

Packaging Regulation

Version 1.6

Date: 2018-10-17

Contents

General Standard	Page
1. Scope	2
2. Approved Packaging	3
I. Universal Load Carriers [ULC]	
II. Small Load Carriers [SLC]	
III. Primary Packaging [PP]	
IV. Other types of packaging	
V. Quality and testing of packaging	
VI. Deviations	
3. Labelling	7
4. Separate Treatments	13
5. Appendices	14

General Standard

1. Scope

The General Standard is an agreement intended to set forth the terms and conditions applicable to the packaging of product-related and non-product related materials for the Diehl Controls corporate division of the Diehl Stiftung & Co. KG (hereinafter referred to as "Diehl").

The General Standard in its most recent version at the date of signing is a mandatory part of the contractual basis of the agreement between the supplier and Diehl. In case of an existing Supply Agreement between Diehl and the supplier, the packaging regulation will become an integral part of their agreement from the date of signing. The term supplier is defined as a direct supplier of Diehl or of companies assigned by Diehl within its supply chain.

As a general requirement the packaging has to protect the goods from being damaged during transportation. The supplier is generally liable for the condition of the packaging at the time of delivery. Responsibility for the perfect condition of the goods delivered stays with the supplier. The use of Styrofoam for any type of packaging is subject to an exceptional approval by Diehl. Packaging is designed component-specific and needs to be planned in line with aspects of logistics, quality control, environmental compatibility and economic efficiency. Packaging for Diehl has to comply with the legal rules and environmental regulations applicable in the country of the respective subsidiary of Diehl.

Material prone to ESD has to be protected by appropriate handling and packaging at each level in accordance with the most recent version of the ESDA standard ANSI/ESD S20.20. Further information on ESD protection can be retrieved from the ESDA or IPC website. Packaging attached with labels indicating ESD-compliance will be treated as ESD-compliant packaging. Any costs incurred by violation of this regulation will be passed on to the supplier.

2. Approved Packaging

The following types of packaging are approved for transports from suppliers to the Diehl subsidiary.

- I. Universal Load Carriers [ULC]
 - a. Standard flat pallet (Europallet)
 - b. One-way pallet
 - c. Standard iron-barred box
- II. Small Load Carriers [SLC]
- III. Primary Packaging [PP]
 - a. Standardised Primary Packaging
- IV. Other types of packaging
 - a. Primary Packaging (Smallest level)
 - b. Secondary Packaging (Further levels)
 - x. Complementary packaging
- V. Quality and testing of packaging
- VI. Deviations

I. Universal Load Carriers (ULC)

The ULC reflects the largest level of packaging. Diehl prefers to have only one part number and one purchase order number per ULC. For mixed pallets the supplier is allowed to provide various part numbers per ULC, indicated explicitly with the term "mixed pallet" on the label of the ULC. The packing scheme has to be aligned for an optimized usage of the loading capacity of the ULC. Material delivered in ULCs has to be packaged ready for installation considering the alignment of the components within the ULC. Shipments with a total weight of below 32 KG must not be shipped on pallets.

Pallets: The international guidelines according to ISPM 15 (International Standards for Phytosanitary Measures) for wooden packaging material and the directive on integrated pollution prevention and control (IPPC) have to be observed. IPPC logo and registration number must be attached readably at least on two opposite sides of the pallet. Tightening straps need to be attached without damaging the packagings on the pallet. Plastic pallets are prohibited.

I.a Reusable pallets, standard flat pallet (Europallets), one-way pallets

The ULC must not be larger than 1200mm x 800mm x 1250mm (L/W/H). The maximum weight per ULC must not be higher than 500kg. For transportation the goods on the ULC must be secured sufficiently through applying plastic tape hoops or stretch foil. Usage of metal hoops is prohibited. ULC have to be packed stackable.

Europallets: Only absolutely perfect and exchangeable Europallets (DIN 15146) are accepted by Diehl. Europallets have to be compliant with the regulations of the European Pallet Pool (EPAL) defined by DIN EN 13698. EPAL and EUR brandings on every pallet are mandatory. Moreover, the UIC-Norm 435/2 has to be observed. The humidity of the wood according to DIN 52183 must not exceed 26% at the time of delivery. Quality criterias for EUR-Pallets are attached in in chapter 5.2 (Quality regulations for EUR-Pallets).

Full pallets have to be stackable at least in two tiers. The supplier ensures packing full pallets per each material number according to the material quantity of the respective shipment. The supplier consolidates remaining quantities of the respective shipment on one mixed pallet.

I.b Standard iron-barred box

DIN 15155 applies.

II. Small Load Carriers (SLC)

The average share of material per SLC has to amount to at least 70%. In case of bulk goods the SLC refers to the smallest packaging unit.

III. Primary Packaging (PP)

The PP encases the goods and refers to the smallest packaging unit. Components has to be packaged for automatic handling. Diehl insists to have only 1 part number and one purchase order number per PP. In case various PPs are provided on a pallet, rest quantities per part number and purchase order number must be sorted out and marked with proper label as such. The additional costs at the Products receipt buffer stock warehouse will be charged back to the Supplier. In addition, the Supplier must assure that on each primary package label the right DIEHL part number and, if applicable, CIP purchase order number is printed on. Additional costs due to wrong labelled primary packaging units will be charged back to the Supplier. Every PP can only contain one part and order number.

Styrofoam and every other packaging material or complementary packaging used as Primary Packaging has to be ESD-compliant. A Tray does not guarantee a fix alignment of the goods within the packaging.

Blister is a deep drawing packaging which does not protect the goods from getting damaged while transportation. As it does not enclose the goods, additional primary packaging is required. A Blister guarantees a fix alignment of the goods within the packaging.

The packed PPs have to fit to the measurements of the ULC. It is not allowed that PP's overlap from ULCs.

III.a Standardised Primary Packaging

Standardised Primary Packagings are specified as follows:

Table 1: Standardised Primary Packagings

Description	Drawing (sample)	Industry standard	Remarks
Tape for Reel ----- Blistertape for Reel ----- Tape for Ammopack		DIN EN 60286-1* DIN EN 60286-2* DIN EN 60286-3* and DIN IEC 286-1* DIN IEC 286-2* DIN IEC 286-3*	Alternative standard RS-296-E, PP-type includes Blister-packaging as well
Tube		DIN EN 60286-4* respectively DIN IEC 286-4*	-

<p>Tray</p>		<p>DIN EN 60286-5* respectively DIN IEC 286-5*</p>	<p>PP-type includes Blister-packaging as well</p>
<p>Box</p>		<p>No standard applies</p>	<p>In addition to PP-type "Tray" inner or outer lining or separators apply</p>

Reel

Plastic or cardboard are approved as carrier material. This PP-type can refer to regular Tapes and Blistertapes, whereas Blistertapes only refer to Reels. Reels and Ammopacks have to be ESD-compliant.

Tray / Blister

Usage of cellular plastic for inner packaging is prescribed. For safe transport one empty Tray / Blister on top and bottom of the PP-bundle is prescribed. Tray / Blister require a plastic bracing and a recessed grip to facilitate manual handling. Usage of ESD-compliant IDEC-Trays is prescribed. Tray / Blister placed on top of each other need to have enough space between them to prevent damaging of the goods inside. Bundles of Trays / Blisters has to be wrapped not more than one time using complementary packaging (usage of crepe tape is prescribed). This complementary packaging has to be easy to remove. For outer packaging of trays usage of plastic material is prescribed, the use of cardboard or paper is prohibited.

Box

Box is a reusable packaging that consists of coated Styrofoam or plastics. This packaging is uniquely designed for one part number.

IV. Other types of packaging

This chapter covers every other form of packaging that applies instead of the forms of packaging detailed in the chapters above. Material delivered in other types of packaging needs to be packaged ready for installation and according to the polarity considering the alignment of the components within the packaging.

Styrofoam and every other packaging material used as packaging has to be ESD-compliant. Cardboard packaging assigned with a Diehl part number has to show this part number visibly on its external surface.

The average share of material per level of packaging has to amount to at least 70%. The packaging size has to be dimensioned according to the lot size. Shipments with a total weight of below 32 KG must not be shipped on pallets.

IV.a Primary Packaging (PP) (Smallest level)

PP corresponds to the smallest packaging unit of the goods. The maximum weight must not exceed 12 kg. Diehl insists to have only one part number and only one purchase order number per PP. In case various PPs with various part numbers are provided they need to be sorted according to their part numbers.

Ammo Packs used as Primary Packaging have to comply with DIN IEC 286-1 and DIN IEC 286-2 (especially in terms of dimensions).

IV.b Secondary Packaging (Further levels)

If shipped on pallets the preferred size of the largest level of packaging is 800 x 300 x 400 mm (L/W/H). The size must be dividable by the standard pallet size 800mm x 1200mm (L/W) in order to avoid any overlapping.

IV.x Complementary packaging

Cartons may be closed with adhesive tape only. The use of adhesive tape for inner packaging is prohibited. The use of crepe tape is prescribed. Styrofoam or plastic flakes used as complementary packaging are subject to an exceptional approval by Diehl.

V. Quality and testing of packaging

The supplier has to ensure the material is delivered in an impeccable condition and the packaging material is free of soil and contaminants. For this reason the supplier guarantees that the packaging protects the material from any damages until receipt of material by Diehl. Diehl will inspect substantial quality features of the packaging regularly at goods receipt. In case of function-affecting deformations, spillings or damages Diehl will charge affected packaging to the account of the supplier.

Diehl generally may request a probational transport of the packed material as agreed on in this regulation to test the functionality of the packaging. The conditions of transport (modes, routes etc.) have to be comparable to the conditions of transport agreed on for regular supply.

In general, the Supplier has to guarantee that ready packed pallets are stackable. This has to be ensured by using wooden planks on the top of a pallet. Furthermore, edge protection has to be used.

Packaging for goods with special packaging requirements might have to pass qualification phases. For example: LCD / LED Displays, 7-Segment Displays, Relays, Rotary Switches, Heavy components, Transformers, Dissipators, Frames. For this test the supplier has to guarantee prevention against dislocation of the part numbers within the packaging.

The sharing of costs incurred by the testing of packaging is subject to an individual agreement.

VI. Deviations

Deviations from the specified packaging are subject to prior written approval from the relevant contact person of Diehl. The approval must contain the affected item numbers, as well as details of the agreed alternative packaging and the precise time of the approval, and must be made visible on the packaging. After the deviation has been approved, the specified alternative packaging can be used in this individual case only.

3. Labelling

Raw Material Labeling for Components

Version 1.1

Introduction

Diehl Controls phases an increasing demand for traceability along the whole supply chain. To ensure this traceability requirement, material and information flow from suppliers to Diehl Controls need to be aligned. This can be achieved by a unique material label (MAT label) on the smallest package unit containing a defined set of traceability information.

In order to achieve this target, Diehl Controls has decided to work with the following 2 label standards:

- VDA 4992 Mat-Label** (preferred)
- Mat-Label V2.6 (only if already existing)

Above standards are valid, unless a valid Diehl Controls document carries different information. Before the MAT label can be used, it has to be approved by Diehl Controls.

Due to the differences in shape and size of the smallest package unit, 2 label sizes (50x25mm and 78x45mm) have been defined.

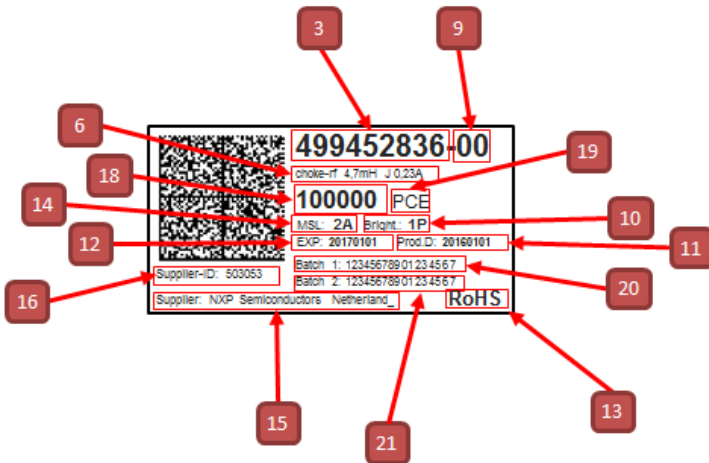


50x25 mm

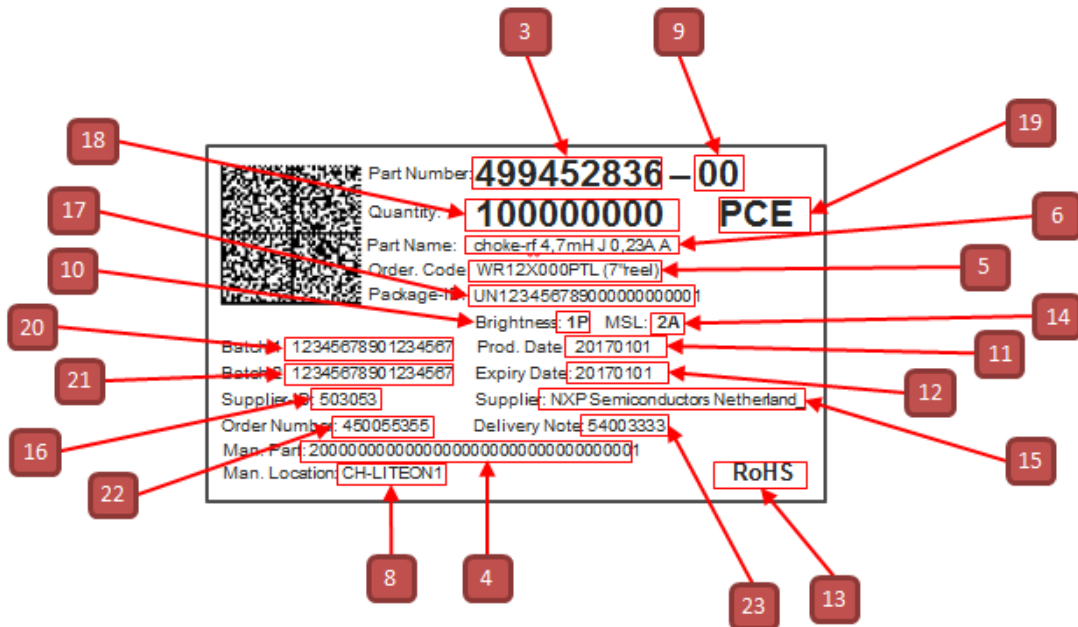


78x45 mm

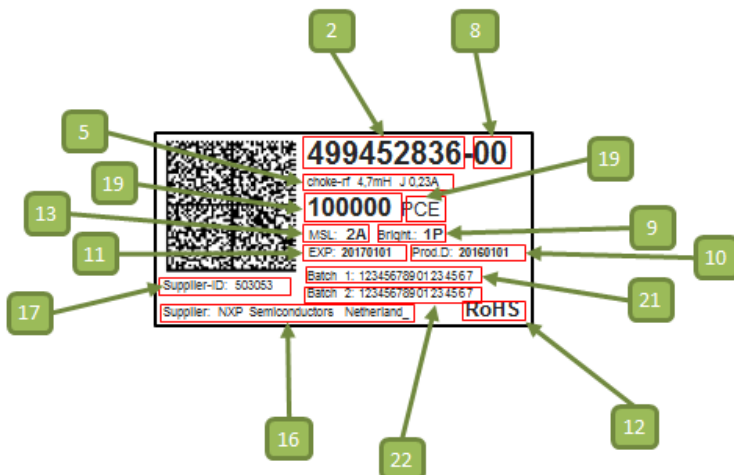
VDA 4992 Mat-Label 50x25 mm (Data source according VDA 4992 standard)



VDA 4992 Mat-Label 78x45 mm (Data source according VDA 4992 standard)



Mat-Label V2.6 50x25 mm (Data source according Mat-Label V2.6 standard)



Descriptions of fields according to VDA 4992 standard:

No.	Data Field	Definition / Description	Data Identifier	Length	Format ²	Status	Examples	Machine-readable Code Data Matrix Code ECC200	Printed Text on the label
Label Information									
1.	Label Version	Type of label. Identifies this Label as MAT-Label based on VDA 4992 recommendation. (Industry consortium's specification for MAT-Labels have 0001, 0002, 0003. See customer specification in case of MAT-Label not based on this VDA recommendation).	12P	4	N	M	4992	yes	no
2.	Label Revision (of VDA's spec.)	The revision level is a fixed entry and serves the recognition of the label or its version.	9K	2	N	M ³	01	yes	no
Part Information									
3.	Customer Part Number	Part number of the customer.	P	Max. 25	A/N	M	718.187-04 A2C5321641900	yes	yes (highlighted)
4.	Manufacturer Part Number	Internal manufacturer part number.	1P	Max. 35	A/N	M	SL105C103MAA-S	yes	yes
5.	Ordering Code	Code assigned by the supplier / vendor for the part which non-ambiguously can be used for part identification. Compared to the "Manufacturer Part Number", the Ordering Code may contain more information, e.g. Software Version in case of Microcontrollers or package form.	31P	Max. 35	A/N	M	SC441427CFNR2 A2C53216419/02	yes	yes
6.	Part Description (Part Name)	Clear-text description of the part (or part name), so that persons who are not familiar with the manufacturer's naming convention can understand what kind of component this is.	-	Max. 30	A/N	M	PCB Ceramic Capacitor Aluminium housing	no	yes
7.	Manufacturer ID	DUNS Identification number of the manufacturer, i.e. the party who produces the part. The top DUNS number of the company's family tree is recommended.	12V	9	N	M	123456789	yes	no
8.	Manufacturer Location	Identification of the manufacturing location	10V	Max. 20	A/N	M	DE-BERLIN CH-BEIJING	yes	yes
9.	Revision Level / Index	Revision status of the part - identifier for the engineering change. Usually, the initial part starts with a value (e.g. A) and for each change this value is increased (e.g. B, C, D ...) assigned by the buyer/customer	2P	Max. 14	A/N	D	AA 01	yes	yes
10.	Additional Part Information	Used differently by each plant, flexible filled, e.g. brightness of the LEDs.	20P	Max. 30	A/N	D		yes	yes
11.	Date of Manufacturing	Date of manufacturing is related to the last manufacturing process	16D	8	YYYYMMDD	M	20080330	yes	yes

² N = numerical, A/N = alphanumerical, DD = day, MM = month, YYYY = year

³ M = mandatory, D = depending (customer defined) O = optional

No.	Data Field	Definition / Description	Data Identifier	Length	Format	Status	Examples	Machine-readable Code Data Matrix Code ECC200	Printed Text on the Label
12.	Expiration Date	The Expiration Date of the part (defined by the manufacturer (depending on production date).	14D	8	YYYYMMDD	M	20081031	yes	yes
13.	RoHS	Indicator for RoHS compliance N= not comply to RoHS, Y: complies to RoHS 0: RoHS not applicable, part is not affected to RoHS	30P	1	A/N (upper case)	M	Y	yes	Logo
14.	MS-Level	Moisture Sensitivity Level according to IPC/JEDEC J-STD-020.	Z	Max. 6	A/N, "N" if not applicable	M	5 6-24 (24 hours) 6-9999 (9999 hours)	yes	yes
Logistic and Traceability Information									
15.	Supplier Name (no real data field)	The supplier name or company logo.	-	Max. 30		N		No	yes
16.	Supplier-ID	The supplier number for the supplier, assigned by the customer as communicated in the order.	V	Max. 10	A/N	D	8845661	yes	yes
	Supplier ID	Alternatively, the supplier's DUNS number can be transmitted	13V	9	N	D	987654321	yes	yes
17.	Package-ID	Globally unique package identification, assigned by the supplier. It is always related to the smallest package unit. It has to be built using an official issuing agency code (e.g. UN for DUNS, OD for Odette...), the company code assigned by the agency and the serial number of the package, unique within the area of responsibility of that identified business unit. If possible, chronologically related to the production process (e.g. reel-ID).	3S	Max. 25	A/N Capital letter only	M	UN987654321123456789012	yes	yes
18.	Quantity	Quantity of the smallest package unit.	Q	Max.18	12.3 to be aligned to the right	M	1000.000 (printed: 1000) 10.020 (printed: 10.02)	yes	yes (highlighted)
19.	Unit of measure	Measure unit according restricted code list UNECE recommendation 20 (see table in chapter 7.19)	3Q ⁵	3	A	M	PCE	yes	yes
20.	Batch-No. #1	With this number the supplier has to be able to retroactively provide information about the batch (e.g. volume, production, measurements, delivery)A batch identification should be based on same manufacturing conditions. If a manufacturing condition changes, the batch number should be changed, too.	1T	Max. 17	A/N	M	750160429	yes	yes
21.	Batch-No. #2	Batch number for the second batch - if applicable.	2T	Max. 17	A/N	O	750160430	yes	yes
22.	Order number	Order number assigned by customer to identify a purchasing transaction.	K	Max. 18	A/N	O	123456789	yes	yes
23.	Delivery note number	Delivery/shipping note number	2S	Max. 12	A/N	O	120123456789	yes	yes
24.	Supplier Data	Suppliers own information that may be used by the supplier.	1Z	Max. 30	A/N	O	Any suitable text	yes	no

⁵ N = numerical, A/N = alphanumerical, D = day, M = month, Y = year

⁵ 3Q identifies the UoM according to ANSI X12 standard. However, in this recommendation codes according to UNECE Rec. 20 are used.

Approval Process

Before the MAT label can be used, it has to be approved by the Diehl Controls. 10 label samples according to this specification including documentation about the label content have to be shipped for approval to

Andrzej Kalbrun
Incoming Inspection Manager
CCP/EPMQ-Quality Assurance
Phone: (+48) 77 40 37 371 •
Diehl Controls Polska Sp. z o.o.
Pulaskiego 6, 46-100 Namyslow, Poland

If the label does not fully comply, also such samples with a clear description of the differences can be sent for approval; minor deviations in the layout may be accepted. If the approved MAT label is to be generated at different locations with different systems or equipment, then the supplier has to ensure that each system will produce the label in the same quality and with the same content as the one that was subject to approval.

Small Load Carrier (SLC)

SLCs are eligible for labelling via plug-in cards.

Reusable packaging

The supplier has to remove all remaining labels before applying a new one.

Just in Time / Just in Sequence deliveries

The following information must be added to the goods tag in the case of JIS deliveries: Trailer number, chassis number of each component, arrival date, assembly line date. Additionally the assembly line sequence and tray (container) sequence number (for JIS-deliveries only).

Partial quantities

If the packaging (smallest level) contains partial quantities, the writing "mixed pallet" has to be explicitly highlighted on the label.

If the primary packaging contains partial quantities, the writing "partial quantity" has to be explicitly highlighted on the primary packaging (e.g. carton box). The mix of 2 or more different Product items in one smallest packaging unit (i.e. carton) is explicitly not allowed

Empty carton boxes

The Supplier should avoid to use empty carton boxes for packing the ULC. If there is no possibility to avoid empty carton boxes for stabilization reasons, the Supplier has to highlight the carton boxes with the writing "empty box" on each side of the carton box. It is only allowed to use empty carton boxes on the highest layer of the ULC.

Bulk goods

For bulk goods a weight card per primary packaging is required.

Non-series material

Non-series material (e.g. samples, pre-series material) has to be clearly labelled as such with their own goods tag. To do so, a separate label "sample" has to be applied to every level packaging.

ESD material

ESD-packaging has to be labelled according to the polarity of the goods inside with "plus" and "minus" labels.

Electronic goods

Labels for electronic components and its component packagings have to follow standard regulations of the International electrotechnical commission (IEC).



Figure 2: ESD-Label (sample)

4. Separate Treatments

Approved Packaging

Primary Packaging

Transformers

Usage of cellular plastic for inner packaging and Tube, Tray and Blister packaging are prescribed.

Displays

Usage of cellular plastic for inner packaging and ESD Blister packaging are prescribed. Foil applied on the display has to be ESD-compliant and placed automatically, free from creases and non-residue removable. A tearing edge is required for easier removal. Blister packaging has to be covered with foil.

Relays

Usage of Tube or Blister packaging as is prescribed. Prescribed width for Primary Packaging is 200 - 300 mm. Relays have to be packaged ready for installation considering the alignment of the components within the Primary Packaging. Tube clips have to be used instead of plastic straps as sealing. Clips have to be equipped with easily removable adhesive tape.

Switches

Usage of Tray or Blister packaging is prescribed. For SMD-switches usage of Reel is prescribed.

Printed circuit boards

Usage of plastic bags as air-tight complementary packaging is prescribed to ensure moisture protection.

Adhesive labels

For reels of adhesive labels ESD-compliant plastic bags or plastic foil has to be used as complementary packaging.

Small Load Carriers (SLC)

Plastic components

Small plastic components need to be packed in a separate plastic bag made of PE.

5. Appendices

Any packaging requirements that differ from the above regulations are listed below:

Appendix 1.1: Separate Treatments for plant Namyslow

Appendix 1.2: Quality regulations for EUR-Pallets

5.1. Appendix 1.1: Separate Treatments for plant Namyslow

Date: 2011-09-15

Divergent regulations:

I.a Reusable pallets

The ULC must not be larger than 1200mm x 800mm x 1200mm (L/W/H).

I.b One-way pallet

The ULC must not be larger than 1200mm x 800mm x 1200mm (L/W/H).

IV.a Primary Packaging (PP) (Smallest level)

Single Packaging has to be equipped with a tearing edge for easier opening.

III.a Standardised Primary Packaging

ESD-compliant trays have to be colored in black. Non-ESD-compliant trays have to be colored in white.

Main regulation for maximum weight per container at workplace:

Please consult Mr. A. Kolodziej (Industrial Engineering) at plant Namyslow.

1) For women

Manual lifting and carrying loads

- a) 12 kg - at work constant,
- b) 20 kg - with casual work (up to 4 times per hour during the work shift).

Manually lifting and carrying loads - move uphill - on ramps, stairs, etc., the maximum tilt angle exceeds 30 ° and a height of 5 m

- a) 8 kg - at work constant,
- b) 15 kg - with casual work (up to 4 times per hour during the work shift).

For pregnant women and breast-feeding these maximum values are transferred or transported loads are reduced to 1/4 these values.

2) For men

- a) 30 kg - at work constant,
- b) 50 kg - with casual work (up to 4 times per hour during the work shift).

5.2. Appendix 1.2: Quality regulations for EUR-Pallets

Date: 2013-07-08

1. EUR-PALLETS:

If there is one or more defects on EUR-pallets as below, the pallets are not exchangeable. They must be repaired as per the UIC-code 435-4. Any costs incurred due to non-exchangeability of EUR-pallets (handling etc.) will be passed on to the supplier.



A single upper or lower edge board is damaged so that more than one nail or screw shank is revealed.



The EUR mark on the right or i.e. the EPAL symbol on the left is missing.



A board is missing.



A block is missing or split to the point where more than one nail shank is visible.



A board is broken transversely or diagonally.



More than two lower or upper edge boards are damaged and reveal one nail or screw shank for each board.

Other characteristics (Poor condition overall):

- The loading capacity can no longer be guaranteed (wood worm-eaten or rotten).
- Contamination is such that products may be soiled.
- Large splinters are coming away from a number of blocks.
- There is evidence that inadmissible construction elements have been used, e.g. boards and blocks that are too weak.