



Packaging standards

Manual for packaging materials

Solaris Bus & Coach sp. z o.o.
(hereinafter referred to as the “Solaris”)

version: January 2022

with a registered office in Bolechowo-Osiedle, under the address 46 Obornicka Street, 62-005 Owińska, entered in the Register of Entrepreneurs of the National Court Register by the District Court Poznań Nowe Miasto i Wilda in Poznań, 8th Commercial Department of the National Court Register under the KRS number: 0000856560, Tax identification Number (NIP): 524-00-15-630, share capital 160 169 580.00 PLN, paid up in full

1. Introduction

1.1. Glossary

Term	Definition
Solaris Bus & Coach sp. z o.o. / Solaris / SBC	Production facility, which produces city buses. Located at: ul. Obornicka 46, Bolechowo-Osiedle, 62-005 Owińska, Poland
Cooperator	A company cooperating with Solaris Bus & Coach sp. z o.o. under conditions set for performing a certain phase of the production process for Solaris (manufacturing co-operation)
Supplier	A company ordered to provide certain goods to Solaris Bus & Coach sp. z o.o.
Unit package	A package, which is used for packing single products, typically used in the retail / internal trade
Collective package	A package, which includes at least two unit packages, usually used in transport and storage processes
Material number	ID number assigned by Solaris Bus & Coach sp. z o.o.
Material name	Identification name assigned to a given material number by Solaris Bus & Coach sp. z o.o.
Order number	Identification number of purchase order assigned by Solaris Bus & Coach sp. z o.o.
JiT	Just in Time – delivery provided in precisely defined time - the moment of production in Solaris Bus & Coach sp. z o.o.
Material	Materials are the elements used for production and assembly of semi-finished and finished products.
Spool	A cylinder, which is wider at the edges than in its central part, on which cables, wires and sealing materials are wound.
Label	Marking area used to present information concerning the marked item and its contents
Pictogram	A symbol presenting the concept (described by a term or phrase) in the form of image separated from the text.

1.2. Purpose of this manual

This manual for packaging materials delivered to Solaris aims to unify standards for delivering components used in the production plant in Bolechowo.

For the last few years, Solaris has been a pioneer in the production of vehicles with alternative propulsion, which effectively reduces the CO² emissions into the atmosphere. The company, pursuing its values and vision of being a role model, wants to draw attention to the environmental aspect of materials used for packing goods purchased from contractors / suppliers.

By giving suppliers hereby standard Solaris want to secure safe transport. transshipment and storage and in some case safe delivering on assembling line/workplace.

When handling or securing the equipment or its components for transport, each component type must be considered individually and only adequate materials must be used for this purpose.

The document does not refer to other, not listed elements. Packaging instructions for these elements must be agreed with Solaris before starting the cooperation or project. The short version of Manual for packaging materials is presented at the end of this document.

2. Scope of application

Solaris Bus & Coach sp. z o.o. shall provide this manual to a cooperator / provider, which shall observe the requirements specified in the manual for the duration of cooperation and implement them during order implementation and cooperation period. Whenever possible, Solaris requires the introduction of reusable containers into the use between the production plant in Bolechowo and its contractor / supplier. Alternatively, the supplier may propose its own terms and conditions of packaging, which must be approved by Solaris Bus & Coach sp. z o.o.

3. Requirements for packaging materials

Materials are the elements used for production and assembly of semi-finished and finished products.

In most cases, cardboard boxes, pallets, spacers and wooden boxes will be the main type of packaging materials. If this is not possible, it is allowed to use other types of packaging, if they are approved by Solaris in each individual case. Packaging design should take into account the transport, handling and storage, as well as the cost-effectiveness of the solution and also safety, occupational health and ergonomic.

Packaging should take into account the environmental aspect and should be made of biodegradable materials to the maximum extent. The packaging material recommended by Solaris is cardboard. Accepted dimensions of cardboard boxes are as follows:

whole-pallet cardboard box 1200x800x1000
whole-pallet cardboard box 1200x800x500
cardboard box 600x400x300
Cardboard box 300x200x250
Cardboard box 400x300x400

Figure 1 Recommended dimensions of cardboard boxes. Source: Own work

3.1. General requirements.

- Materials must not protrude beyond the packaging boundaries;
- Packaging must provide basic protection against damage, dirt or moisture in the material;
- Each individual material should be packaged and labelled separately;
- The packaging must ensure the best use of space;
- Packaging materials, which affect the appearance of Solaris products must provide special protection of the finished product exposed surface;
- All materials must be readily available for unpacking. Heavy materials, in order to avoid too many manoeuvres, must be packaged in the position in which they are mounted;
- The packaging must be properly adapted for safe transport, transshipment and storage using conventional means of transport and storage, such as a forklift and gantry.

- The packaging must be designed to ensure its lifting by any typical forklift from each of the four sides.

3.2. Steel materials (profiles, beams, plates, wires, angles, etc.)

- Steel materials shall be placed on wooden / cardboard spacers, platforms or pallets in order to enable their unloading with cranes (attaching points for transport belts), or with forklift trucks;
- Materials transported without packaging (loose) should be properly fastened and secured against moving during transport and unloading.

3.3. Hazardous materials (ADR)

- Hazardous materials shall be packed in good quality packaging, strong enough to withstand the shocks and loading procedures normally occurring during carriage;
- The packaging shall be made of materials, which do not react dangerously in direct contact with contained dangerous goods and do not generate hazardous compounds or cause softening, weakening or damage to the package;
- The packaging should prevent the release of dangerous substances outside of the packaging, in particular to land and water;
- In case of ADR packages used in Solaris, they should be reusable;
- The packaging should have a fire resistance class agreed individually with Solaris purchasing department, depending on the product range.

3.4. Joint, electrical materials, others

- Materials for one device in the contract should be packaged as sets and described also with contract number.

3.5. Materials supplied in running meters - cables, wires, gaskets etc.

- The packaging must protect products against deformation;
- The packaging must have the form of a spool. Plastic, wooden and paper (cardboard) spools are allowed.

4. Materials protecting components / filling the packaging

Materials that protect SBC goods act as the direct protection of quality of surfaces ordered by Solaris. They are used inside the packaging to separate the components and protect them during transport.

Permitted materials that may be used to protect the components include:

- Corrugated cardboard
- Grey paper
- Honeycomb
- Nomapack
- Polyethylene foam
- Bubble wrap
- Cardboard dividers

5. Marking of the packaging:

- Marking / labelling must be clear, legible, durable, identifying the material and allowing trouble-free reception, release and assembly during production;

- Packaging should be marked with material indexes of Solaris Bus & Coach (if the index numbers have been assigned and provided), as well as the index and revision or contract number;
 - Indexes with revision - materials made pursuant to the documentation of Solaris Bus & Coach
 - Indexes with contract name – materials made pursuant to the order within the indicated contract.
 - Indexes with the supplier number – material entrusted by the customer (5560*)
- Each packaging should be marked separately;
- Pallets (unit/collective package, different materials) should be marked with a list of materials with Solaris material indexes.
- If such guidelines are specified, the packaging should be marked with safety pictograms (see Appendix);
- Small elements should be packed separately in a collective package and properly marked.
- Each packaging should be mark with information about stocking conditions (if it concerns);

6. Marking components

Component marking must be consistent with standard SN22-004-00J and Logistics standard Marking - Additional Requirements, which are available at Solaris website in 'Company' tab, as a part of 'For Suppliers' section.

<https://www.solarisbus.com/pl/firma/dostawcy>

7. Packaging Card

Packaging Card (hereinafter referred to as KP) is a document that records arrangements between supplier and SBC on how to pack a part/group of parts. The packing slip is sent out by the Purchasing Department during the quotation for a new part or is created on the initiative of the Supplier Development Department as a result of reports of recurring damage to a given part. All arrangements and discussions regarding the Packing Card should be conducted with the Supplier Development Department in each case.

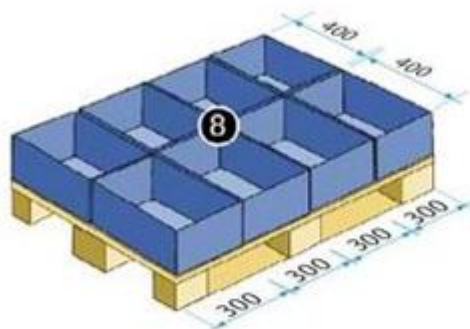
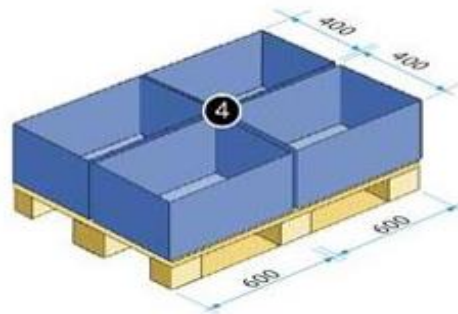
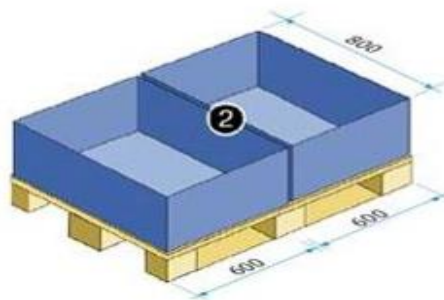
Rules of functioning of the KP are described in the Packaging Card standard.

8. Short packaging manual – packaging standards

1 Freight containers

1. Packaging standards

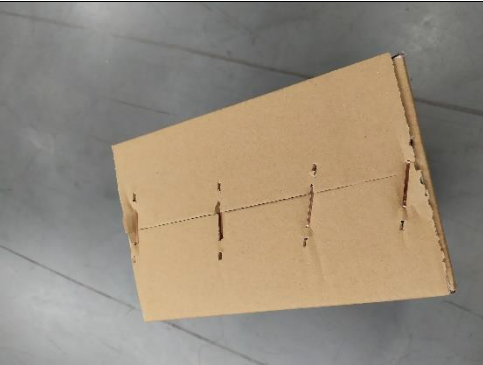
- Unit / collective package should be preferably based on the following spatial module: 800x1200x1000 mm
- **ALL MATERIALS should be delivered on a pallet.**
- Cardboard boxes should be adapted to the size of components.
- The unit package/ one cardboard box should be used to deliver one type of product



2 Storage of cardboard boxes

2. Packaging standard

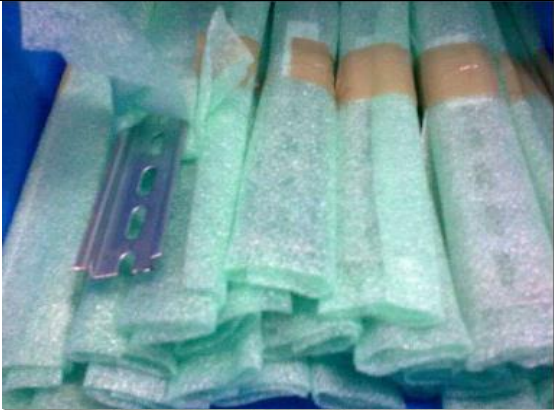
- the base (bottom) shall be stapled
- the top part shall be joined with a tape or bound



3 Goods packed in polyurethane foam

3. Packaging standard.

- plastics invisible after installation
e.g. tanks, air ducts
- metal parts susceptible to scratches and damage



4 Goods packed in paper and bubble wrap

4. Packaging standards

- additional cardboard paper can be used as additional protection
- plastics visible after installation
- susceptible to scratches and damage
- large-sized painted parts



5 Goods packed in cardboard box without special protection

5. Packaging standard

- large-sized details less susceptible to damage, e.g. pumps, small tanks
- hoses



6 Goods packed in cardboard boxes with specific protective measures

6. Packaging standard

- (additional spacers, partitions, paper carton, filler
- all types of details very susceptible to damage or scratches
- electronic equipment - speakers, etc.
- destination display
- mirrors
- lamps with fluorescent tubes, fluorescent tubes (cardboard + bubble wrap)



7 Goods packed in larger quantities

7. Packaging standards

- Goods packed in large quantities (decimation) and suitable protected against mechanical damage (foil, bag)
- all types of small-sized painted and unpainted details:
 - * connectors,
 - * elbows,
 - * buttons,
 - * brackets,
 - * clamps,
 - * etc.



8 Lacquered, polished goods

8. Packaging standards

- Lacquered, polished goods (decorative), susceptible to surface damage, shall be individually wrapped in paper and bubble wrap
- all kinds of painted and decorative elements:
 - * caps,
 - * finishing elements,
 - * panels,



9 Railing details and handrails

9. Packaging standards	
<ul style="list-style-type: none"> - Railing details and handrails (long [6m] and short) must be protected by bubble wrap, polyurethane foam - EACH PIECE MUST BE PACKED SEPARATELY! - all kinds of hand-rail tubes 	

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Revisions:

Version	Date	Scope of revision
1	26.09.2019	Compilation of the standard
2	13.08.2020	Changes in points: 1.2; 3; 3.1; 5; 6.
3	08.03.2021	Changes in points: 6
4	10.06.2021	Updating the legal form of the company
5	03.01.2022	Adding point 7.