



DEABB 2629 19 EN

# Guidelines for Packing

ABB AG – Electrification Distribution Solutions

Medium Voltage Products

# Guidelines for Packing

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# 1 Introduction

# Guidelines for Packing

## 1 Introduction

This packing guidance shall give you an overview over the various possibilities of packing of our products.

The packing guideline explains ABB general terms which will be considered for the packing.

The packing complies with regular packing-standards and is based on HPE.

Packing appropriate to the type of duty will be chosen according to the latest technologies and the best quality of packaging means.

The packing method considered the various demands depending on the type and the way of transport defines the choice of the packing method.





# Guidelines for Packing

## 1 Introduction

A safe and easy handling with current ground conveyors or kind of loading is given by adequate construction characteristics of the packing.

Weights and dimensions comply with the valid freight standards.

The packages will be marked according to international regulations / instructions and customers request.

The type of packing is fundamentally determined through:

- Dimensions, weight, centre of gravity
- Sensibility
- Base surface area
- Kind of transport and storage period
- Intended transit method and storage requirements



# Guidelines for Packing

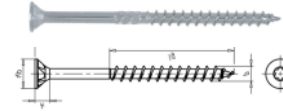
## 1 Introduction



To increase the health and safety at work, all wooden components are screwed together and not nailed at the Ratingen plant .

- Screwing the timber beams with the base of crate or pallet for securing the goods against slipping for all types of transport trucks / air and sea freight
- Screwing the timber beams with the box sides to secure the goods against slipping and jumping
- Screwing square timber under cover to guarantee the possibility of stacking
- Screwing the sides and cover
- Screwing of squared timber for blocking and wedging the goods in case of container stuffing for a safe transport

Used screws depending on type of application and requirements



Screw partial thread, ribs under head,  
zinc plated DIN EN 14592:2008  
TORX-head TX30 length 60 up to 140 mm



BIT-TX30-1/4ZO-L25MM

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## 2 Standards and regulations

# Guidelines for Packing

## 2 Standards and regulations

The type of packing is based on the following rules and standards:

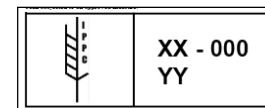
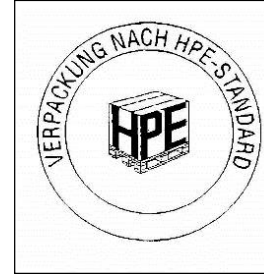
HPE (Organisation for wood packing, pallets and export packing)

DIN EN ISO 9001 quality management

Dangerous goods regulations for

- Air freight (IATA)
- Sea freight (IMDG, GGV See)
- Truck (GGVS/KVO/ADR)
- Train (GGVE/EVO/RID)

Regulations for wood packing of the IPPC (ISPM 15)





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## 3 Packaging specifications

# Guidelines for Packing

## 3 Packaging specifications

- Gas-insulated switchgear type ZX
- $I_s$ -Limiter panel
- Vacuum circuit-breaker
- Embedded Poles
- Vacuum interrupters
- Components
- Ring Main Unit (RMU)



# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>s</sub>-Limiter panel

### 3.1.1 Unpacked switch gears for truck transport (without reloading) – suitable for domestic transport only

Does not apply for ZX0 switchgears.

#### Dimensions

- Variable depending on the size of the panel

#### Type of packing

- Unpacked, without dust protection
- Unpacked, optional with PE foil for dust protection

#### Unloading

- Only by crane

#### Storage

- Outdoor-storage not possible



# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>s</sub>-Limiter panel

### 3.1.2 Pallet for direct truck transport (without reloading) – suitable for domestic transport only

#### Dimensions

- Variable depending on the size of the panel

#### Typ of packing

- Pallet type 4- way entry , Floor 24 mm
- Alternative in case of high weights 8 x 10 vats, number of vats depending on the width, floor 24 mm
- Securing of the panels on the pallet with longitudinal and cross timbers against slipping in all direction
- Fastening with textile strap

#### Unloading:

- By crane, forklift or pallet truck (depending on the package)

#### Storage:

- Outdoor-storage not possible
- No dust protection



# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>s</sub>-Limiter panel

### 3.1.3 Pallet for direct truck transport (without reloading) – with Poly protective cover with poly protection cover suitable for domestic transport only

Type of packing as described under 3.1.2

#### Variation

- Optional the panels can be provided with a poly protection cover to prevent as dust protection

#### Unloading

- By crane, forklift or pallet truck (depending on the package)

#### Storage

- Outdoor-storage not possible





# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>s</sub>-Limiter panel

### 3.1.4 Pallet protect with paperboard for the direct truck transport (without reloading) – within Europe

#### Dimensions

- Variable depending on the size of the panel

#### Type of packing

- Single or double packing (see paragraph 3.1.8)
- Pallet type 4- way entry, Floor 24 mm
- Alternative in case of high weights 8 x 10 vats, number of vats depending on the width, floor 24 mm
- Securing of the panels on the pallet with longitudinal and cross timbers against slipping in all direction
- Poly protection cover to prevent as dust protection
- Additional physical protection with cardboard
- Fastening with textile strap

#### Unloading and storage

- By forklift or pallet truck (depending on the package)
- Outdoor-storage not possible



# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>s</sub>-Limiter panel

### 3.1.2 / 3.1.3 / 3.1.4 Pallet without preservation for transport by truck – packaging structure

3.1.2 Truck-national



Fastening  
with textile  
strap

1 or 2  
depending  
on the  
weight

Panel  
placed  
on pallet

Securing of the panels  
on pallet with timbers  
against slipping in all  
direction

3.1.3 Truck-national + Option



Foam foil and Poly  
protective cover as  
dust protection

3.1.4 Truck-Europe



Additional physical  
protection with  
cardboard

3.1.4 Truck-Europe



Installation of  
indicators and  
basic marks

# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>s</sub>-Limiter panel

3.1.5 Pallet covered with paperboard for the sea transport in containers belonging to the shipping company (20' und 40' box containers and 40' high cube containers, only FCL / FCL deliveries possible)

### Dimensions

- Variable depending on the size of the panel

### Type of packing

- Single or double packing (see paragraph 3.1.8)
- Pallet type 4- way entry , Floor 24 mm
- Alternative in case of high weights 8 x 10 vats, number of vats depending on the width, floor 24 mm
- Securing of the panels on the pallet with longitudinal and cross timbers against slipping in all direction
- Standard preservation in aluminium foil for a transport and storage time of 12 month from the date of packing. Extension of the preservation time to 18 - 24 month possible
- Additional physical protection with cardboard
- Fastening with textile strap

### Unloading and storage

- By forklift or pallet truck (depending on the package)
- Outdoor-storage not possible





# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>s</sub>-Limiter panel

### 3.1.5 Pallet covered with cardboard for the sea transport in containers – packaging structure



Panel placed on pallet  
Desiccant placed

Aluminium and foam foil placed on pallet



Foam foil on top of the panel

Securing of the panels on pallet with timbers against slipping in all direction



Panel welded in aluminium foil as preservation for corrossion



Fastening with textile strap  
1 or 2 depending on the weight  
Additional physical protection with cardboard

Installation of indicators and basic marks

# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>S</sub>-Limiter panel

### 3.1.6 Sea freight in a shipper's own container (new or second-hand) with CSC tag (20' und 40' box containers and 40' high cube containers)

- Suitable for outside storage
- Under-roof storage recommended
- Storage: Same as for cases for conventional sea freight

Packages as described under 3.1.5

- Under the consideration that packages remain in the bought container boxes outside storage is possible in accordance with agreed preservation time.





# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>s</sub>-Limiter panel

### 3.1.7 Case for the conventional sea freight – optional can be stacked up to 1,000 kg / top cover surface

#### Dimensions

- Variable depending on the size of the panel

#### Type of packing

- Single or double packing (see paragraph 3.1.8)
- Longitudinal and cross timbers, bottom 24 mm
- Plywood DW100 water-resistant
- Cover lumbers
- Fastening with longitudinal and cross timbers
- The interior fitting is strengthened by pillars and longitudinal (stacking pressure)
- Preservation in aluminium foil for a transport and storage time of 12 month from the date of packing
- Extension of the preservation time to 18 - 24 month possible

#### Unloading and storage

- By crane or forklift
- Outdoor-storage possible
- Under-roof storage recommended



# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>S</sub>-Limiter panel

### 3.1.7 Case for the conventional sea freight – packaging structure



Desiccant placed

Panel placed on pallet

Foam foil and aluminium placed on pallet



Foam foil on top of the panel

Securing of the panels on pallet with timbers against slipping in all direction



Mounting fixing timber

Panel welded in aluminium foil as preservation for corrosion and covered with foam foil

Side panels of plywood screwed



Optional Timber under the lid screwed

Fixing timber screwed

Fixing timber screwed

# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>s</sub>-Limiter panel

### 3.1.7 Case for the conventional sea freight – special option solid wooden case (standard for Australia)



Desiccant placed

Panel placed on pallet

Foam foil and aluminium placed on pallet



Foam foil on top of the panel

Securing of the panels on pallet with timbers against slipping in all direction



Mounting fixing timber

Panel welded in aluminium foil as preservation for corrosion and covered with foam foil

Side panels of plywood screwed



Solid wooden case

# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>S</sub>-Limiter panel

### 3.1.8 Case for the conventional sea freight – Single- or Double panel packing



I.  
Single panel packing  
gross weight up to  
approx. 2.5 tons



II.  
Double panel packing  
gross weight up to  
approx. 4.5 tons



# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX / I<sub>s</sub>-Limiter panel

### 3.1.8 Double panel packing

Gross weight up to approx. 4.5 tons

- The standard packing price is calculated for the single packing.
- ABB will use double panel packing only after customers approval.

The double panel packing provides the following advantages

- Saving potential in packing costs which will be granted to the customer.
- Increase of the stability in the packaging unit.





# Guidelines for Packing

## 3.1 Gas-insulated switchgears type ZX

### 3.1.9 Case with cardboard for transport by airfreight

#### Dimensions

- Variable depending on the size of the panel

#### Type of packing

- Single panel packing
- Cardboard 2-waves with wooden boards for reinforcing
- Pallet type 4- way entry , Floor 24mm
- Securing of the panels on the pallet with longitudinal and cross timbers against slipping in all direction and fastening with textile strap
- Standard preservation in aluminium foil for a transport and storage time of 12 month from the date of packing. Extension of the preservation time to 18 - 24 month possible

#### Unloading and storage

- By forklift or pallet truck (depending on the package)
- Outdoor-storage not possible
- Not stackable



# Guidelines for Packing

## 3 Packaging specifications

- Gas-insulated switchgear type ZX
- $I_s$ -Limiter panel
- Vacuum circuit-breaker
- Embedded Poles
- Vacuum interrupters
- Components
- Ring Main Unit (RMU)



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# Guidelines for Packing

## 3.2 Vacuum circuit-breakers

### 3.2.1 Euro-pallet for the domestic truck transport

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#### Dimensions

- 120 x 80 cm (Euro dimension) or
- 120 x 100 cm
- Height variable depending on type of vacuum circuit-breaker

#### Type of packing

- Fastening with textile strap and frames against slipping
- Provided with a poly protection cover to protect against dirt (dust protection)
- Alternatively, additional protection with pallet collars

#### Unloading

- By forklift or pallet truck (depending on the package)

#### Storage

- Outdoor-storage not possible
- Not stackable



# Guidelines for Packing

## 3.2 Vacuum circuit-breakers

### 3.2.2 Carton on Euro-pallet for air and truck transport (Europe)

#### Dimensions

- 120 x 80 cm (Euro dimension) or
- 120 x 100 cm
- Height variable depending on type of vacuum circuit-breaker

#### Type of packing

- Fastening with textile strap and frames against slipping
- Alternatively, additional protection with pallet collars

#### Content

- 1 - 4 vacuum circuit-breakers depending on type of breaker

#### Unloading

- By forklift or pallet truck (depending on the package)

#### Storage

- Outdoor-storage not possible
- Not stackable



# Guidelines for Packing

## 3.2 Vacuum circuit-breakers

### 3.2.3 Carton on Euro-pallet for air and truck transport (Europe), optional stackable

---

- To enable the stacking of the packages, the boxes will be strengthened with longitudinal and angle woods
- The pallets can be stacked twice one upon the other





# Guidelines for Packing

## 3.2 Vacuum circuit-breakers

### 3.2.4 Case for transport in containers, for FCL and LCL deliveries, stackable up to 1,000 kg / top cover surface

#### Dimensions

- Variable, optimized for a beneficial container load

#### Type of packing

- Plywood DW100 water-resistant, longitudinal and cross timbers, cover lumbers
- Inside of the case the circuit-breaker will be fixed on the bottom. The circuit-breaker will be stuffed against each other. Compression woods prevent from lengthwise movements.
- Standard preservation in aluminium foil for a transport and storage time of 12 month from date of packing
- Extension of the preservation time to 18 - 24 month possible

#### Content

- 1 - 8 circuit-breakers depending on the type of breaker

#### Unloading

- By forklift or crane

#### Storage

- Outdoor-storage possible
- Under-roof storage recommended



# Guidelines for Packing

## 3 Packaging specifications

- Gas-insulated switchgear type ZX
- $I_S$ -Limiter panel
- Vacuum circuit-breaker
- Embedded Poles
- Vacuum interrupters
- Components
- Ring Main Unit (RMU)



# Guidelines for Packing

## 3.3 Embedded Poles (Indoor)

3.3.1 Reusable case for air, truck and sea transport in containers,  
for FCL and LCL deliveries, stackable up to 1,000 kg / top cover surface

### Dimensions

- 120 x 80 x 64 cm
- 120 x 80 x 89 cm
- 151 x 83 x 102 cm

### Type of packing

- Case 6 mm plywood, full non-wood type
- Packing of the poles with special ethafoam inserts (upper and base parts)
- Preservation for overseas transport in aluminium foil for a transport and storage time of 6 month from date of packing

### Loading and unloading

- By forklift or pallet truck (depending on the package)

### Storage

- Under-roof storage



# Guidelines for Packing

## 3.3 Embedded Poles (Outdoor)

3.4.1 Reusable case for air, truck and sea transport in containers,  
for FCL and LCL deliveries, stackable up to 1,000 kg / top cover surface

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### Dimensions

- 151 x 83 x 102 cm

### Type of packing

- Packing of the OP-poles with special ethafoam inserts (upper and base parts)
- Locking with a special plywood cover for protection against slipping (prefabricated pattern)

### Loading and unloading

- By forklift or pallet truck (depending on the package)

### Storage

- Outdoor-storage possible
- Under-roof storage recommended



# Guidelines for Packing

## 3 Packaging specifications

- Gas-insulated switchgear type ZX
- $I_s$ -Limiter panel
- Vacuum circuit-breaker
- Embedded Poles
- **Vacuum interrupters**
- Components
- Ring Main Unit (RMU)





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# Guidelines for Packing

## 3.5 Vacuum interrupters

3.5.1 Reusable case for air, truck and sea transport in containers,  
for FCL and LCL deliveries, stackable up to 1,000 kg / top cover surface

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### Dimensions

- 120 x 80 x 89 cm

### Type of packing

- Case 6 mm plywood, full non-wood type
- Packing of the vacuum interrupters with special ethafoam inserts
- Separate shrinking of the chambers with dryers
- Preservation for overseas transport in aluminium foil for a transport and storage time of 6 month from date of packing

### Loading and unloading

- By forklift or pallet truck (depending on the package)

### Storage

- Under-roof storage



# Guidelines for Packing

## 3 Packaging specifications

- Gas-insulated switchgear type ZX
- $I_S$ -Limiter panel
- Vacuum circuit-breaker
- Embedded Poles
- Vacuum interrupters
- Components
- Ring Main Unit (RMU)



# Guidelines for Packing

## 3.6 Components

### 3.6.1 Carton on pallet for air and truck transport, not stackable

#### Dimensions

- 120 x 80 cm (Euro dimension) or
- 120 x 100 cm

#### Type of packing

- Small parts will be packed additionally in cartons
- If necessary the components will be protected with stacking bags, airbags bubble wrap, polystyrene, foam-pack or paper stuffing
- Alternatively, additional protection with pallet collars

#### Content

- Components

#### Loading and unloading

- By forklift or pallet truck (depending on the package)

#### Storage

- Outdoor-storage not possible



# Guidelines for Packing

## 3.6 Components

### 3.6.2 Carton on Euro-pallet for air and truck transport (Europe), optional **stackable**

---

- To enable the stacking of the packages, the boxes will be strengthened with longitudinal and angle woods
- The pallets can be stacked twice one upon the other



# Guidelines for Packing

## 3.6 Components

### 3.6.3 Case for transport in containers, for FCL and LCL deliveries, stackable up to 1,000 kg / top cover surface

#### Dimensions

- Variable
- Optimized for a beneficial container load

#### Type of packing

- Plywood DW100 water-resistant, longitudinal and cross timbers, cover lumbers
- If necessary the components will be protected with stacking bags, airbags bubble wrap, polystyrene, foam-pack or paper stuffing
- If applicable a pre-packing of the components in cardboard boxes occurs
- Preservation in aluminium foil for a transport and storage time of 12 month from date of packing
- Extension of the preservation time to 18 - 24 month possible

#### Loading and unloading

- By forklift or crane

#### Storage

- Outdoor-storage possible
- Under-roof storage recommended





# Guidelines for Packing

## 3.6 Components

### 3.6.3 Case for accessories standard measurements – packaging structure



Every part labelled with

- Order-no.
- Position
- Quantity
- Material number
- Material description
- Delivery note number



Heavy or bulky materials (e.g. floor frames, metal sheets) are packed on the floor and protected with cardboard and foam foil



Sensitive materials are additionally packed in foam foil and separated from other materials by cardboard (e.g. lacquered materials)

# Guidelines for Packing

## 3.6 Components

### 3.6.3 Case for accessories standard measurements – packaging structure



- Protect with foam foil
  - Adding desiccant
  - Welding in aluminum foil



- Standard measurements
- 1770 mm x 1440 mm x 900 mm
  - 1770 mm x 1440 mm x 650 mm

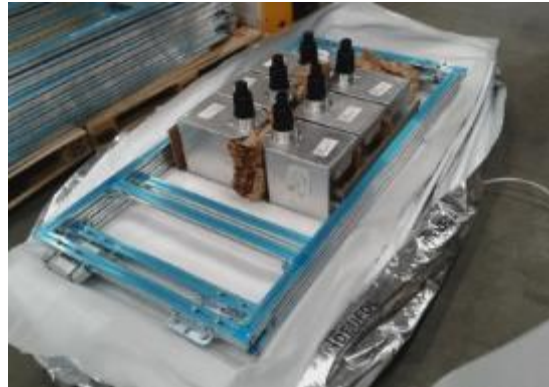


Packing list at the front under a cover

# Guidelines for Packing

## 3.6 Components

### 3.6.3 Case for accessories individual measurements – packaging structure



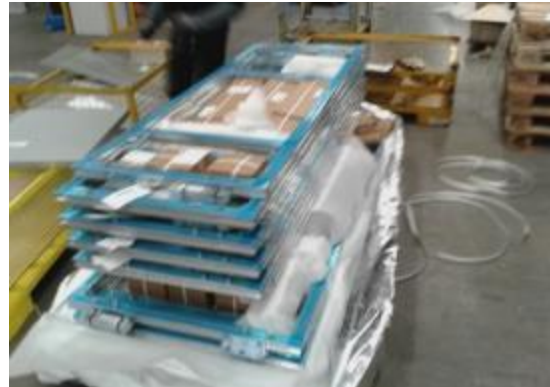
Heavy or bulky materials (e.g. floor frames, endcover, transformer) are packed on the floor and protected with cardboard and foam foil

Protect with foam foil adding desiccant welding in aluminum foil

# Guidelines for Packing

## 3.6 Components

### 3.6.3 Case for accessories individual measurements – packaging structure



Sensitive materials are additionally packed in foam foil and separated from other materials by cardboard (e.g. lacquered materials)

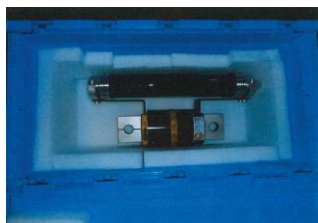
Securing and fixing with timber and textile strap.  
Timber under the lid for stacking

# Guidelines for Packing

## 3.6 Components

### 3.6.3 Pre-packing of sensibler components / I<sub>s</sub>-Limiter inserts – packaging structure

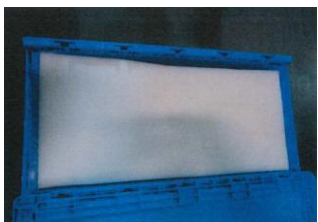
#### I<sub>s</sub>-Limiter inserts



- Prepackaging in blue box
- Bottom and sides upholstered by Ethafoam

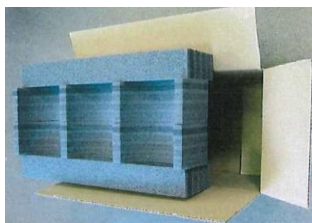


- Padding with wrapping paper

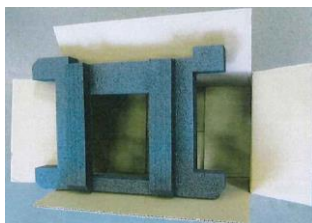


- Ethafoam on the top
- Closing the box

#### UFES prime switch



- Prepackaging in special carton box
- Foam molding Bottom

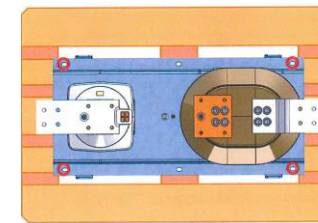


- Foam molding Top



- Insert UFES in molded part and secure with counterpart
- Closing the box

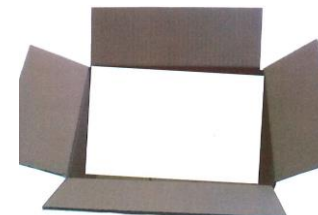
#### FC-Protector



- Lower part screwed on pallet



- Upper part in carton box on pallet
- With Foam screwed on pallet



- Ethafoam on the top
- Closing the box



# Guidelines for Packing

## 3 3 Packaging specifications

- Gas-insulated switchgear type ZX
- $I_s$ -Limiter panel
- Vacuum circuit-breaker
- Embedded Poles
- Vacuum interrupters
- Components
- Ring Main Unit (RMU)



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# Guidelines for Packing

## 3.7 Ring Main Unit (RMU)

### 3.7.1 Pallet for direct truck transport (without reloading)– with VCI-cover

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#### Dimensions

- Variable depending on the size of the panel-unit

#### Type of packing

- Single panel-unit packing
- 4-way pallet, handling with forklift or pallet truck
- RMU screwed to the pallet
- Standard preservation with VCI-cover and 1 bag of desiccant

#### Unloading and storage

- By forklift or pallet truck (depending on the package)
- Outdoor-storage not possible
- Not stackable

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## 4 Securing of packages in containers

# Guidelines for Packing

## 4 Securing of packages in containers



The packages will be secured in the container with timbers on the bottom against slipping in lengthwise and crosswise direction and on the sides with special stuffing bags and textile strap

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## 5 Securing of packages on trucks



# Guidelines for Packing

## 5 Securing of packages on the truck

The tie-down will be made as follows

1. Tension belts against upright movements
  - number of belts depends on the width of the package, preferably 1 belt per package
2. Rubber under the pallets against horizontal movements
3. Stuffing bags for cushioning against each other, if necessary
4. Edge protection for the tie-down with tension belts, if necessary ( e. g. RMU)



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6 Unload instructions

# Guidelines for Packing

## 6 Unload instructions

### Principles of unloading by using forklift and pallet truck

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1. Check before unloading, if the using forklift truck is suitable
  - Enough load capacity of the using forklift truck
  - The forklift truck has to be maintained regularly and inspected for deficiencies
  - The proper conditions of the tyre are important to ensure an evenly transportation
2. Requirement unloading staff
  - Only competent and trained staff is allowed to do the unloading
  - The driver must have the legal driving age, be in a good constitution and spiritual condition and a written commission
  - The driver must have an unobstructed view and if necessary a second person has to give instructions
  - When driving the stability of the truck has to be guaranteed
  - Driving with appropriate speed, no turning and driving angular on incline routes, transport the weights on the forks in a low rise position, observe the underground of the lane
3. The length of the forks has to be min. 70% of the length of the package which should be unloaded
4. If the package is shifted or damaged this has to be documented by photo before unloading  
Later registration of complaint of transport damage are unacceptable



# Guidelines for Packing

## 6 Unload instructions

### Principles of unloading by using forklift and pallet truck

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1. Drive under the package as far as possible and distribute the weight evenly on the forks; if necessary pick up the package again
2. The centre of gravity has to be centrally arranged to the vehicle  
If the centre of gravity is not in the middle of the package it will be marked on the package
3. Only lift the weights immediately before the unloading while standing and braked trailer
4. Immediately upon leaving the load area the packaging has to be lower  
If the weight is rise on the fork lifter you are not allowed to leave the fork lifter  
The stay under and directly besides the lifted package is prohibited
5. The same evenly distribution of the weight and the centre of gravity are also to observe by using lifting cart (electrical/manually)



# Guidelines for Packing

## 6 Unload instructions

### Principles of unloading by crane

For unloading the panels by crane, there are windows for lashing points into the cardboard. It is absolutely necessary to use only the pre-assembled lashing points as well as the cable run correctly by a four-strand chain.





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## 7 Examples of markings

# Guidelines for Packing

## 7 Examples of markings



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## 8 Packaging options

# Guidelines for Packing

## 8 Packaging options



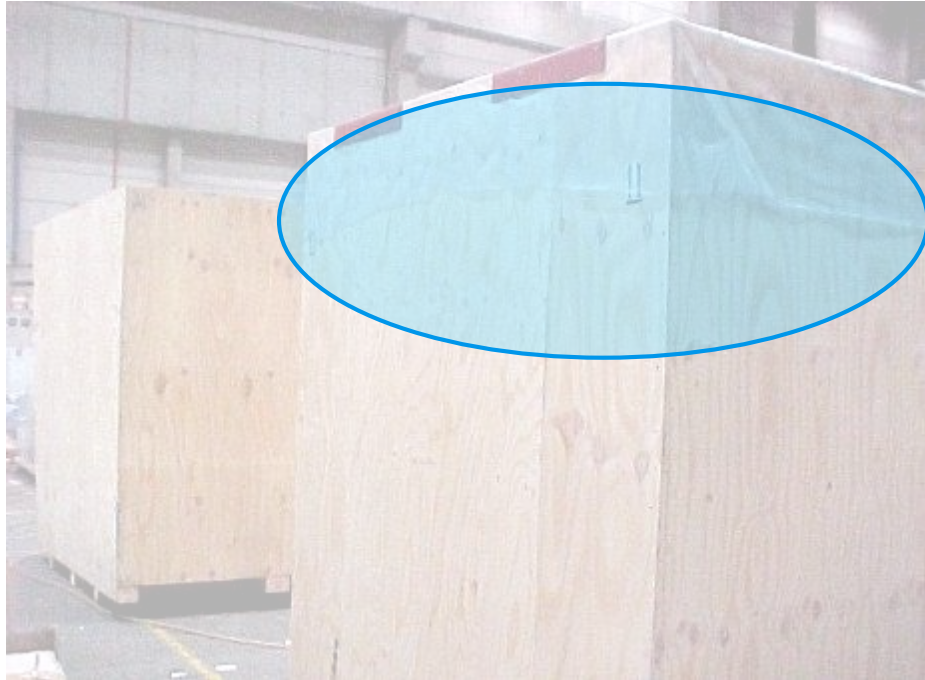
1. U-iron – underneath
  - Used for heavy cases



2. Steel angles – above
  - Used for high and / or heavy cases

# Guidelines for Packing

## 8 Packaging options



3. Additional coverfoil – outside
- For better protection against moisture



4. IPPC Standard ISPM 15
- Special heat treated wood



# Guidelines for Packing

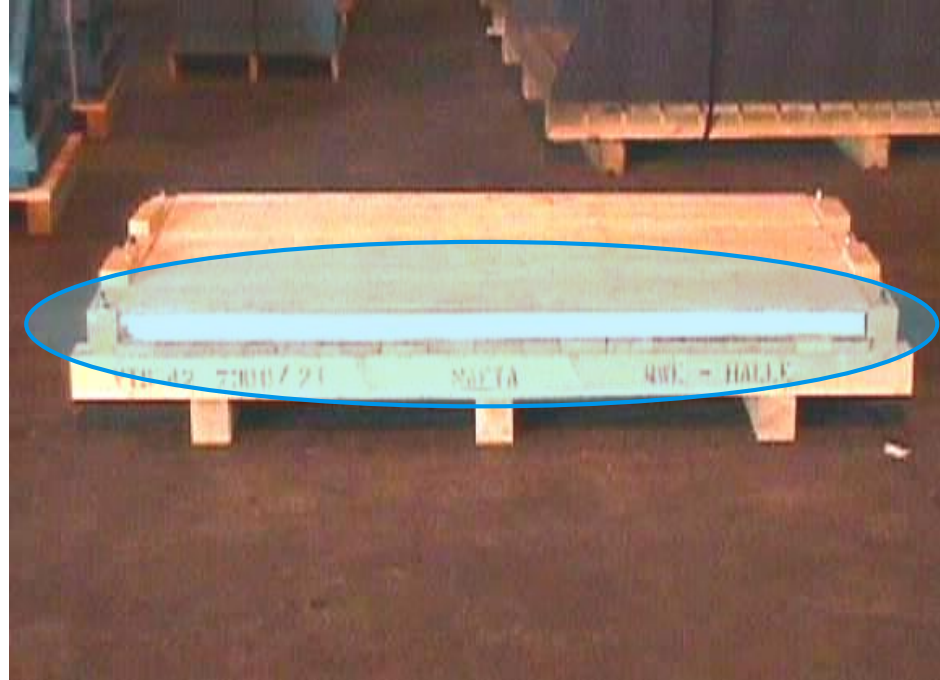
## 8 Packaging options



5. Tilting indicator



6. Shock indicator



7. Ethafoam bottom

- For shock absorption (high protection)

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## 9 Advantages and disadvantages of the packing types

# Guidelines for Packing

## 9 Advantages and disadvantages of packing types

Type of packing	Advantages	Disadvantages
Packing on pallet	<ul style="list-style-type: none"><li>• Less expensive</li><li>• Reduces packing time</li></ul>	<ul style="list-style-type: none"><li>• Low protection against manual and corrosion damages</li><li>• Transport and loading have to be done carefully, expenditure of time</li></ul>
Packing in cases (non-returnable)	<ul style="list-style-type: none"><li>• Safe protection</li><li>• Easy handling for the haulier</li><li>• Outdoor-storage possible</li><li>• Stackable</li><li>• Optimal capacity utilization for truck and container under consideration of dimensions</li></ul>	<ul style="list-style-type: none"><li>• More expensive</li></ul>
Packing in cases (returnable)	<ul style="list-style-type: none"><li>• Safe protection against mechanical damages</li><li>• Easy handling for the haulier</li><li>• Stackable</li><li>• Economical and ecological</li></ul>	<ul style="list-style-type: none"><li>• Logistical expense through returning of cases</li></ul>
Container packing	<ul style="list-style-type: none"><li>• Safe protection against mechanical damages</li><li>• Less expensive</li></ul>	<ul style="list-style-type: none"><li>• No outdoor-storage possible with containers of the shipping company, as they have to be returned after unloading immediately.</li><li>• Alternatively shipper's own containers (second-hand or new) could be bought, in which the packages could remain according to their preservation, to allow an outdoor-storage for this packaging type.</li></ul>



**ABB**