Logistics Manual

The standards of Zollner Elektronik AG and their affiliated companies

Contents

01 Area of Application / Necessity / Goal Setting

A deliveries and services rendered by supplies to Zollner Elektronik AG and its affiliated companies (henceforth referred to as "Zollner"), must be executed in compliance with the specifications in this Logistics Manual, in short: LM.

All relevant processes and standards have been recorded in this manual to guarantee standardized and error-free processing of deliveries to Zollner.
Among other things, this is necessary because the standard requirements of the supply process and product-specific requirements (e.g.: requirements for traceability, packaging, etc.) require the highest level of quality for the supply standard.

Through the specifications in this manual, trouble-free flow of materials should be ensured within the supply chain. Furthermore, collaboration between the suppliers and Zollner is made easier with the help of this Logistics Manual, and continuous improvement of the quality and supply performance should be achieved.

The Logistics Manual in hand contains general packaging guidelines for use between Zollner and its suppliers. The responsible Zollner packaging planner and the suppliers agree conclusively on packaging rules for the defined, product-specific packaging. The Logistics Manual supplements the agreed-upon packaging rules in the quality assurance agreement.

02 Information on Copyright

This manual and all of its parts are copyright protected. Every use without the approval of Zollner is not permitted. This applies especially for Reproduction, translation and storage and processing in electronic systems.

03 Information on Supplemental Documents

Document Ranking Order

The depicted guidelines and information supplement existing location and/or part-specific rules and/or contracts where applicable.

If the regulations stated in the Logistics Manual contradict information about location and/or part-specific regulations or other individual agreements, the location and part-specific regulations take precedence.

Violations against the defined logistic guidelines are recorded in Receiving inspection and immediately rejected in writing to the supplier. The supplier is obliged to remedy the causes for the complaint. The complaints are entered into the supplier rating (quality assessment).

04 Glossary

- EDI **Electronic Data Interchange**

EDI is the umbrella term for fully automated shipment of structured messages between the ERP systems of business partners.

- EDIFACT **Electronic Data Interchange For Administration, Commerce and Transport**

EDIFACT is a cross-sector, international standard for the format of electronic data in business communications.

- WebEDI

WebEDI is the interface through which a Zollner web portal for the Electronic Data Interchange System to make an inexpensive EDI solution for suppliers possible.

05 Communication Standards

Please send any questions about the described standards for suppliers to the following email address:

- **Electronic Data Communication:** edi@zollner.de
- **Marking Shipments:**
  warenkennzeichnung@zollner.de

The responsible departments are also available to you for general questions.

06 Procurement Transport

For deliveries to Zollner, the following conditions regarding transport as well as the creation of shipping units are to be observed:

6.1 Transport/Shipping Specifications for Suppliers

For transports that incur costs for the Zollner Group, agreed upon via Incoterms®, business partners must adhere to the Zollner Shipment Guidelines and commission the transports accordingly. For questions or clarifications regarding transport, where Zollner is the freight payer, please contact your contact person at Zollner or the following email address: shipment_guideline@zollner.de.

It is mandatory that the SAP order number is provided as a reference number for each transport notification. This applies regardless of whether the delivery is made via a shipping company or directly by Zollner.

For questions, please contact Mail Global: shipment_guideline@zollner.de or your contact person in the business division.

Upon noncompliance with the Zollner Shipment Guidelines, no freight or other costs will be assumed by Zollner. These costs are to be paid by the supplier.

6.2 Incoterms

Only the valid Incoterms® rules issued by the International Chamber of Commerce (ICC) apply.

In supplement, the following regulations are also to be adhered to:

- correct referencing of Incoterms on delivery documents: [the selected Incoterms® clause], [named port, location or place] – [Incoterms® 2020] example: FCA Miami International Airport, Cargolux warehouse – Incoterms® 2020

- sole use of exactly identified commercial terms in accordance with Incoterms: Use of statements like "ex works" or "free house" is prohibited.

Delivery conditions according to national commercial law are also excluded. An example of this: USA, Uniform Commercial Code (UCC).

6.3 Transport Documents

The following information is to be attached to the shipping documents and especially the delivery note/shipping note (data is transmitted by Zollner upon order placement):

- Recipient
- Shipping Note Numberr
- Purchase Order Number
- Part Number
- Quantity
- Supplier
- Delivery address

- For special cases, such as express, oversized, or hazardous shipments, written approval must be obtained from your Zollner contact person before shipping.

6.4 Transport Insurance

Zollner is self-insured. No additional transport insurance may be taken out at Zollner's expense.

07 Packaging

The selection of packaging is made in accordance with the waste management goals of environmental protection regulation. Therefore, inasmuch as it is sensible and economically viable, reusable packaging is preferred for use.

General rules that also need to be observed:

- For air freight, pallet height cannot exceed 160cm.
- Palletized goods are not permitted to be shipped with a parcel service.
- The optimal pallet size for ocean freight FCL shipments is L-114cm x W-98cm.

The points listed above are also part of the Shipment Guideline (please note: IPPC standard).

7.1 Term Definitions

Package goods: goods that are packaged.

Packaging: products designated as packaging are used for packaging products. Examples of packaging in daily life are: bag, sack, box, carton, tray, bottle, glass, cover, bottle caps, polystyrene, paper and foil.
Packaging aids: the part of packing that helps to affix and seal packaging in a shipment. Materials for padding and shipment marking are also designated as packaging aids. Among these are also materials that improve the stability of the packaging on the outside (protective and insulating lid)

and the inside (foam, Styrofoam, etc.).

One-way packaging: packaging intended for just one use (e.g.: boxes).

Reusable packaging: packaging that can be used multiple times without negatively impacting the protection, transport, storage and transfer function and is used in open or closed circulation.

Returnable packaging: reusable packaging that has a material number and is exchanged with partners. Examples of returnable packaging are ESD crates, wire mesh boxes and Euro-pallets.

Loading unit: in logistics, a physical transport unit is typically designated as a loading unit (LU) . A typical loading unit is mostly made up of the loading equipment (e.g.: pallet, container, tray, wire mesh box pallet, unit load device), loading unit securing equipment and the package.

Loading units can be divided into three groups:

- **LU with a structural function:** pallets made of wood, plastic or metal; examples: Euro-pallet or industrial pallet. Proper as-delivered condition of all of these pallets is important.

- **LU with surrounding form:** wire mesh box pallets; further examples are: solid panel box pallets, folding crates and collapsible boxes (these provide a space saving of 60% upon return shipment).

- **LU with enclosing form:** container or swap bodies, etc.

There are special air freight containers for air freight. Securing the load/stacking: this securing serves protection of the loading units from various stresses: shifting, rolling, tipping over, fanning out, moisture, contamination, etc. (e.g.: tape, safety belt, anti-slip mats, edge protectors, foils).

- No damaged pallets or wire mesh boxes are to be used for delivery.

- Only in accordance with applicable load securing guidelines is it permitted to

  - secure the load,
  - stack the load.

- Damage to the package goods is to be ruled out.

7.2 Packaging Basics

The following basic principles are to be observed by suppliers:

Avoiding packaging: packaging cannot be larger and more elaborate than is absolutely necessary for the protection of the goods (package goods).

Maximum fill level: Containers are to be delivered by the supplier observing the maximum fill level.

The following maximum weights apply:

- LLC (large load carrier): max. 1000kg
- SLC (small load carrier): max. 15kg

Packaging planning/design
For clarification of the design or basic configuration of the packaging, coordination must take place with the respective "Packaging Planner" at Zollner. This is typically a contact person from the respective CFT or the GE division ⟶ Packaging Specification (Zollner).

Automated processing is to be taken into consideration in planning for packaging. **Dimensions of reusable packaging should coincide with standard sizes.** Regulations typical to the location and sector apply for Euro-pallets and European wire mesh boxes. In cases of doubt, the regulations of the European Pallet Association apply (Internet: www.epalpallets.org).

Packing materials
When using one-way and reusable packaging, reusable packing materials should also be utilized and marked to correspond with the specifications of the waste management industry. Only single materials are to be used. Composites are not permitted. The specifications of EU Directive 94/62/EG are to be adhered to for packaging.

Reusable packaging must be resistant to cleaning agents and heat. Local and typical sector regulations apply to wooden packaging.
To protect indigenous forests against the introduction of wood pests, the UN International Plant Protection Convention (IPPC) issued "Guidelines for Regulating Wood Packaging Material in International Trade" for the international shipping of packaging made of solid wood, ISPM 15 (International Standards for Phytosanitary Measures). That requires adherence.

Preferred packaging
If one-way and reusable packaging are equal from an economic and qualitative standpoint, reusable packaging should be preferred. Reusable packaging able to be in a pool (= returnable packaging: Euro-pallets, Euro wire mesh boxes, VDA-SLC, etc.) are to be preferred over those that are not.

Stackability
The packing must be able to be stacked.

Cleanliness and damage
Packaging must be provided clean and undamaged. Reusable packaging must be designed such that it can be completely empties, is easy to clean and easy to dry.

Cleaning must be done by the supplier.
Individual regulations are to be agreed upon with Zollner. If containers in Zollner's possession are or become damaged, they can only be scrapped or repaired in coordination with the responsible contact person.

Acceptance of the delivered goods can be refused by Zollner upon violation of this specification.

7.2.1 Packaging ESD-Sensitive Components

Handling and packaging of ESD-sensitive components must coincide with IEC 61340-5-3. The following criteria must be observed in selection of the correct packaging type for directly contiguous packaging and the outer packaging:

- dissipating, conductive or shielding; proper marking of the packaging:

*marking of the main function

S   shielding against electrostatic discharging
F   shielding against electrostatic fields
C   electrostatically conductive
D   electrostatically dissipating

7.2.2 Packaging Dangerous Goods

Dangerous goods must be packaged in accordance with the respective dangerous goods specifications.

7.2.3 Packing Materials with Serial Numbers

In the case of "serial number tracking", It must be possible to take apart the container in accordance with the FIFO/FEFO principle (FEFO sequence should be pursued). Delivery of single containers must come sorted such that goods processing is possible. Example: sorting the most recent (highest) serial numbers from the bottom to the top. Marking of the goods and possible individual

packaging with the respective contained serial numbers is to be guaranteed.

7.2.4 Provision of Packaging

The supplier is responsible for the use of a container agreed upon with the responsible employees at Zollner. If the supplier fails to request or procure packaging in a timely manner, the supplier is to assume any resulting additional costs (e.g.: freight charges, repackaging costs).

7.2.5 Empty Packaging (Empties) Management

Ownership regarding containers is defined in agreements between Zollner and the supplier. The supplier is obligated to keep a container account. Credits and debits are updated in these container accounts.

This obligation to manage an account mainly affects deliveries with wire mesh boxes, Euro-pallets and pallet frames (for Euro-pallets). Balancing of the respective container accounts, if agreed-upon, is to occur in the defined rotation (Zollner – shipping company/supplier).

Please send your questions about management of the container account to: packagemanagement@zollner.de.

Balancing of container accounts is only done upon deliveries from exchange countries (a more precise definition is in SCT), e.g.:Austria.

For countries that are not exchange countries (e.g.: Poland), no balancing of container accounts is made unless this was negotiated in the product price.

If the supplier is responsible for delivery of the goods, an exchange rate of 1:1 is pursued (basis for balancing inventory accounts/container accounts). If no empty container is taken upon delivery of the goods (either by a shipping company or supplier), they must be picked up as quickly as possible. If this does not happen, costs accrued by this are invoiced to the supplier. The statute of limitations always applies.

08 Marking Shipments

In order to guarantee flawless and standardized information transmission on the delivered material, deliveries to Zollner are to be marked in accordance with the following standard:

- The marking must be attached clearly and visibly on the delivered goods.
- There is a particularity for the marking of materials for products subject to traceability requirements. Along with the standard marking (8.2 Standard Labeling) marking is required for products with trace obligation (8.3 Labeling for Trace Obligation). The respective process is decisive for implementation of the requirements (coordination with warenkennzeichnung@zollner.de).
- Goods that cannot be "stacked" must be marked as such upon handover to the freight forwarder.

8.1 Term Definitions

Shipping unit
A unit of packages encompassing a delivery, which through specification or packaging represents a closed unit.

Smallest packaging unit
The smallest container unit in a delivery, which at the lowest level represents a closed unit through specification or packaging.
⟶ Smallest packaging units do not contain inner packing.

8.2 Standard Labeling

Every shipping unit must be marked with a standard label as the master label.

The following data is mandatory input:

- Recipient (1)
- Shipping Note / delivery note number (3)
- Purchase Order Number/order number or delivery schedule number (3)

- Part Number/material number (8)
- Quantity (9)
- Supplier (15)

Following this is an illustrated example of a standard label for marking the delivery:

(1) Warenempfänger/ Kurzadresse **Zollner Elektronik AG** **93499 Zandt**	(2)		(3) Shipping Note **123456LS** Purchase Order Number **450000000**
	(8) Part Number **1476663-00**		
	(9) Quantity **3000**	(10)	
		(11)	
(12)			
		(13)	(14)
(15) **Testlieferant xy** **99999 Musterstadt**	(16)		Special Mark

Illustration 1: Sample standard requirement as a master label for all deliveries (minimal characteristics)

8.3 Labeling for Trace Obligation

On the Zollner side, the requirement exists for suppliers to implement suitable, holistic traceability for all product-specific goods, raw materials and components that are delivered to Zollner. It is also necessary for this that the MAT label for identification at the component level (MAT label as a single label) is also attached to the smallest packaging unit. This contains all of the necessary information for traceability in one applicable format. The content and layout of this label can be taken from the currently valid document, e.g. "MAT-Label_Requirements_on_Marking_ of_Goods_Vers_2.6". Supplemental to this, this document also applies "Supplement 02_2.6 for MAT Label Specification_V1" at Zollner Elektronik AG in which the attachment on the packaging units is described among other things.

This can be requested at this email: warenkennzeichnung@ zollner.de. Basically, the label is attached to the smallest packaging units. You can find examples in the following:

Reel goods

A reel represents the smallest packaging unit marked with the label.

Not only the so-called "pizza box" but also the inner packaging (reel) is to be marked.

Goods in dry pack or protective cover

In the case of dry packs or a protective cover, those are defined as the smallest packaging unit

The label must be able to be removed easily, intact from the protective cover.

If tubular products are bundled or packaged, the bundle or protective packaging requires a label.

Multiple inner packaging

Each inner packaging in one-way or returnable containers requires an individual label if the packaging is bundled

-       in individually closed packets or
-       can be removed separately.

Each bundle (e.g.: circuit boards in bags) has its own specific label – independent of the outer packaging (each packaging unit is to be labeled).

For stick goods, every stick requires a label, if the circumference allows for that (otherwise, the next larger packaging unit).
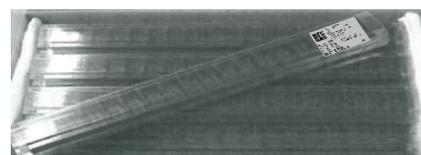
Vessels

Every vessel (e.g.: solder paste) requires a label. The lid of the vessel is recommended as the attachment point.

The batch or lot number and the expiration date on the MAT label must exactly coincide with the supplier label found on the vessel.

Containers without inner packaging

One-way and returnable containers that contain several tubular products (stick goods) or trays, etc., are to be marked on the outside of the next PU with a label if they are loose and not bundled or packages in protective foil.

The basic prerequisite is set by the sorting and batch/lot. In this case, the outer label (the next packaging unit) refers to the total number of parts inside.
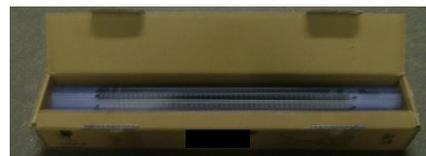
Containers without inner packaging

One-way or returnable packaging is always defined as the smallest packaging unit if the container or cardboard box has no separate inner packaging as described above.

These containers must be marked with a single label such that both the label and the label code can be read.

Special agreement is required for this.

MAT label as the master label:
If the batch/lot unit of the packaging unit with several inner packaging is guaranteed, it can be agreed upon that the MAT label is the master label.

MASTER LABEL

The MAT label functioning as the master label is a special opportunity to identify a complete unit with one scan (e.g.: a pallet).

Mixed units are not possible with a master label.

Special agreement is required in these cases, too

Illustration 3: MAT label as the master label for trace obligation

8.4 Marking Controlled Area / Cleanroom Material

If goods and items intended for cleanroom or controlled area production are delivered to Zollner, the goods are to be given the appropriate marking. The applicable regulations for this are in Global Procurement or must be agreed upon with a contact person from Zollner.
Sample marking:

8.5 Label Generation with the Zollner Web Platform = Net-Label

Along with creation of the MAT label, Zollner offers you the option of creating and printing labels according to specification via a web portal to mark material deliveries. This only makes sense for irregular deliveries because the platform works with previously defined templates (simplified variation of the MAT label). You only need Internet access. If you are interested in using this platform, you will receive more detailed information and access data at this email address: warenkennzeichnung@zollner.de.

09 Elektronic Business Data Transmission (EDI)

If you have EDI-questions, please contact Zollner at the following central email address: edi@zollner.de. Transmission of business data via EDI is offered to minimize the manual effort as well as associated error-proneness in the transmission of business data between Zollner and its suppliers.

Suppliers without an existing EDI-connection to Zollner will be supported in the implementation with coordinated process steps. The available message/notification formats as well as the technical prerequisites are described in detail in the applicable Zollner EDI-Guidelines.

9.1 Conventional EDI

Delivery schedule call offs (LAB)
Zollner routinely transmits the current delivery schedule call offs to suppliers with the respectively agreed-upon horizon dates. An applicable agreement is to be finalized in advance for this processing.

- EDI-Standard EDIFACT
- Message Implementation Guidelines
  EDIFACT DELFOR D96A

Invoices
The following standard is offered for the transmission of invoice documents via EDI:

- EDI-Standard VDA
- Message Implementation Guidelines
  GLOBAL INVOIC; 1.1; public based on UN D.07A S3

Inventory/movement data
The supplier is offered the following standard for the transmission of warehouse stock and warehouse movements and for the processing of our VMI models via EDI:

- EDI-Standard EDIFACT
- Message Implementation Guidelines
  EDIFACT INVRPT D96A

9.2 WebEDI

Along with the conventional EDI-interface, data transmission via WebEDI is also available. For further information and requests regarding our messaging or notification standards, please contact us at this email address: edi@zollner.de.