

9 Cost allocation/transfer of costs

As a supplier, you are responsible for proper use and handling of the packaging. Damaged or lost Voith packaging materials will be invoiced to you. Note that you as the supplier are responsible for the appropriate packaging being available for an on-schedule delivery. Therefore please order packaging in a timely manner, i.e. at least **12 working days before shipping deadline!**

The supplier shall bear all additional costs (e.g. repacking, special transportation) that can be attributed to delayed or incorrect package orders.

9.1 Procurement of Voith standard load carriers

Standard Voith load carriers as listed under point 7 are procured from the "Packaging Planning" department. Containers that are property of Voith may be used only for transport to the plant in Garching.

9.2 Procurement of special load carriers and workpiece carriers

The cost allocation for load and workpiece carriers to be acquired will be negotiated between the supplier and Voith.

10 Inventory

We request that you carry out a quarterly physical inventory of the Voith packaging material in your possession on request. For pallet cages, the inventory will be compared monthly. If necessary, we may request unscheduled inventories. The respective quantity must be noted on an inventory report.

Missing quantities will be invoiced to you or debited.

Please observe timely return of the inventory report.

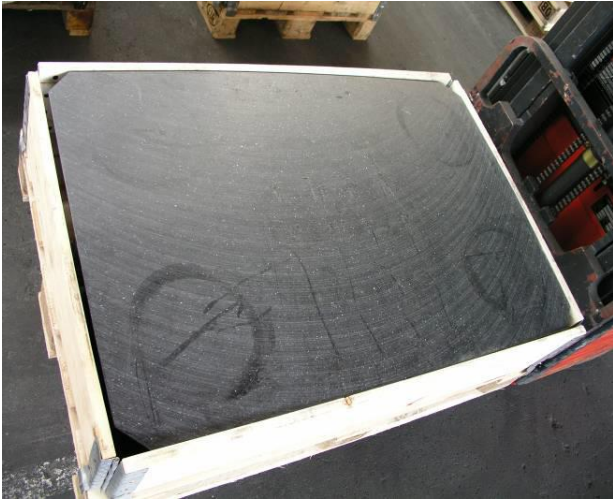
Please note that you as the supplier are obligated to observe the specifications described in this manual. We are looking forward to working together with you as partners.

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85748 Garching, Germany

Created: 2019-09-13
Revised:

11 Annex

11.1 Application examples for organizers and intermediate bottom plates



11.2 Packaging data sheet template

11.3 Empty container order form

11.4 Revision history

Version	Chapter	Revision/addition
1.3	1-11	Updating (overall)