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## 0. History of changes

Date	Dept.	Name	Brief description
11.01.2008	LO-3	Bernd Sutter	Production of document
06.02.2013	OI-2	Klaus Bürk	Point 1. Scope added
13.07.2017	LO-2.1	Manuel Sauer	Point 5.1 Addition

## 1. Scope

This guideline is valid for PWO AG (Oberkirch – Germany), PWO Canada (Kitchener –Canada), PWO Czech Republic a.s. (Valasske – CZ), PWO China (Suzhou – China).

## **2. Introduction**

Ongoing improvements to business processes are a key strategy at Progress Werk Oberkirch AG (PWO) and its subsidiaries. This applies not only to our products but also to the logistical methods of material flow, packaging, transport and material handling.

It is the aim of PWO logistics to reduce handling in the material flow to a minimum by forwarding the parts to the production line in the condition in which they are supplied.

In order to do this, all packaging and transport methods must correspond to the definitions provided in these instructions.

The aim of these instructions is to provide the supplier with PWO's packaging requirements.

The following instructions should result in:

- standardised dimensions,
- optimum containers and packaging design and
- coordinated content volume inside packaging

ensuring a rational and smooth flow of material between supplier and PWO.

## **3. General information**

The packaging instructions, including all Annexes, contain the applicable packaging guidelines for PWO suppliers. If the supplier is not able to supply in accordance with these instructions, the PWO purchasing department must be informed in time before contracts are concluded.

If the instructions can only briefly not be complied with during the contractual relationship, the PWO purchasing planning department must be informed in time before delivery and corresponding alternative proposals put forward.

## **4. Packaging requirements**

### **4.1 General information**

The packaging must be defined by PWO and the supplier on the basis of ecological, economical and qualitative criteria. Packaging appropriate for the goods to be transported and the type of shipping should be used to ensure that the goods are supplied to PWO intact and can be used in production without having to be repacked. One of the supplier's tasks in achieving this is to determine the loads that the product has to withstand.

Regardless of the type of packaging selected, the following requirements must be satisfied:

Quality issues:

- Delivery of parts free from damage (quality must not be impaired)
- Containers with a partial quantity must be marked in color on both sides.
- Pallets, containers and packaging must be clean
- The supplier is liable for any reduction in quality of the goods supplied due to defective or dirty packaging

Handling issues:

- Creation of rational loading units
- Structure suited to handling
- Optimum utilisation of transport units and loading aids
- Ability of units to be stacked (at least 2 high)
- Container/Packaging with a partial quantity must also have the same stacking capacity as a full bundle
- Transport protection

- It must be possible for the loading aids to be easily unloaded from the transport vehicles using ground conveyors
- Low-cost removal of parts
- Precisely defined and observed capacities
- Units that can be handled manually must not exceed a gross weight of 15 kg
- Objects (e.g. paper slips, bands, covers, ...) which protrude beyond the outside contours of the exterior packaging must be removed before shipping

Environmental issues:

- Use of recyclable packaging (single- and multiple-use)
- Minimal use of single-use packaging materials

## 4.2 Standard dimensions

The following packaging dimensions should be observed. Other dimensions are only permitted in exceptional cases when this is required by the technical process. Such cases must be discussed with PWO in advance.  
(Coiled goods are considered separately)

Type of packaging	Max. length	Max. width	Max. height	Max. gross weight
Single-use pack../small shipments	≤ 600 mm	≤ 400 mm	≤ 420 mm	15 kg
Multiple-use small carriers	≤ 600 mm	≤ 400 mm	≤ 420 mm	15 kg
Pallets	≤ 1200 mm	≤ 800 mm 1000 mm (only following PWO approval)	≤ 1000 mm	=> permissible payload, e.g. Euro pallet 1000 kg
Large carrier	≤ 1250 mm	≤ 850 mm	≤ 1000 mm	=> permissible payload, e.g. wire mesh box 1000 kg

## 4.3 Avoiding protruding parts

The basic dimensions of the pallets and/or other containers should be observed, i.e. protruding parts must be avoided. If this requirement is not observed, we will be forced to refuse acceptance and/or pass on the additional costs incurred for taking the shipment into storage in accordance with the costs incurred.

## 4.4 Packaging of a single type

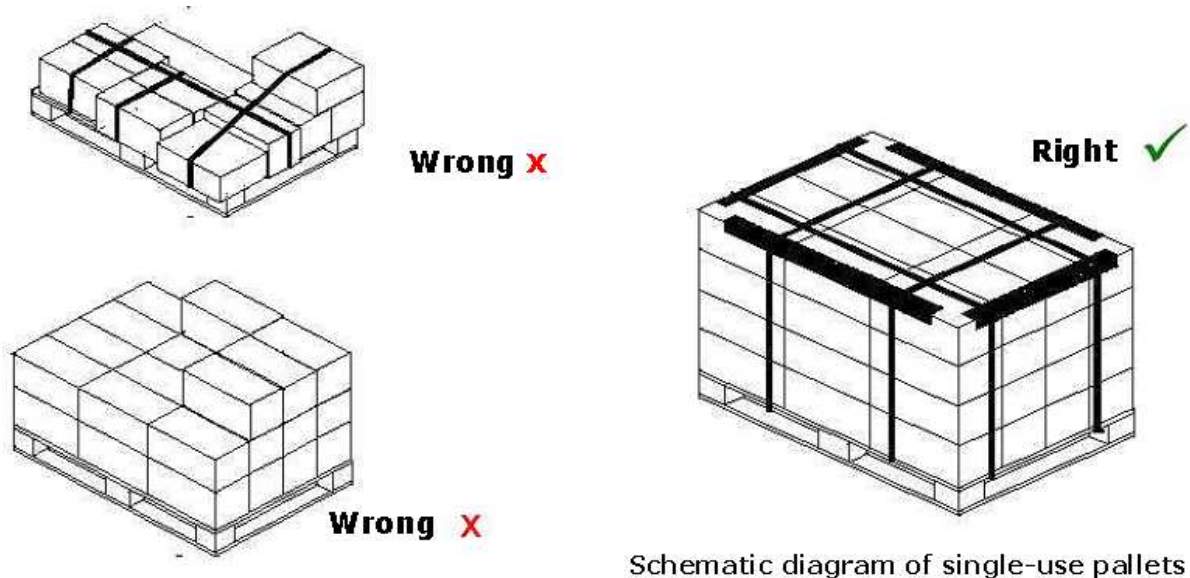
Items should preferably be packaged in one single type of packaging. If single-type packaging is not possible, the different packages should be clearly separated and labelled.

## 4.5 Loading and transport

The packaging should be added to a unit on the pallet safe for transport and bandaged up with non-metallic straps. On environmental grounds, preference should be given to non-metallic straps over shrink wrapping.

- The load unit must be strapped sufficiently in both directions, and this should be done by passing the straps between the pallet blocks and under the pallet base, not under the runners.

- Before strapping, the packages must either be protected by fitting cardboard or plastic edge protection brackets or by using a cover.
- Load units must always make up a closed block so that several load units can be stacked one on top of one other.



- The corresponding permissible payload and superimposed load must not be exceeded.
- Carriers and containers must be stacked in such a way that the superimposed load is secure.
- Defective carriers must not be stacked.

The load must be secured in accordance with national and international guidelines. The German Road Traffic Act, German Road Traffic Licensing Regulations and German Commercial Code make up the statutory framework for securing loads.

## 4.6 Cleaning

Parts may only be supplied in clean and fully-functioning packaging. Packaging that is damaged or defective must not be loaded or shipped.

All stuck on parts (e.g. old labels, adhesive tapes, ...) should be removed.

The qualitative requirements of the part to be supplied determine the level of cleanliness required of the packaging and must be met by the supplier at the supplier's own cost.

The type of cleaning and cleaning cycle should be agreed on with PWO depending on requirements.

## 4.7 Transport of dangerous goods

During transport carriers and packaging containing dangerous goods must satisfy the relevant applicable general and special packaging instructions.

It must be ensured that the UN specification marks (sample approval) used on the packages are not covered by other labels or information accompanying the goods (e.g. goods tag).

Other requirements relating to the transport of dangerous goods, e.g. vehicle equipment, driver qualification, jointly loading with other dangerous goods or the simultaneous transport of accompanying papers should be observed by the people involved in transportation.

The supplier and/or people involved in transportation are responsible for compliance with the relevant dangerous goods instructions.

## **4.8 Alternative packaging**

Deviating packaging is packaging used by the supplier that does not satisfy the packaging instructions for serial parts. They may only be used in exceptional circumstances and with the consent of PWO.

## **4.9 Individual rules**

Individual rules agreed upon with PWO always take priority over these general packaging instructions.

## **4.10 Packaging instructions for coiled goods**

Ring packaging: horizontal on wooden frame or wooden pallets; 10 cm underside height with wooden intermediate layers with a thickness of at least 1 cm, watertight blocking layer between base layer of wood and material. Each ring must be covered with a PE film to protect from dampness and dirt. Only natural wood as defined in Article 1. of the German Federal Immissions Protection Law / Matured Timber Ordinance may be used.

Max. pallet weight of 5 tons, the individual pallet weights should be stated on the delivery papers.

Weighed gross for net (if necessary also net for net).

# **5. Types of packaging**

## **5.1 One way packaging**

One way packaging is intended for single use only. After use, it is sent for recycling. Ensure that such packaging is made from recyclable packaging materials. Filler and cushioning materials should be reduced to a minimum in line with parts quality.

If one way and multiple-use packaging are of the same economic and qualitative quality, one way packaging should be used on environmental reasons.

To minimize the number of variants of one way packaging used, there is a standard range of box dimensions from which packaging variants should preferably be selected. This standard range is based on the familiar VDA-KLT modular structure and is designed for Euro pallets (see page 6 / section 0 Small carriers).

Exceptions due to particular processes are permissible but must be communicated between PWO and the supplier.

In principle, the quality of the packaging must be defined such that the payload and superimposed load requirements are satisfied. The maximum gross weight per box is 15 kg.

## **5.2 Multiple-use packaging**

Multiple-use packaging is a high-quality resource which has to satisfy the various requirements of a continuous logistics chain. It should therefore be treated with care and must not be used for external purposes in order to ensure as long a service life as possible.

The following applies in principle:

- Multiple-use packaging that can be used in pools (Euro pallets, wire mesh boxes, VDA small carriers...) should be given preference over that which cannot be used in pools.
- Multiple-use packaging should be of a standard size. Specific design and other sizes are only permissible in cases where the material to be transported has special requirements.
- Multiple-use packaging should be designed such that it can be fully emptied, is easy to clean and dry.

### 5.2.1 Large carriers / pallets

The Euro wire mesh box is used as a standard large carrier at PWO. The standard pallet is the Euro pallet.



**Euro wire mesh box**



**Euro pallet**

Both pallets and wire mesh boxes must be in perfect condition. If damaged or deviating in any other way from the EPAL replacement criteria, PWO may refuse to accept the goods. Any resultant consequences (repacking, reshipping, replacement, disruption to production...) and associated costs are borne by the supplier!

(You will find a detailed description of all issues relating to Euro pallets and wire mesh boxes online at [www.qpal.de](http://www.qpal.de))

### 5.2.2 Small carriers

In order to minimize the number of variants used, PWO orientates itself towards the VDA R-KLT standard.

#### Overview of VDA R-KLT

Typ	Nominal dimensions (mm)			Inner dimensions (mm)			Inner volume in litres	Weight kg	Containers per position on the EURO pallet	Total height on shipping unit including EURO pallet and cover plate with n-positions mm				
	Length	Width	Height	L	W	H				2	3	4	5	6
R-KLT 3215	300	200	147	243	162	129	5,3	0,6	16	468	600	732	864	996
R-KLT 4315	400	300	147	346	266	109	10,1	1,3	8	468	600	732	864	996
R-KLT 4329	400	300	280	346	266	242	22,3	1,9	8	734	999			
R-KLT 6415	600	400	147	544	364	109	21,6	2,2	4	468	600	732	864	996
R-KLT 6429	600	400	280	544	364	242	48	3	4	734	999			

Use of other small carriers should be avoided at all costs.

## 6. Information accompanying the goods

### 6.1 Labelling according to VDA recommendation 4902 version 4

A VDA 4902 version 4 goods tag should be attached to every load unit, every container and every single package. Ensure that both supplier-specific labels and test features as well as old goods tags that are no longer valid are removed.

Every load unit must be labelled using a master label, every package (small carrier, box ...) with a small label.

(See VDA 4904 version 4)

Below you will find some examples of master and small labels (not to scale!), detailed descriptions of this VDA recommendation can be obtained from the VDA directly.

(1) Warenempfänger <b>WOLF Hard- und Software Auf der neuen Heide 2 55595 Allenfeld</b>		(2) Abladestelle - Lagerort - Verwendungsschlüssel <b>Lager 1 Lager 2</b>	
(3) Lieferschein-Nr. (N) <b>502151</b> 		(4) Lieferantenanschrift (Kurzname, Werk, PLZ, Ort) <b>WOLF, 55595 Allenfeld</b>	
		(5) Gewicht-Netto <b>33</b>	(6) Gewicht-Brutto <b>136</b>
		(7) Anzahl Packst. <b>108</b>	
(8) Sach-Nr. Kunde (P) <b>881.051 996</b>  <b>A123</b>			
(9) Füllmenge (Q) <b>118</b> 		(10) Bezeichnung Lieferung/Leistung <b>Fluegelrad</b>	
		(11) Sach-Nr. Lieferant (30S) <b>GITTERBOX</b> 	
(12) Lieferanten-Nr. (V) <b>03264060</b> 		<b>021005</b> <b>10165-66</b>	
		(13) Datum <b>D 30.07.99</b>	(14) Änderungsstand Konstruktion <b>keiner</b>
(15) Packstück-Nr. (S) <b>110529</b> 		(16) Chargen-Nr. (H) <b>45003487-K</b> 	
WOLF Hard- und Software, 55595 Allenfeld		Warenanhänger VDA 4902, Version 4	

#### Example of a master label (VDA 4902 V4)

(1) Warenempfänger <b>WOLF Hard- und Software Auf der neuen Heide 2</b>		(2) Abladestelle - Lagerort - Verwendungsschlüssel <b>Lager 1 Lager 2</b>		(3) Lieferschein-Nr. (N) <b>502151</b> 	
(8) Sach-Nr. Kunde (P) <b>A0199978482</b> 				<b>A123</b> 	
(9) Füllmenge (Q) <b>16</b> 		(10) Bezeichnung Lieferung/Leistung <b>Fluegelrad</b>			
(12) Lieferanten-Nr. (V) <b>03264060</b> 		(11) Sach-Nr. Kunde f. Packm. (B) <b>GITTERBOX</b> 			
		(13) Datum <b>D 05.07.02</b>		(14) Änderungsstand Konstruktion <b>keiner</b>	
(15) Packstück-Nr. (S) <b>73</b> 		(16) Chargen-Nr. (H) <b>45003487-K</b> 			
Ulrich/Wolf, Allenfeld		Warenanhänger VDA 4902, Version 4 (KLT) <small>© 2002 VDA, VDA 4902, VDA 4902-1, VDA 4902-2, VDA 4902-3, VDA 4902-4, VDA 4902-5, VDA 4902-6, VDA 4902-7, VDA 4902-8, VDA 4902-9, VDA 4902-10, VDA 4902-11, VDA 4902-12, VDA 4902-13, VDA 4902-14, VDA 4902-15, VDA 4902-16, VDA 4902-17, VDA 4902-18, VDA 4902-19, VDA 4902-20, VDA 4902-21, VDA 4902-22, VDA 4902-23, VDA 4902-24, VDA 4902-25, VDA 4902-26, VDA 4902-27, VDA 4902-28, VDA 4902-29, VDA 4902-30, VDA 4902-31, VDA 4902-32, VDA 4902-33, VDA 4902-34, VDA 4902-35, VDA 4902-36, VDA 4902-37, VDA 4902-38, VDA 4902-39, VDA 4902-40, VDA 4902-41, VDA 4902-42, VDA 4902-43, VDA 4902-44, VDA 4902-45, VDA 4902-46, VDA 4902-47, VDA 4902-48, VDA 4902-49, VDA 4902-50, VDA 4902-51, VDA 4902-52, VDA 4902-53, VDA 4902-54, VDA 4902-55, VDA 4902-56, VDA 4902-57, VDA 4902-58, VDA 4902-59, VDA 4902-60, VDA 4902-61, VDA 4902-62, VDA 4902-63, VDA 4902-64, VDA 4902-65, VDA 4902-66, VDA 4902-67, VDA 4902-68, VDA 4902-69, VDA 4902-70, VDA 4902-71, VDA 4902-72, VDA 4902-73, VDA 4902-74, VDA 4902-75, VDA 4902-76, VDA 4902-77, VDA 4902-78, VDA 4902-79, VDA 4902-80, VDA 4902-81, VDA 4902-82, VDA 4902-83, VDA 4902-84, VDA 4902-85, VDA 4902-86, VDA 4902-87, VDA 4902-88, VDA 4902-89, VDA 4902-90, VDA 4902-91, VDA 4902-92, VDA 4902-93, VDA 4902-94, VDA 4902-95, VDA 4902-96, VDA 4902-97, VDA 4902-98, VDA 4902-99, VDA 4902-100</small>			

#### Example of a small label (VDA 4902 V4)