

Guideline for the assessment of defective packages in air transportation



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The guideline for the assessment of defective packages has been elaborated on the basis of an expert evaluation.

It applies to packages, overpacks and loading units for the transportation of dangerous goods, hereafter called packages. It is not valid for packages containing radioactive materials.

The guideline contains an exemplary description of packages with defects of different degrees which thus are probably no longer suited for the safe transportation by air. According to their degrees, the defects are classified into three damage levels to which recommendations concerning their further usage are assigned.

The guideline may be taken as a decision support in the assessment of defective packages and may be used for training purposes.

Liability for the recommendations given in this guideline is excluded.

1. Target Group

Shippers or consignors, package and loading personnel, carriers, pre-checkers, checkers, surveillance personnel, supervisory authorities, training organisations, forwarding agents and other institutions involved in transportation.

2. Legal Basis According to the ICAO-TI

The consignor has to take care that dangerous goods are packed in packagings of good quality. The packages may not show any signs of reduced strength. They must be constructed, closed and prepared for transportation in such a way that any leakage during transportation due to temperature, moisture and pressure changes or vibrations, which may normally occur in flight, is prevented. No dangerous good residue may adhere to the outside of the packages. These conditions apply to new as well as to reused packages. The intended function of a package may not be adversely affected by overpacks possibly used.

The air carrier may accept a package with dangerous goods only after he has checked the package and verified that it has been properly marked and placarded and that neither leakage nor other signs exists which give reason to doubt the intactness of the package.

For the implementation of the legal requirements it is assumed that packagings may be repeatedly reused for transportation (the regulations expressly provide for this possibility) and that in combined transportation already a shipment and transshipment may have taken place.

Therefore it has to be taken into account that for the transportation of packages the outward appearance need not be brand-new and intact. Critical defects, however, are those which may indicate that the legally prescribed performance level is not obtained. Only in the latter case packages are hereafter considered to be damaged.

3. Damage Levels and Recommended Actions and Consequences

I Simple defects

Defects which are insignificant under safety aspects (e.g. traces of use) and which have no effects on the legally prescribed performance level of the package.

Consequence:

The package may be transported without restrictions.

II Serious defects

Defects which are serious under safety aspects and which will have the effect that the package presumably does not meet the performance level legally prescribed for air traffic.

Consequence:

As far as possible the consignor is to be contacted so that the following measures can be arranged for:

- a.) In individual cases, the package may be repaired by or in coordination with an expert in order to restore the required performance level (see number 4, **repair measures**), and afterwards continue to be transported in air traffic. For the purpose of increasing the performance level of the package, additional **measures to reduce transport loads** (see number 5) may be taken into consideration.
- b.) In addition, there is a possibility to transport a seriously defective package by air in an approved salvage packaging.
- c.) If neither consequence II a) nor consequence II b) applies, a package with serious defects will not be suited for transportation by air. In this case, the package may be transported by land – in consideration of the **measures to reduce transport loads** (see number 5).

III Damage

Damage which has already led to releases or which presumably would lead to a release of dangerous good under normal transport conditions (land and air transportation).

Consequence:

As far as possible the consignor is to be contacted so that the following measures can be arranged for:

- a.) In individual cases the damaged package should be transported by land either to the addressee of the package or to a place where the unit can be newly packed or disposed – in consideration of the dangerous goods regulations and the special **protective measures** (see number 6) established by an authorized expert and tailored to the case.
- b.) In addition, it is possible to transport the damaged package in an approved salvage packaging - preferably by land; otherwise the package may not be transported by air.
- c.) Apart from that it is possible to have the damaged package transported off by land by an appropriately authorized institution, e.g. the fire brigade.

4. Repair measures

In order to repair level II defects, the following measures may be taken into account:

- For boxes made of fibreboard:
 - Opening of the package, check of the inner packaging for damage, repair of the outer packaging by gluing cracks and marks over to get a moisture resistant bonding, marking of the repaired package with a label signed by the expert;
 - Replacement of a loosened bonding with an approved adhesive tape;
- For overpacks (several boxes)
 - Additional strapping for the purpose of stabilization;;
- For barrels and cans:
 - Defined tightening of locks;

5. Measures to reduce transport loads

In order to reduce the loads during transportation and transshipment and in order to increase the performance of packages with level II defects, the following measures may be considered:

- Transportation without stacking (application of a do not stack label);
- Palettization (additional wooden skin plating);
- Securing of the load by means of additional straps, especially for heavy packages;
- Use of a stronger inner packaging or reinforcement of the inner packaging;

6. Protective measures

The following protective measures for packages with level III defects may be applied by an authorized expert in consideration of the dangerous goods regulations:

- In case of spillage of filling contents:
 - New packing of the damaged package, absorption and disposal of the spilled filling contents;

Annexes

Annex 1	Metal packagings
Annex 2	Plastics packagings
Annex 3	Fibreboard packagings
Annex 4	Overpacks

Annex 1 to Guideline for the assessment of defective packages in air transportation

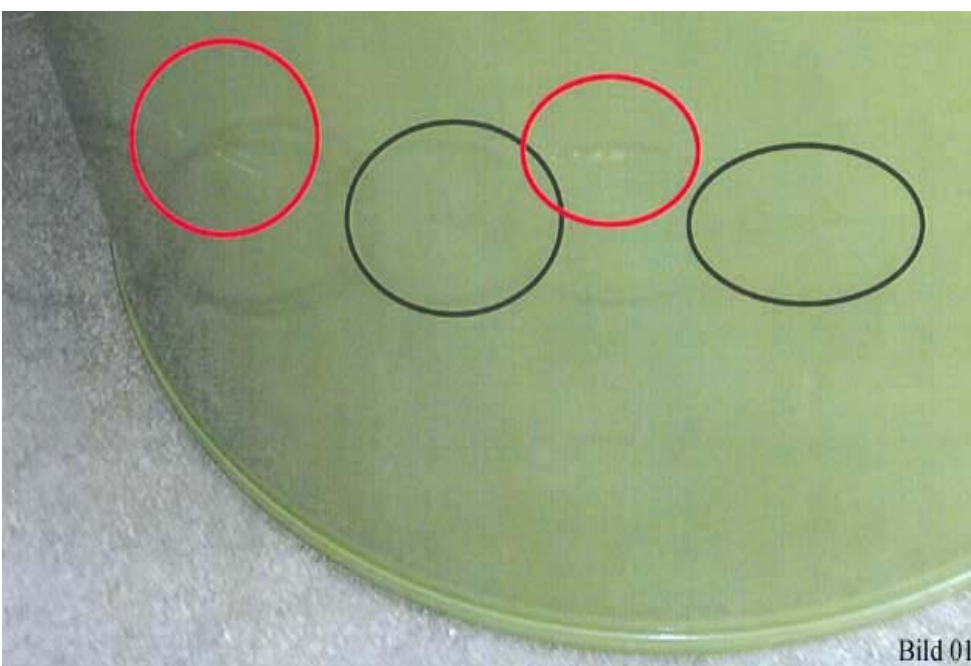
Metal packagings

(Metal drums, jerricans and boxes; composite and combination packagings with outer packagings of metal)

I Simple defects of packagings with solid and liquid contents



- paint worn off in several spots
- retaining of the outer geometry



- Scratches/ abrasive traces/ dents with smooth edges in the wall, however, not close to the folds and closures
- Retaining of the outer geometry



- Scratches/ abrasive traces/ dents with smooth edges
- paint worn off in several spots
- retaining of the outer geometry



- Scratches/ dents with smooth edges in the wall
- paint worn off in several spots
- retaining of the outer geometry



- dents with smooth edges
- retaining of the outer geometry

Bild 05



- dents/ buckles with smooth edges in the wall
- Retaining of the outer geometry

Bild 06



- Dents/ buckles with smooth edges close to the fold
- retaining of the outer geometry



- deformed fold, closures not affected
- no spillage of contents



- Corrosion
- without dents/
buckles
- retaining of the
outer geometry

Bild 13

I Simple defects of packagings with solid contents



- dents/ buckles with smooth edges
- degradation of the outer geometry



- dents/ buckles with smooth edges
- degradation of the outer geometry
- no spillage of contents



- dents/ buckles
- degradation of the outer geometry
- no spillage of contents

Bild 15



Bild 11

- deformed fold
- no spillage of contents

II Serious defects of packagings with solid and liquid contents



- Dents/ buckles with smooth edges close to the fold
- corrosion at dents/ welded seam/ fold
- no spillage of contents



- Dents/ buckles with smooth and sharp edges
- corrosion at dents/ buckles/ welded seam/ fold
- no spillage of contents



- dents with smooth and sharp edges in the bottoms
- degradation of the outer geometry
- no spillage of contents



- dents/ buckles with sharp edges
- degradation of the outer geometry
- no spillage of contents



- Dents/ buckles with sharp edges close to the fold
- degradation of the outer geometry

II Serious defects of packagings with liquid contents



- deformed fold
- no spillage of contents



- dents/ buckles with smooth edges
- degradation of the outer geometry



- dents/ buckles with smooth edges
- degradation of the outer geometry
- no spillage of contents



- dents/ buckles
- degradation of the outer geometry
- no spillage of contents

II Serious defects of thin sheet metal packagings with liquid contents



- dents/ buckles with smooth edges
- degradation of the outer geometry
- no spillage of contents



- buckles with sharpe edges
- degradation of the outer geometry
- no spillage of contents

III Damage



Bild 21

- buckles caused by raised internal pressure
- corrosion at buckles/ welded seam/ fold
- spillage of contents



Bild 22

- sharp dents/ buckles
- degradation of the outer geometry
- spillage of contents



- sharp dents/ buckles
- degradation of the outer geometry
- spillage of contents



- leakiness
- cracks/ cuttings in sheet metal
- spillage of contents



Bild 24

- leakiness
- cracks/ cuts in sheet metal
- spillage of contents

III Damage of thin sheet metal packagings



Bild 29

- sharp dents/ buckles
- degradation of the outer geometry
- spillage of contents

Annex 2 to Guideline for the assessment of defective packages in air transportation

Plastics packagings

(Plastics drums, jerricans and boxes; composite and combination packagings with outer packagings of plastics)

I Simple defects:



Bild 30

- dents
- wrinkle formation without crazing
- no degradation of the outer



Bild 31

- dents / depressions in plastic drums
- wrinkle formation without crazing
- degradation of the outer geometry

II Serious defects:

Plastics Packagings - Serious defects:

- dents/ depression in plastic drums
- wrinkle formation
- degradation of the outer geometry

(Bild 55)

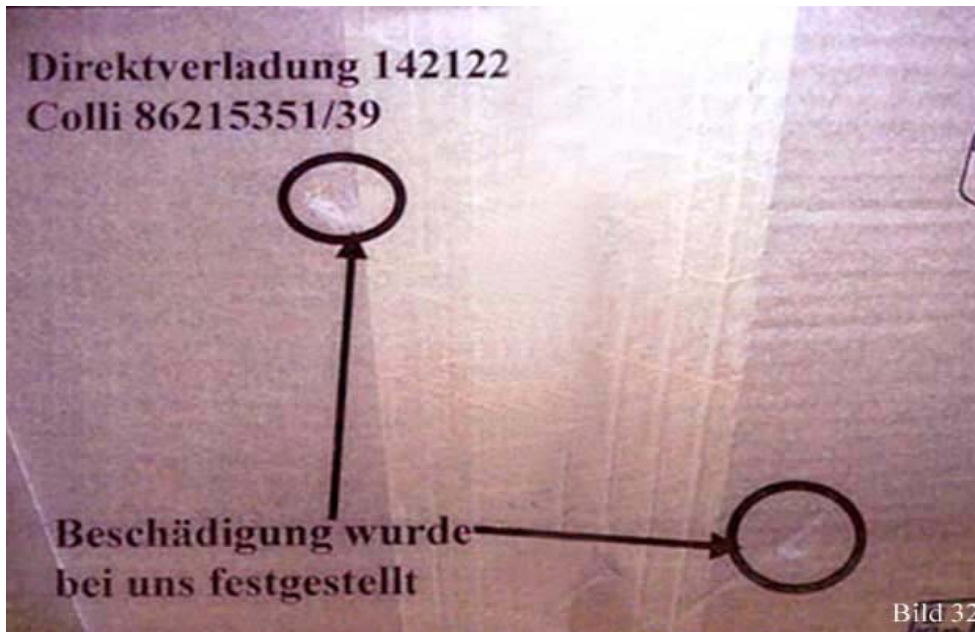


Annex 3 to Guideline for the assessment of defective packages in air transportation

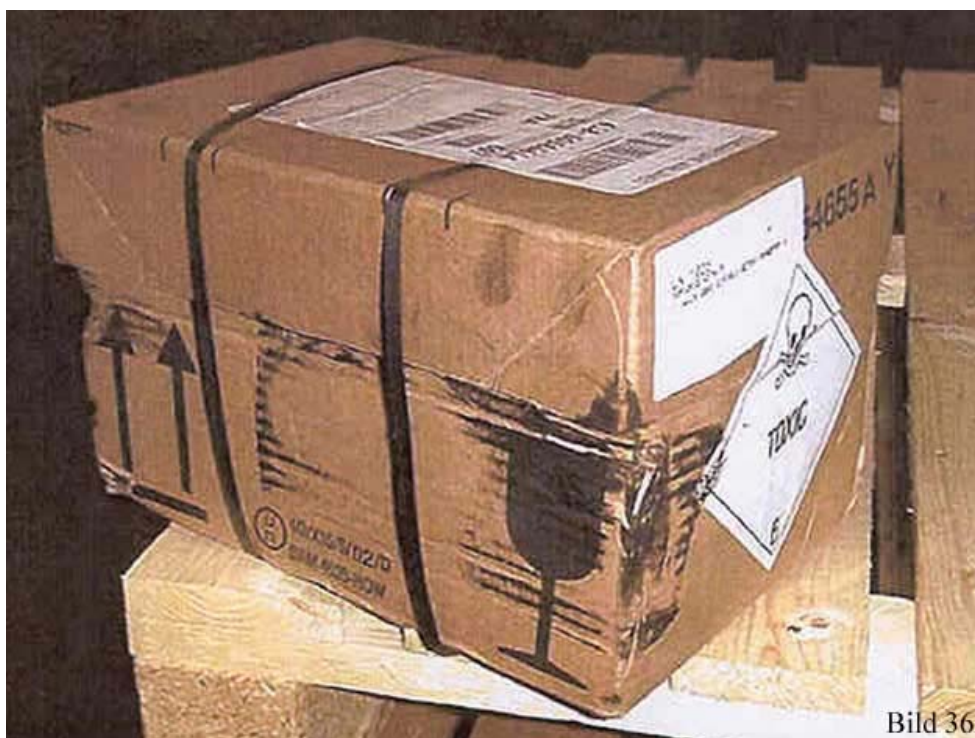
Fibreboard packagings

(Fibreboard boxes and fibre drums, composite and combination packagings with outer packagings of fibreboard)

I Simple defects



- pressure marks
- no damage to the outer paper layer
- retaining of the outer geometry
- no soaking



- abrasives traces/ pressure marks
- limited to the outer paper layer
- retaining of the outer geometry
- no soaking



- wrinkles parallel to the vertical edges
- retaining of the outer geometry
- no damage to the outer paper layer
- no soaking

Bild 34



- wrinkles parallel to the vertical edges
- retaining of the outer geometry
- no damage to the outer paper layer
- no soaking

Bild 35



- pressure mark/
crack
- damage of the
outer paper
layer in an over-
lapped area
- retaining of the
outer geometry
- no soaking



- dent in the me-
tal cap outside
the sealing area
- retaining of the
outer geometry
- no soaking

II Serious defects



- pressure marks
- damage of the outer paper layer
- retaining of the outer geometry
- no soaking

Bild 33



- crack/ pressure mark
- thorough damage down to the inner layer
- retaining of the outer geometry
- no soaking

Bild 38



- pressure mark in a vertical edge
- degradations of the outer geometry
- no soaking

Bild 39



- pressure mark in a vertical edge
- damage to the outer paper layer
- degradation of the outer geometry
- no soaking

Bild 40



- pressure mark in a horizontal edge
- degradation of the outer geometry
- no soaking

Bild 41



- pressure mark at a corner
- no damage to the outer paper layer
- degradation of the outer geometry
- no soaking

Bild 42



- pressure mark at a corner
- limited to the outer paper layer
- degradation of the outer geometry
- no soaking



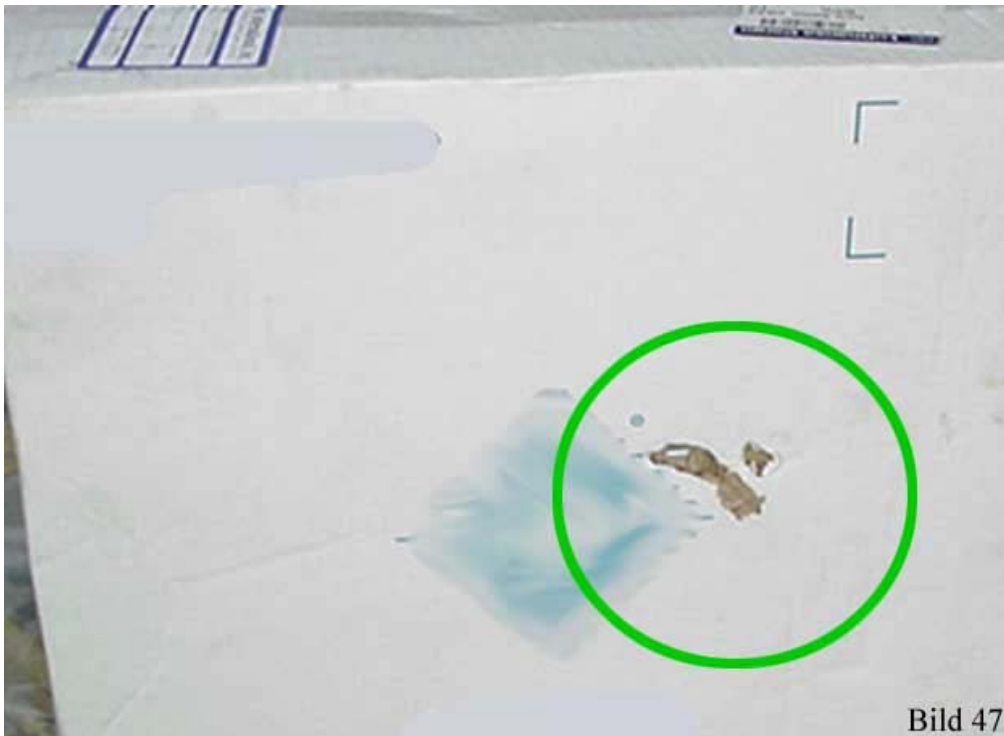
- pressure marks close to a corner
- damage of the outer paper layer
- degradation of the outer geometry
- no soaking



- crack
- thorough damage down to the inner layer
- retaining of the outer geometry
- no soaking



- crack/ depression
- thorough damage down to the inner layer
- retaining of the outer geometry
- no soaking



- crack/ depression
- thorough damage down to the inner layer
- retaining of the outer geometry
- no soaking

III Damage



- Loosening of a bonded joint
- Degradation of the outer geometry
- Spillage of material



- pressure mark
- degradation of the outer geometry
- spillage of solid contents



- soaking
- spillage of liquid contents
- retaining of the outer geometry

Bild 51

Annex 4 to Guideline for the assessment of defective packages in air transportation

Overpacks

(Trays with stretching or shrinking foil)

I Simple defects



- pressure marks/ dents on boxes in an overpack
- retaining of the outer geometry
- no leakage

II Serious defects



- crushed boxes in an overpack
- degradation of the outer geometry
- no leakage