

# General ZFFCN Packaging Specification Logistics, Environmental Protection

Version 2025



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# 1. Scope of Application

This ZF Foxconn Chassis Modules Standards applies if reference is made to it in documents (e.g. ordering documents). It describes the fundamental basis of packaging planning in ZFFCN and the requirements for supplementary use of packaging by suppliers. ZFFCN location and part specific specifications are not invalidated by this ZF Foxconn Company Standards.

## 2. Object

### 2.1 Environmental protection

ZFFCN and its suppliers meet the waste disposal requirements of environmental legislation in accordance with the following ecological priorities:

- a) **Avoidance of waste:** Restriction of packaging to weight and volume necessary (saving resources and reducing the amount of transport)
- b) **Reduction of waste:** Application and continuous improvement of re-usable packaging made of recyclable materials
- c) **Recycling of materials:** The use of environmentally compatible, preferably recyclable materials for all types of packaging

### 2.2 Logistic requirements on the packaging

The supplier is responsible for packaging their components and to improve packaging if it is not fit for its intended purpose. The packaging must be designed in such a way to ensure that it is sufficiently robust to withstand shipment by land, air, sea, etc. and arrive on time without damage or contamination. The planned type of packaging must be agreed with ZF on the supplier's initiative in sufficient time before PPF/PPAP or series production delivery.

The logistic packaging functions are to be taken into consideration under the following aspects:

a) **Quality assurance function:**

The quality assurance function of packaging ensures that the quality of the packed goods is maintained on its way from the manufacturer of the goods to the consumer or for further processing respectively. This means that the protection of the goods shall ensure that the product quality is retained taking the corrosion protection and preservation into consideration.

**b) Transport function:**

The fulfillment of the transport function facilitates or even enables transportation of goods, so that the protection of the goods against slipping, vibrations and changing environmental conditions is safeguarded.

**c) Handling function:**

The handling function of the packing enables grouping of goods and facilitates their handling at the goods turnover.

**d) Environmental function:**

To fulfill environmental function, all one-way packaging shall consist of preferably recyclable materials (see Section 2.1).

**e) Storing, arranging and commissioning function:**

Packaging fulfills important tasks in the distribution of goods as part of the logistics chain. To support increasing automation of warehouses and commissioning systems, suitable packaging is required. Another essential aspect of the storage function of packaging is the requirement for efficient storage of the packaging material in stock.

**f) Integration function:**

Integration of packaging refers to its modular structure and its functional multi-way application in consistent transportation and handling chains. In the future, standardization and modular applications will lead to more and more system links worldwide, characterized by more and more performance-related and cost-efficient material and information flow. Worldwide accepted pool systems are required, and standardized unitary packaging is the basis for commodity circuits.

### 3. Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

DIN EN 13427	Packaging - Requirements for the use of European Standards in the field of packaging and packaging waste	<a href="https://www.din.de">https://www.din.de</a>
ISPM 15	Regulation of wood packaging material in international trade	<a href="#">ISPM-15</a> <a href="#">Einfuhrvorschriften   HPE</a>
SQM24	Global Supplier Quality Directive	<a href="#">Sourcing and Compliance - ZF Foxconn</a>
TRGS 615	Restrictions on the use of anticorrosion agents whose use can lead to the formation of Nnitrosamines	<a href="https://www.baua.de">https://www.baua.de</a>
94/62/EG	Directive 94/62/EC on packaging and packaging waste	<a href="https://eur-lex.europa.eu">https://eur-lex.europa.eu</a>
CAMDS	China Automotive Material Data System	<a href="https://www.camds.org.cn">https://www.camds.org.cn</a>
IMDS	International Material Data System	<a href="http://www.mdssystem.com">www.mdssystem.com</a>
GADSL	Global Automotive Declarable Substance List	<a href="http://www.gadsl.org">http://www.gadsl.org</a>

#### General ZF Packaging Specification Logistics, Environmental Protection

ECR 1907/2006	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EEC and 2000/21/EC
ECR 1272/2008	Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

## 4. Abbreviated terms

Abbreviated term	Explanation
CAMDS	China Automotive Material Data System
CL	Classification, labelling and packaging of substances and mixtures (see regulation (EC) No 1272/2008)
CLP regulation	Classification, labelling and packaging of substances and mixtures (see regulation (EC) No 1272/2008)
ECHA	European Chemicals Agency
EEA	European Economic Area
EHS	Environmental protection, health protection & occupational safety
ELV directive	End-of-life vehicle directive (see directive 2000/53/EC)
EU	European Union
GADSL	Global Automotive Declarable Substance List
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
HCS	Hazard Communication standard
IMDS	International Material Data System
OSHA	Occupational Safety and Health Administration of the United States Department of Labor
REACH regulation	Registration, Evaluation, Authorisation and Restriction of Chemicals (see regulation (EC) No 1907/2006)
RoHS	Restriction of Hazardous Substances
SCIP	Substances of concern in products
SVHCs	Substances of very high concern
ESD	Electrostatic discharge
VCI	Volatile corrosion inhibitor
MF-KLT	MF small load carrier
VDA-KLT	VDA small load carrier

## 5. General

Only the types of packaging approved or specified by the respective ZFFCN locations may be used in the logistics chain from the supplier to the customer.

- The packaging concept is defined in coordination with the relevant internal departments of ZFFCN and the supplier based on the aspects of logistics, quality assurance, environmental compatibility, occupational safety and economy, and it shall be observed.
- The substance prohibitions acc. to Section 8 & 10 apply for packaging materials in principle.
- Packaging with use within the European Union shall correspond to the directive 94/62/EC (see also DIN EN 13427).

- Parts should always be in a ready-for-assembly state when packed. Regardless of the type of packaging agreed upon, the supplier is liable for the as delivered quality of the product and the load carrier.
- Containers, pallets and packaging aids are to deliver in perfect, clean, functioning and save condition.
- If specifications of this standard are not observed, ZFFCN reserves the right to charge additional costs (e.g., disposal costs).

## 5.1 General specifications for the design of packaging

Packagings shall be able to be emptied completely and to be cleaned efficiently. If necessary, PE bags should be used. Material combinations and compounds of materials should be avoided. Packaging materials are to choose in a way that formation of mold will be avoided as possible.

## 5.2 Use of supplier owned packaging

The delivery of parts in the supplier's own returnable containers is only permitted in extraordinary cases and after prior agreement with the ZFFCN specialist departments. The supplier may only use supplier owned containers in the ZFFCN container loop according to ZFFCN plant requirement. These must be technically agreed in advance with the ZFFCN packaging planning department and agreed in writing using a container acceptance protocol.

## 6. Packaging costs

Packaging costs comprise the costs for packaging of each product meant to prevent quality-related deficiencies that may be caused during transportation. They only include the costs for packaging incurred. Plastic inserts/deep drawn parts, one-way inserts, one-way cardboard packaging, as well as VCI components are also included for example. Expenditures and/or work times (handling costs) are not included in the packaging costs, they shall be considered by the supplier in the calculation of the production price. When making an offer, the packaging costs shall be indicated separately, but they do not appear separately on the invoice.

## **7. Use of re-usable packaging/re-usable containers**

**As a rule, ZFFCN gives preference to standardized re-usable container systems combined with the relevant one-way packaging aids made of preferably recyclable materials.**

**The individual ZFFCN locations may negotiate with their suppliers bilateral employment of re-usable packaging.**

**Paper, cardboard or marked PE sheeting shall be used for transport labels (e.g. acc. to VDA 4994 - find at <https://www.vda.de>). The transport labels shall not be stuck on. Wire hangers are not permitted (e.g. for accident prevention reasons).**

**Empties are prepared and kept ready for use at the supplier's premises. The supplier is solely responsible for defining and satisfying various packaging cleaning standards and requirements for specific parts. It is expected that the supplier cleans the containers of coarse dirt and removes old labels if necessary.**

**The supplier is responsible to manage the returnable packaging in their side and cooperate with ZFFCN plant for the regular stock taken - minimum once per year. If any packaging missing from supplier side, the supplier should provide 8D report and is responsible for the losing cost accordingly.**

**In case of special load carriers, special inserts and reusable packaging aids, the supplier is responsible for monitoring and the compliance with the required degree of cleanliness.**

**The packed content and the packaging aids shall not protrude beyond the external contours of the re-usable containers. Components shall be packed in a way that they cannot be damaged during the transport. Lease barrels should be used for fluid or viscous materials.**

**ZFFCN reuseable packaging shall be managed by container management system (e.g. BinMan). For the implementation and rollout of the systems, support and close collaboration from suppliers is required and expected.**

## 8. Use of one-way packaging

### 8.1 General

For one-way packaging, which are not returned to the manufacturer, the regulations in the Sections 8.2 to 8.4 apply.

### 8.2 Dimensions and stackability

- Permitted dimensions:  
length  $\leq$  1 200 mm;  
width  $\leq$  800 mm;  
height  $\leq$  1 000 mm
  
- Permitted dimensions after agreement with ZF FCN:  
length  $\leq$  1 200 mm;  
width  $\leq$  1 000 mm;  
height  $\leq$  1 000 mm
  
- Packaging shall be stackable at least two fold

### 8.3 Material marking

All one-way packaging should be clearly and visibly marked with the standard symbols and/or those recognized by the waste disposal industry (e.g. graphical symbols and symbols acc. to DIN EN ISO 11469 or DIN 6120). The marking shall not restrict the ability to recycle.

### 8.4 Material requirements

In general, environmentally compatible and preferably recyclable materials, accepted worldwide for recycling are to be used for all one-way packaging.

ZFFCN only permits a few, selected materials due to reasons associated with the logistical expenditure required for sorting and separating to assure material recycling. The followed table lists all permitted and forbidden one-way packaging and one-way packaging aids.

Composite materials and packaging chips may only be used for the following part-specific approval. The use of corrosion protection paper and corrosion protection films is subject to TRGS 615. Nitrosamine compounds, secondary amine compounds, heavy metals and nitrite shall not be contained.

For release prior to first delivery, a safety data sheet (requirements see SQM24) stating the ingredients and an independent test certificate are necessary.

Adhesive tapes and packaging straps as well as labels and transport labels shall not restrict the ability to recycle the carrier material.

It is to observe, that different packaging materials can be separated easily.

Type	Permitted material	non-permitted Material
Cardboard packaging	Papers and cardboard free of materials hazardous for paper production ESD cardboard packagings	Papers and cardboard with waterproof coatings, adhesives, or incompatible additives Bitumen paper/cardboard
Corrosion protection paper	VCI papers, which are demonstrably recyclable together with paper/cardboard. VCI foils, which are demonstrably recyclable together with plastic foils.	Paper with incompatible additives, incompatibly impregnated or soaked paper (e.g. paper made with bitumen, oil, wax)
Plastics (preferably natural-colored)	Molded parts: PE, PP, PS Protective caps: PE Foil/sheet: PE with ≤ 5% printed area (also bubble wrap) Foams: PE, PP, PS Strapping bands: PP, PE, Polyester Polystyrene (molded parts) Plastic combinations PE, PP, PS ESD foil/sheet and ESD packaging materials Metal coated foils/sheets for moisture sensitive electronic components	Other plastic combinations Rubber compound material Metal and plastic composite foils Incompatibly impregnated and VCI plastic foils Metal and plastic composite materials Packaging materials containing PVC
Metals	Steel, even galvanized or painted, aluminum	Tin-plated metals (e.g. tin plate) Metals containing heavy metal
Wood	Non-impregnated solid wood and plywood, wood fiber	Chip board, coated or painted wood
Textiles	Cellulose fibres (e.g. cotton, sisal, hemp)	Oilcloth

<b>Glass</b>	<b>Only if absolutely essential for chemical compatibility with the product being transported</b>	<b>Glass wool</b>
<b>Minerals</b>	<b>Active clay, perlite, silica gel, vermiculite</b>	<b>Not in fiber form Mineral wool KMF (synthetic mineral fibers)</b>

In the international trade only raw wood with heat treatment acc. to ISPM 15 or laminated wood is permitted.

## 9. Material-related definition of packaging

Quantity and technical design of packaging are defined in coordination with the relevant internal ZFFCN departments and the supplier.

The supplier submits the first packaging proposal.

## 10. Prohibited, restricted and declarable substances

### 10.1 Legal regulations

All supplies shall meet applicable legal environmental and import regulations, e.g.:

- EU REACH regulation (EC) No 1907/2006,
- EU ELV directive 2000/53/EC,
- China requirements for prohibited substances on automobiles GB/T 30512:2014

Additional legal requirements are summarized in General packaging specifications

#### Attention:

The listed documents may be not complete or outdated.

### 10.2 GADSL substance classification

ZFFCN has adopted the substance declarations and prohibitions of the Global Automotive Declarable Substance List (GADSL).

The GADSL defines the requirements for prohibited and / or declarable substances. These requirements shall be applied to ZFFCN products which are covered under the scope of this ZFFCN Company Standard.

Substances listed in the GADSL and used in parts and materials shall be identified, reported as described in Section 7, and substituted as possible.

The currently published version of the GADSL applies.

Reportable substances shown in the GADSL have a classification of "P" or "D" (definition see below).

Depending on its specific application, the same substance could be classified "P" in one end use, and "D" in another end use.

When this is the case, both classifications for the substance will be shown on the GADSL with examples under the application column.

Declaration (reporting) thresholds are defined by the specific application of the substance.

Any reportable substances below the declaration threshold do not have to be reported.

Unless otherwise indicated, these declaration thresholds lie at a mass fraction of 0.1% of the homogeneous material, not of the component or assembly.

- "P" = Prohibited A substance designated with "P" is either prohibited by regulation for use in certain applications or may not exceed regulated threshold limits. "P" substances in GADSL shall not be used in supplies to ZFFCN unless specific exemptions apply.
- "D" = Declarable a substance designated with "D" must be declared if it exceeds its defined threshold limit.

Since some "D" substances are potential candidates for "P" substances (e.g., substances that are marked with reason code "LR" = "legally regulated" or "FA" = "for assessment"), it is highly recommended not to use "D/LR" or "D/FA" substances, if possible.

"D/FI" substances ("FI" = "for information") are not potential candidates for "P" substances and are acceptable to use.

## 10.3 REACH regulation

### 10.3.1 Substances of very high concern

Substances of very high concern (SVHCs) on the REACH regulation Candidate List (CL) with a mass fraction of > 0.1% are restricted for newly developed ZFFCN products, including supplied parts and carryover parts for new projects.

Suitable substitutes to CL substances shall be developed.

In cases where the supplier is not able to perform a substitution, he shall inform his "Engineering and Product Stewardship" contact at ZF and secure the necessary approval.

SVHCs shall also be avoided in materials used in the production process, such as lubricants, oils, cutting fluids, etc. and approval for use by local ZFFCN environmental protection, health protection & occupational safety (EHS) according with the release process is necessary.

Suppliers of articles and mixtures containing SVHCs with a mass fraction of > 0.1% shall inform ZFFCN in accordance with regulation (EC) No 1907/2006, Article 33, where legally mandated.

### **10.3.2 List of substances subject to authorization (REACH regulation, Annex XIV)**

Substances contained in regulation (EC) No 1907/2006, Annex XIV are prohibited in supplies to ZFFCN.

For all newly developed ZFFCN products, including supplied parts and carryover parts for new projects, as well as for parts being produced after the sunset date, suppliers shall develop suitable substitutes to substances contained in regulation (EC) No 1907/2006, Annex XIV.

In cases where the supplier is not able to perform a substitution, he shall inform his "Engineering and Product Stewardship" contact at ZFFCN, and secure the necessary REACH authorization, where legally mandated.

Substances contained in regulation (EC) No 1907/2006, Annex XIV are also prohibited in materials used in the production process, such as lubricants, oils, cutting fluids, etc. The approval for use shall be in accordance with legal requirements and the release process of the local ZF EHS department.

Suppliers are responsible for securing the REACH authorization for continued use of any material or mixture containing substances listed in regulation (EC) No 1907/2006, Annex XIV and to ensure that ZFFCN's use is included in the authorization.

### **10.3.3 Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (REACH regulation)**

Importers and producers of articles containing substances restricted under regulation (EC) No 1907/2006, Annex XVII may only continue to place the articles on the EU or European Economic Area (EEA) market if the restriction does not apply to their use.

## **10.4 Radioactive substances**

The overall gamma-activity shall not exceed the limit value of 0.1 Bq/g (becquerel per gram) in supplies to ZFFCN.

Any surface contamination on items and packagings shall be kept as low as reasonably achievable and shall not exceed the limit value of 4 Bq/cm<sup>2</sup> for beta and gamma emitters.

**For the measurements, it is permitted to take an average over an area of 300 cm<sup>2</sup>. Non-fixed and fixed contamination needs not be distinguished.**

**Additionally, the gamma local dose rate at the surface of packagings, containers, and equipment may exceed the natural background radiation by a maximum value of 0.1 µSv/h (microsievert per hour).**

**Any additional customer specific requirements shall be stipulated contractually. If ZFFCN has accepted any specific customer requirements which vary from this standard, then these shall also be stipulated contractually with the supply chain.**

## **11. Packaging materials substance prohibitions**

**In addition to the substance specifications of GADSL, packaging materials shall comply with substance prohibitions described in this general packaging specifications.**

## **12. Material data reporting**

**To provide evidence of conformance to substance restrictions, suppliers shall report material and substance information for all types of purchased materials, components or items supplied.**

**For this purpose, the International Material Data System (IMDS) shall be used. The IMDS provides detailed information on materials and substances. IMDS recommendations give instructions on how to report the presence of declarable substances in parts and materials.**

**Suppliers who do not use IMDS shall report material and substance information for all types of purchased materials, components or items supplied acc. to the format agreed with ZF FCN.**

**In addition, suppliers for vehicle manufacturers in China shall also report material and substance information in the China Automotive Material Data System (CAMDS).**

**The supplier shall review changes of legal or other requirements and shall update the data provided to ZF (e.g., IMDS submission, CAMDS submission, safety data sheet, compliance declaration), if necessary.**

**Additional requirements are described in SQM24.**

## 13. Reporting of substances of very high concern (SVHCs)

- EU-based suppliers are obligated to report products that contain SVHCs with a mass fraction of > 0.1% to the European Chemicals Agency (ECHA) in the Substances of concern in products (SCIP) database. The EU-based supplier shall provide the SCIP number(s) to ZF. The exception is those EU-based suppliers who have already reported their products to ZF in IMDS.
- Non-EU-based suppliers shall provide ZF with all necessary information for each product containing SVHCs with a mass fraction of > 0.1% unless the non-EU-based supplier has already reported his product to ZFFCN.

## 14. Safety data sheets

Requirements for the provision of safety data sheets are described in SQM24

## 15. Product warning labels

Product warning labels are primarily used to ensure consumer safety and that a given product was manufactured to meet regulatory and industry standards.

Certain ZF products, such as adhesives, friction materials, cleaners (brake cleaners, etc.), hydraulic fluids (brake fluids, etc.), lubricants (greases, etc.), oils, etc., may require product warning labels on the product or packaging, in addition to provision of safety data sheets, to inform users of chemical hazards or potential exposure to chemical substances contained in the product.

For product labelling the following labeling requirements may apply or need to be followed for example:

- Electronics or electrical products
  - EU RoHS
  - China RoHS
- Mixtures / chemicals:
  - Globally Harmonized System of Classification and Labelling of Chemicals (GHS) of the United Nations
  - CLP regulation in the EU
  - Hazard Communication standard (HCS) from OSHA in the United States, etc.
- California Safe Drinking Water and Toxic Enforcement Act (also known as "Proposition 65")

## 16. Responsible ZFFCN departments

If reference is made to ZFFCN in this ZFFCN Company Standard, the following departments shall be included:

- Purchasing
- Logistic / Container management

## 17. Exceptions

Should specific packaging specifications require deviations from this packaging specification, consultation with ZFFCN (see Section 16) will be necessary. Any deviation from this packaging specification requires written approval from ZFFCN for exemption.

### Bibliography & Version History

#### GB/T 30512:2014

Requirements for prohibited substances on automobiles

#### 2000/53/EC

Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles

Version	Changes in Document	Datum
1.0	Info aus QD83 übernommen, Section 2.2	26. Feb
1.0	Section 5.2 added	26. Feb
		26. Feb
		27. Feb

# ZF Global AFR <5tons

## INBOUND Region – 2 Forwarder Strategy

Validity until 30th April 2025

**2 Forwarder Strategy**  
 - Plant's / division's decision which forwarder to use  
 - Decision driven by costs, transit time, performance

Contact details of the nominated forwarders can always be found at the ZOOM Page Air Freight @ ZF

Packages by INBOUND region	Nominated Forwarder
North + Central America	Crane / JAS
South America	JAS / Dachser
Europe (excl. GB)	Dachser / JAS
GB	JAS / Crane
Africa	Dachser / Senator
India	Crane / Dachser
China	GAC / Schenker / Dachser
South Asia (MY, SG, TH, VN)	Schenker / DHL
JP, KR	JAS / Dachser
HK, TW	Schenker / DHL
Oceania	Schenker / DHL
Middle East	Schenker



Starting from May 1st 2024, chargeable weight limit change from 2.5t to 5t for the separation of AFR regular and spot quote

Please use **rate management** for cost comparison and transit time consideration

# Ocean Freight Nomination Overview Global

## 2024 FCL

