

MAHLE Global Transport Label (GTL) Guideline

Version 1.0



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List of Abbreviations

AIAG	Automotive Industry Action Group
ASN	Advance Shipping Notice
BLC	Big Load Carrier
DI	Data Identifier
DUNS number	Data Universal Numbering System (developed and regulated by DUN & BRADSTREET)
EDI	Electronic Data Interchange
Fig.	Figure
GTL	Global Transport Label
IAC	Issuing Agency Code
IEC	International Electrotechnical Commission
ISO	International Association for Standardization
SLC	Small Load Carrier
VDA	Verband der Automobilindustrie (German Association of the Automotive Industry)

Document History

Version	Date	Changes
1.0	01.12.2024	Guideline creation



Contact

If you have any questions regarding the implementation of this guideline, please contact your responsible MRP Controller at the MAHLE plant to be supplied.

1. Introduction (MAHLE)

This guideline outlines the MAHLE requirements for the Global Transport Label (GTL) and contains the technical specifications necessary to implement the GTL. It specifies the label type, label placement, field and barcode contents in compliance with the VDA recommendation 4994 (Version 2.0, July 2023).

The GTL is included on the delivered item and is aligned with the Advance Shipping Notice (ASN) that is transmitted via electronic data interchange (EDI). Accordingly, the ASN and GTL must contain identical information. This includes texts for manual processing and barcodes for machine capture via scanner and camera technologies.

The use of the GTL allows for the clear identification of packages (on shipping units and individual packages), enabling process optimization in the goods inwards area (eliminating the need for relabeling and mechanical processing), and continuous tracking of goods along the entire supply chain (traceability), including production lines.

The MAHLE Global Transport Label complies with the VDA recommendation 4994. The following chapters contain MAHLE specific regulations:

- 1. Introduction
- 2. Function of labels

- 4.1 Dimensions
- 4.2 Data fields on labels
- 4.3 Technical requirements
- 4.4 Labels for big load carriers (BLCs)
- 4.5 Labels for small load carriers (SLCs)
- 5. Description of data fields
- 6. Identification of packages and loading units
- 7. Barcode, 2D code and optional RFID tag
 - 7.1 1D barcode
- Chapter 3./7.2/7.3/8./9. of the VDA recommendation 4994 are not applicable.

For easier navigation, we have added the information (MAHLE) or (VDA 4994) to the chapter titles:

(MAHLE) MAHLE specific requirements additional to the VDA recommendation 4994

(VDA 4994) Chapter corresponds with VDA recommendation 4994 (V2.0 2023-07)

The start date for using the GTL must be agreed in advance by the Supplier and MAHLE. The GTL must be approved by MAHLE and therefore tested with a MAHLE contact person prior to commissioning. Once the GTL has been approved, its use is mandatory for the Supplier.

2. Function of Labels (MAHLE)

Labels are used to identify product and shipping packages in the internal material flow process and along their route from the dispatcher of the goods (usually the factory of the Supplier) to the shipping company and finally to the recipient of the goods (usually the factory of the customer). Labels enable the unique identification of packages worldwide. In addition to the clear-text information, labels also contain machine-readable data in the form of 1D barcodes for automated handling.

3. Consignments and Transport (VDA 4994)

This chapter is not applicable to MAHLE.

4. Size, Layout and Application of Labels

4.1 Dimensions (MAHLE)

Labels can vary in size according to the size of the packaging unit they will be attached to and can sometimes vary according to the region of the world in which they are to be used.

The following sizes are considered to be an exhaustive list:

- A5, 210 mm x 148 mm
- A6, 148 mm x 105 mm or
AIAG B10, 152.4 mm (6 inches) x 101.6 mm (4 inches)
- SLC1: Label for small load carriers (SLCs) 210 mm x 74 mm
- SLC2: Label for flat small load carriers 210 mm x 42 mm

As A6 and AIAG B10 are virtually identical in size, they are described together.

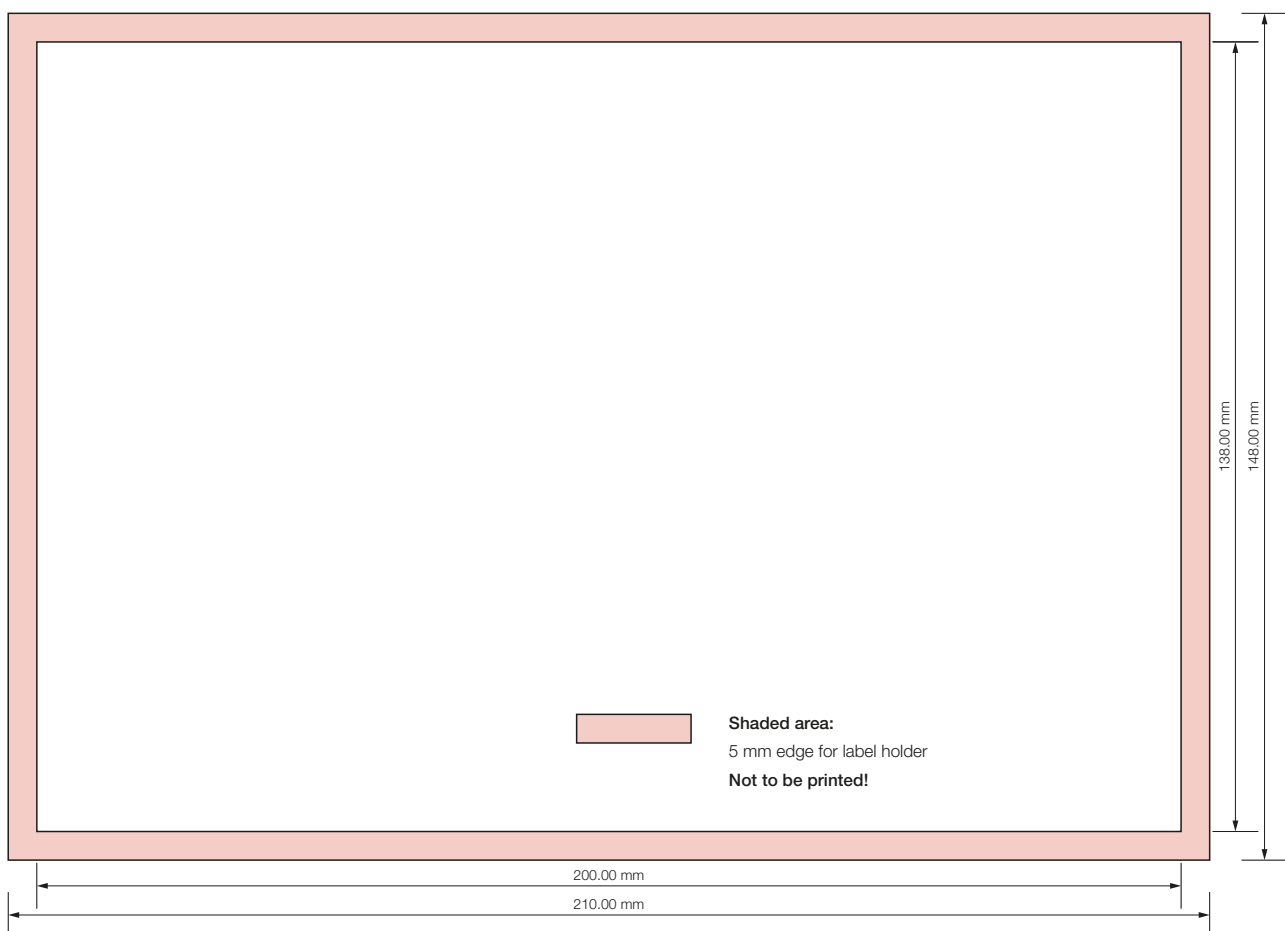


Fig. 1: Label size A5



Fig. 2: Label size A6/AIAG B10

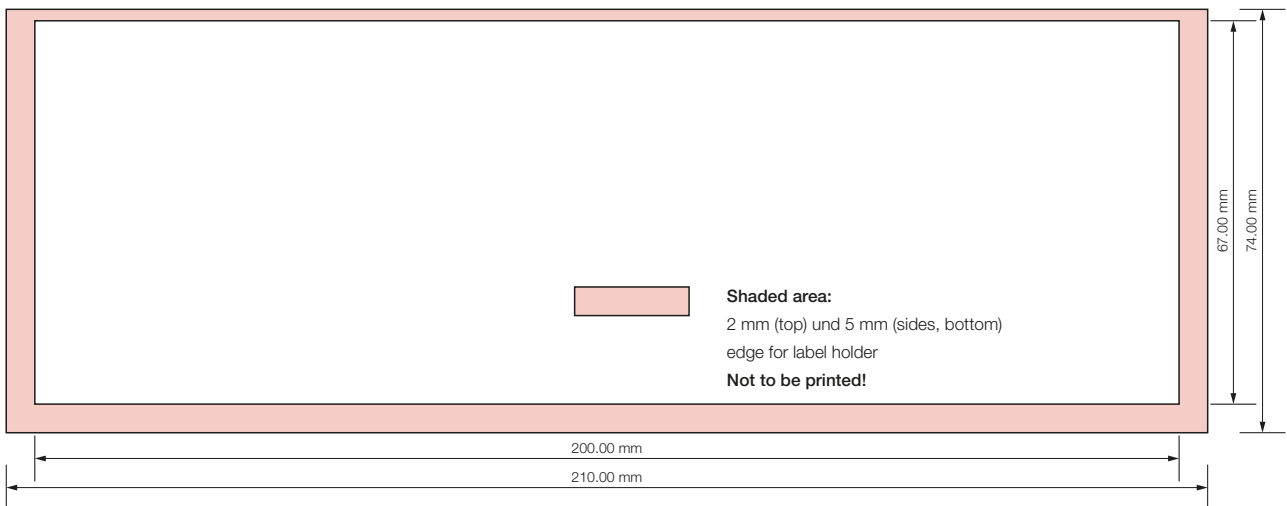


Fig. 3: Label size for small load carriers (SLC1)

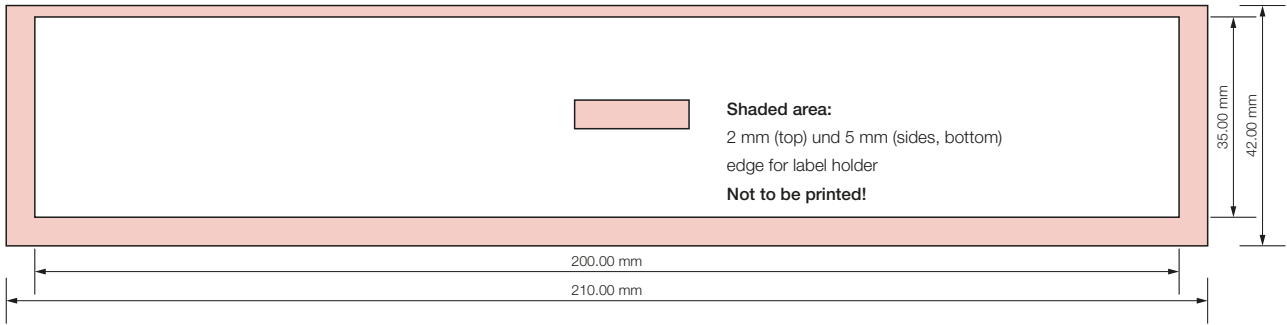


Fig. 4: Label size for flat small load carriers (SLC2)

Comparison of label sizes

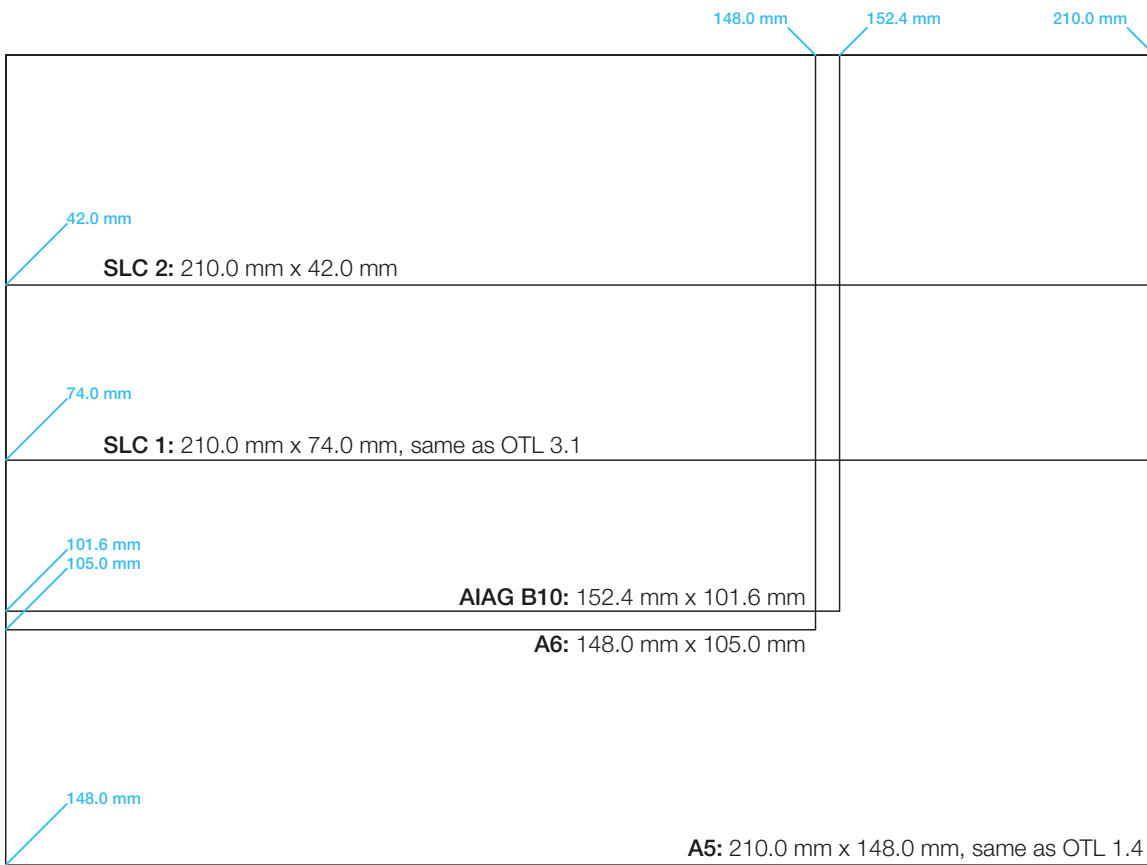


Fig. 5: Comparison of different label sizes

4.2 Data fields on labels (MAHLE)

The information printed on the label is divided into logical fields of data according to the applicable layout template.

The following information blocks are defined:

- A1 – Goods sender (ship from)
- A2 – Goods recipient (ship to)
- A3 – Label type
- B1 – Customer reference 1
- B2 – Customer routing information
- B3 – Logistics reference
- C – Customer's article number
- D1 – Package ID
- D2 – Customer reference 2
- E1 – Optional information as defined by the Supplier
- E2 – Customer reference 3

For more information, see chapter 5.

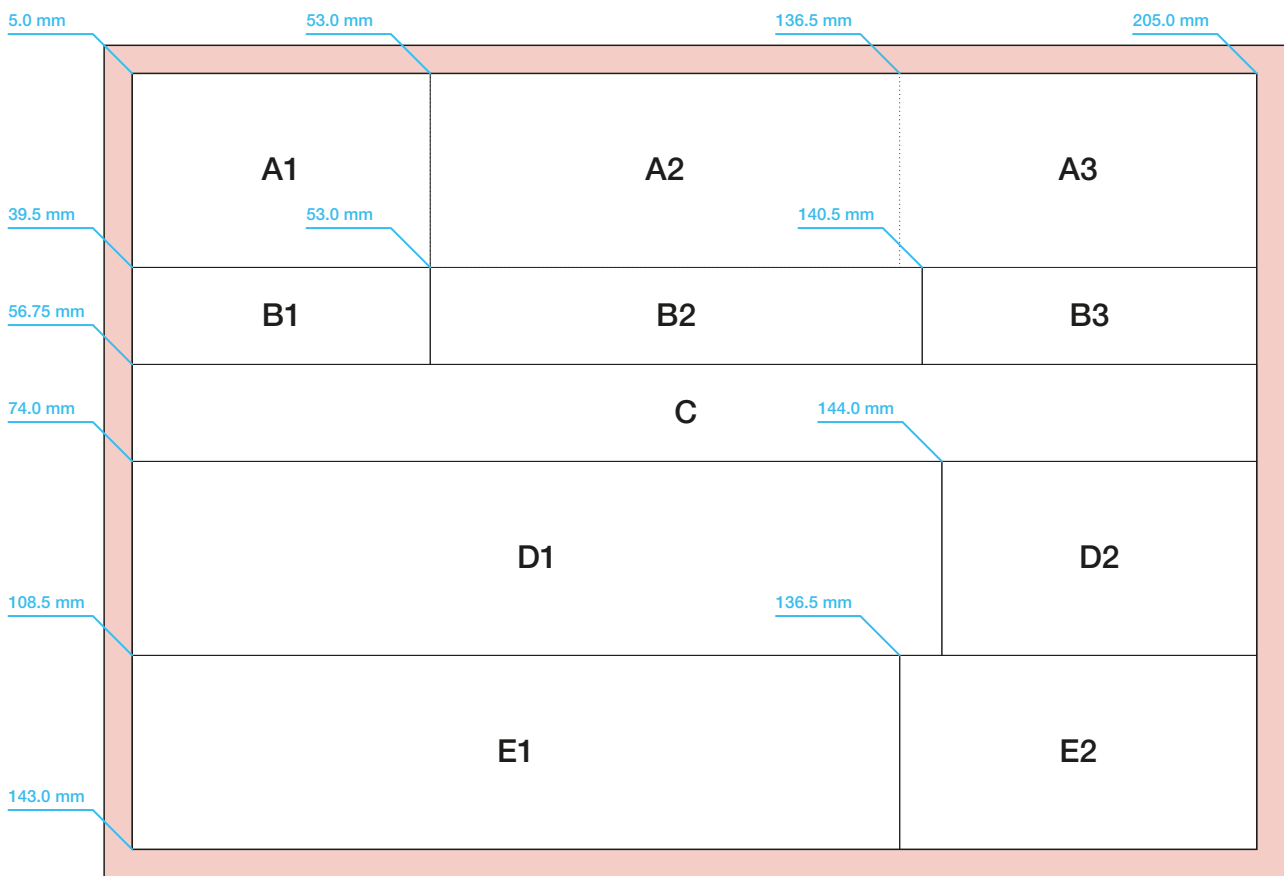


Fig. 6: Dimensions and layout of data fields – label format A5

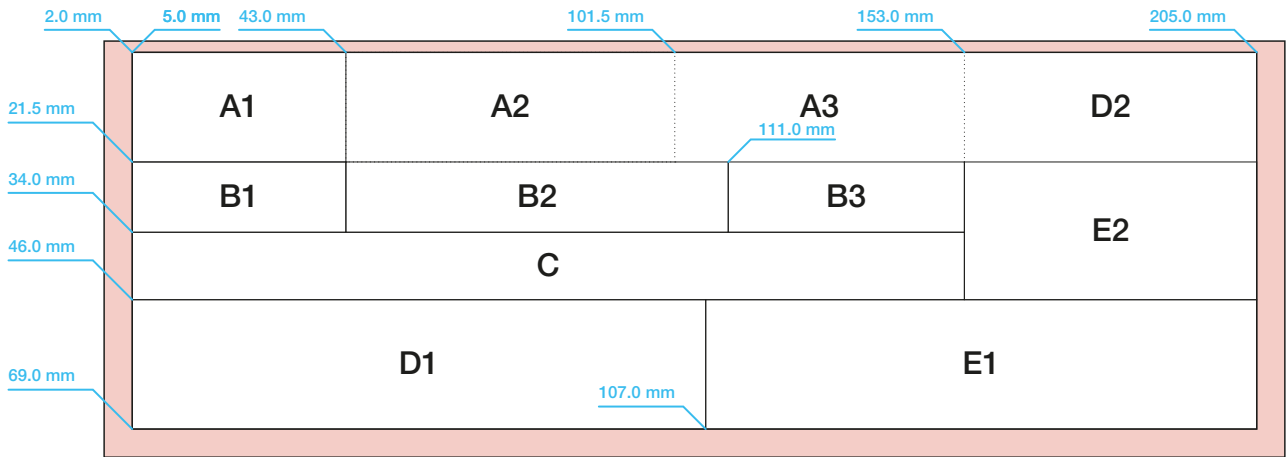


Fig. 7: Dimensions and layout of data fields – label format SLC1

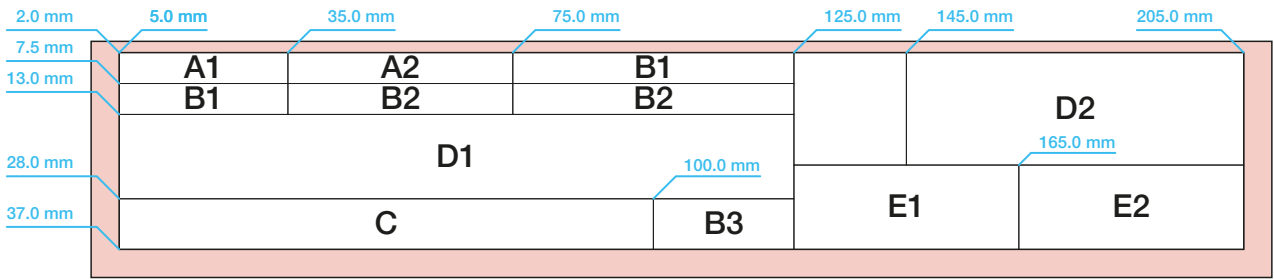


Fig. 8: Dimensions and layout of data fields – label format SLC2

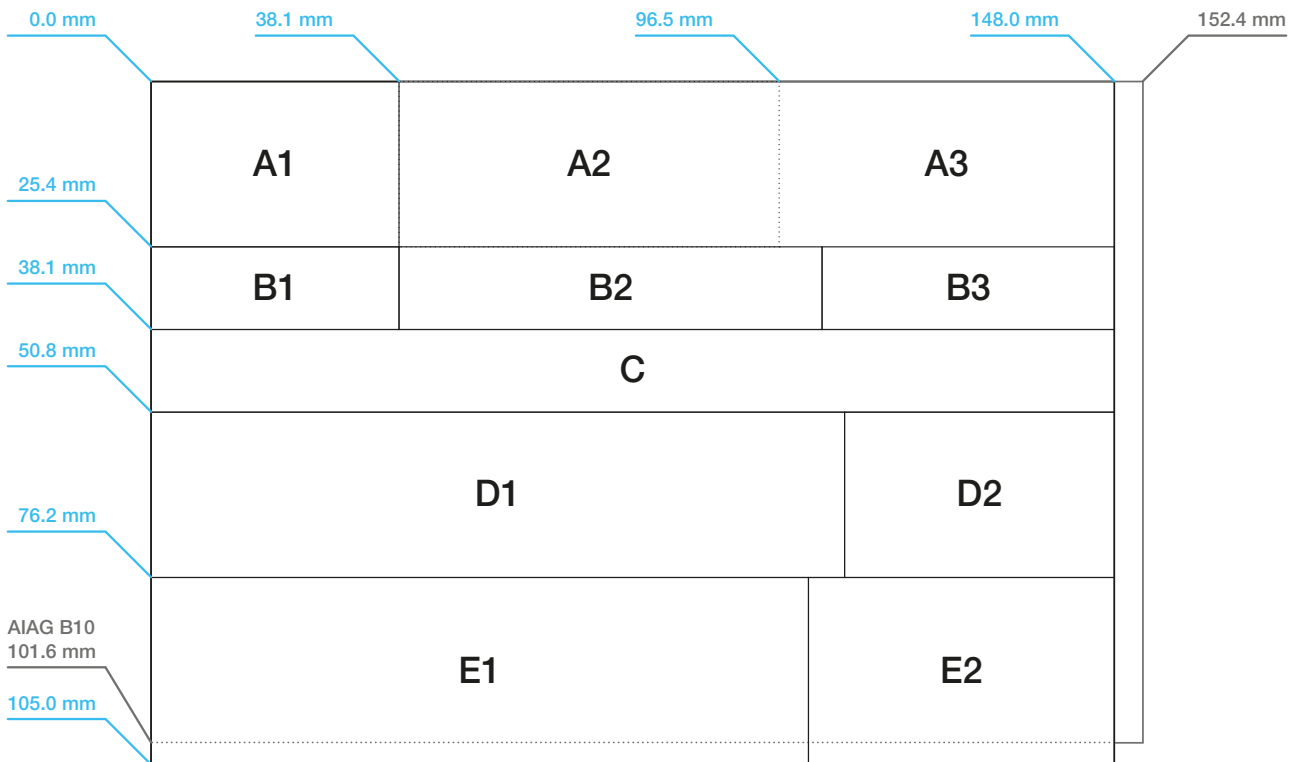


Fig. 9: Dimensions and layout of data fields – label format A6 (blue) and AIAG B10 (grey)

4.3 Technical requirements (MAHLE)

- Insert label = min. 120 g/m²
- Adhesive label = min. 80 g/m²
- Combined label = approx. 130 – 170 g/m²
- Carrier material = approx. 50 – 90 g/m²
- Label material = approx. 80 g/m²
- Paper = white, machine-finished, moisture-resistant
- Adhesive = permanent adhesive, moisture-resistant, easy to remove

It is the Supplier's responsibility to ensure that the paper used for the label is of sufficient quality to be read and scanned clearly!

Depending on customer requirements, insert labels may be secured with adhesive dots, or may be produced from a heavier paper.

For use with returnable containers, adhesive labels must be easy to remove without leaving behind any residue.

If the labels have to be attached to boxes without label holders, then adhesive elements will need to be used (sticky labels, adhesive dots).

For shipments to and from North America, labels of size A6 or 6" x 4" may be used, if approved by the customer.

For trouble-free machine reading, the labels must be attached horizontally on the packaging.

The attached label must not extend beyond the edges of the packaging.

Before applying new labels, all old (and thus invalid) labels must be removed from the packaging.

4.4 Labels for big load carriers (BLCs) (MAHLE)

For big load carriers, label format A5 (or 4"x6") landscape should be used. It can be designed as an insert label (if a suitable label frame/holder is available) or as a self-adhesive label.

Depending on the type, the following specifications must be observed.

Preferred labels for big load carriers:

- **Master Label for homogeneous big load carriers:** big load carriers hold individual small load carriers, which all contain the same article number. Individual small load carriers are equipped with separate Single Labels: a Single Label designates the label on the small load carrier, i.e. the innermost packaging unit containing the parts.
- **Single Label for simplified big load carriers:** the big load carrier contains only parts with the same article number, but which are not packed in individual small load carriers.

In certain circumstances, and in consultation with the MAHLE plant to be supplied, the following special label type can be used:

- **Master Label for mixed big load carriers (Mixed Label):** big load carriers hold individual small load carriers, which do not all contain the same article number. The individual small load carriers are equipped with separate Single Labels.

Labels applied to big load carriers are also referred to as Main Labels.

Please note that in the case of two-level packaging, the delivery note number is not mandatory on single labels. In contrast, the delivery note number is always required on master labels and labels for one-level packaging.

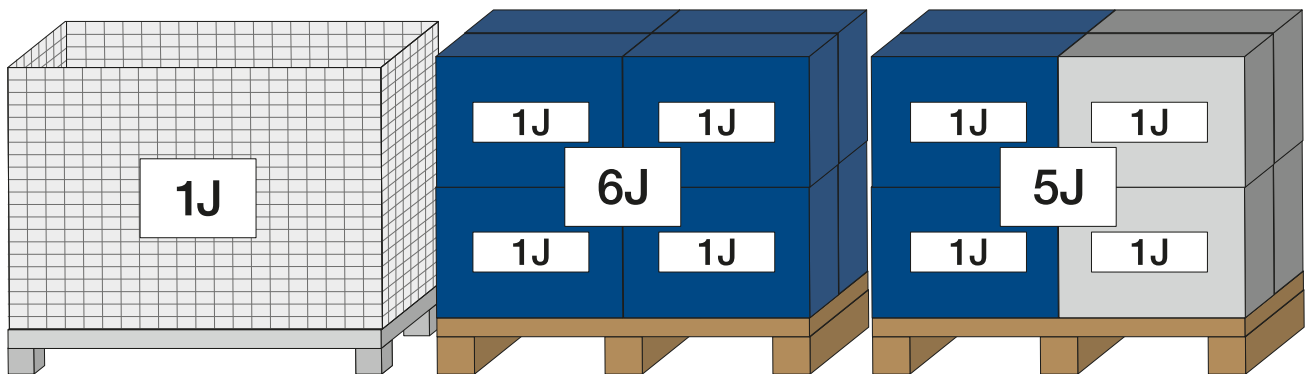


Fig. 10: Overview of label types

4.5 Labels for small load carriers (SLCs) (MAHLE)

For containers in accordance with the VDA small load carrier system (VDA 4500), the DIN A5 label may also be used for SLCs, as long as the label can be inserted into the label frame without having to be folded.

Instead of using folded labels, the SLC or SLC2 label size should be used. Please observe the customer's instructions regarding the use of SLC and SLC2.

The use of adhesive labels on SLCs is prohibited. All labels must be removed before returning the empty containers to the sender.

5. Description of Data Fields (MAHLE)

In general, data fields should be filled in accordance with the VDA recommendation 4994 (chapter 5).

For all text content, use font Arial Narrow, bold (alternative font: Helvetica Condensed, bold). Text must be printed in capital letters. The font size to be used is 6 pt.

The data fields and lines must be identified with headings or titles as specified in the examples below. These titles are to be printed in English. An exception to this rule can be made if both the Supplier and the MAHLE plant to be supplied are located in the same country. In this case, the local language may also be used if the MAHLE plant to be supplied and the Supplier agree.

Completely filled labels can look like the following examples:


SHIP FROM Company Swiss Supplier Nellen 11 9246 Niederbueren		SHIP TO CORE 1 Pragstr. 26-46 70376 Stuttgart		M	
ID : 100005 COUNTRY OF ORIGIN : CH		PLANT / UNLOADING POINT / CUSTOMER INTERNAL DESTINATION M101 /			
DELIVERY NOTE NUMBER HS0606		CUSTOMER SPECIFIC ROUTING INFORMATION		ETA 2024-06-06/00:00	
SUPPLIER NUMBER 1000005				QUANTITY 50 PC	NET (KG) 90
				GROSS (KG) 93	
CUSTOMER PART NUMBER RING CARRIER 1000007A					
PACKAGE ID <small>(S-J)</small> UN999999101000366078			PACKAGING TYPE 2000001A		SHIP / EXPIRY / PROD. DATE S 2024-06-06
			BATCH NO		NO. OF INN PACK 5
SUPPLIER AREA			PRINTED ON BIN		
<small>User: FIEBH1 Date/Time: 06.06.2024 10:09:17 System: QAM 100</small>					

Fig. 11: A5 Master Label for homogeneous loading unit


SHIP FROM Company Swiss Supplier Nellen 11 9246 Niederbueren		SHIP TO CORE 1 Pragstr. 26-46 70376 Stuttgart		<h1>Mix</h1>	
ID : 1000005 COUNTRY OF ORIGIN : CH		PLANT / UNLOADING POINT / CUSTOMER INTERNAL DESTINATION <h2>M101 /</h2>			
DELIVERY NOTE NUMBER HS0610		CUSTOMER SPECIFIC ROUTING INFORMATION		ETA 2024-06-06/00:00	
SUPPLIER NUMBER 1000005				NET (KG) GROSS (KG) 30 32	
CUSTOMER PART NUMBER <h1>Mixed Pallet</h1>					
PACKAGE ID SJ UN999999101000366109			PACKAGING TYPE 2000002A		SHIP / EXPIRY / PROD - DATE S 2024-06-06
			BATCH NO		NO. OF INN PACK 2
SUPPLIER AREA			PRINTED ON BIN		
User: FIEBH1 Date/Time: 06.06.2024 10:32:11 System: Q4M 100					

Fig. 12: A5 Mixed Label for mixed loading unit


SHIP FROM Italy Supplier Via San Giovanni 2 24060 Villongo		SHIP TO CORE 1 Pragstr. 26-46 70376 Stuttgart		<h1>S</h1>	
ID : 1000004 COUNTRY OF ORIGIN : IT		PLANT / UNLOADING POINT / CUSTOMER INTERNAL DESTINATION <h2>M101 / G05001</h2>			
DELIVERY NOTE NUMBER HS0607		CUSTOMER SPECIFIC ROUTING INFORMATION		ETA 2024-06-06/00:00	
SUPPLIER NUMBER 1000004				QUANTITY NET (KG) GROSS (KG) 10 PC 1.470 27	
CUSTOMER PART NUMBER BUSH 71005168					
PACKAGE ID (1-J) UN999999101000366098			PACKAGING TYPE 71320003		SHIP / EXPIRY / PROD - DATE S 2024-06-06
			BATCH NO		
SUPPLIER AREA			PRINTED ON BIN		
User: FIEBH1 Date/Time: 06.06.2024 09:17:05 System: Q4M 100					

Fig. 13: Label for a simplified loading unit

SHIP FROM Company Swiss Supplier Nellen 11 9246 Niederbueren ID: 1000005		SHIP TO CORE 1 Pragstr. 26-46 70376 Stuttgart		<h1>S</h1>	
ID : 1000005 COUNTRY OF ORIGIN : CH		PLANT / UNLOADING POINT / STOCK LOCATION M101 /			
DELIVERY NOTE NUMBER HS0606		CUSTOMER SPECIFIC ROUTING INFORMATION		ETA 2024-06-06/00:00	
SUPPLIER NUMBER 1000005				QUANTITY GROSS (KG) NET (KG) 10 PC 18 10	
CUSTOMER PART NUMBER 1000007A RING CARRIER					
PACKAGE ID (1-J) UN999999101000365978			SUPPLIER AREA (R-J) UN999999101000366078		
					
User: FIEBH1 Date/Time: 06.06.2024 10:00:17 System: Q4M 100					

Fig. 14: Single Label in SLC format for inner packaging

6. Identification of Packages and Loading Units (MAHLE)

Correct identification of individual packages and loading units is crucial for efficient control of the various process steps. It is therefore necessary to devise a global identification system covering all packages and loading units.

The license plate/package ID is the decisive element. It is a package serial number made up as follows:

Qualifier (Data Identifier (DI))
 + UN (Issuing Agency Code)
 + globally unique DUNS number (9-digit number filled in)
 + sequential package serial number (9-digit number, with leading zeros filled in)

Example: 1J UN 987654321 000000001

The total length of the ID including the DI must not exceed 22 characters.

The license plate has to match the content of the corresponding ASN. For further information, please refer to the MAHLE Advance Shipping Notice (ASN) Guideline, which can be found on the MAHLE website ([Guidelines & documents – MAHLE Group](#)).

The **Qualifier** is a classifying characteristic and precedes the actual barcode content. The data identifier classifies the packages into Single, Homogeneous Master and Mixed Master packages. The Qualifier forms part of the barcode and is displayed on the label in brackets, preceding the package ID.

The following qualifiers are preferred within MAHLE:

- **Single-layer packaging:** Big load carrier has the qualifier 1J
- **Two-layer packaging (homogeneous loading unit):**
 - Big load carrier has the qualifier 6J
 - Small load carriers have the qualifier 1J

The following qualifier can be used if it has been agreed with the MAHLE plant to be supplied in advance:

- **Two-layer packaging (mixed loading unit):**
 - Big load carrier has the qualifier 5J
 - Small load carriers have the qualifier 1J

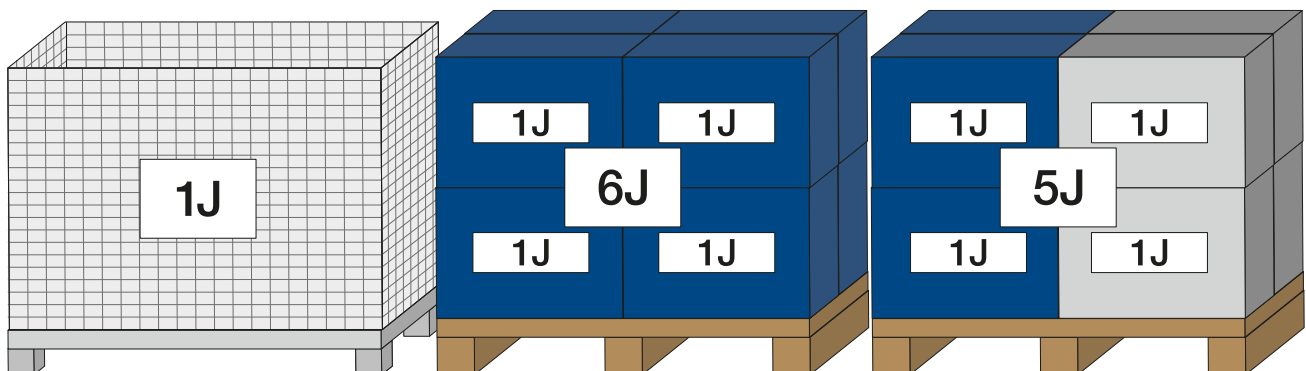


Fig. 15: Overview of license plate qualifiers

Each package ID begins with an Issuing Agency Code (IAC). This is the code of the agency or organization that has issued the ID. MAHLE uses the numbering system of Dun & Bradstreet, abbreviated as UN. For the unique identification of companies, corporate divisions and traders, Dun & Bradstreet uses the nine-digit numerical D-U-N-S code (Data Universal Numbering System).

The serial number of the package is devised by the dispatcher of the goods. Operators in the automotive industry generally use serial numbers and we recommend continuing to use such codes. To ensure compatibility with existing systems, the serial number should also consist of nine digits (with added

leading zeros, where required). Serial numbers must not be longer than nine digits. The package serial number must never be used again. The Supplier must ensure that the license plate is unique.

This recommendation does not restrict the generator of the ID in choosing an ID, provided the package ID is a globally unique identifier.

It is essential that the transport label is of sufficient quality to remain visually and machine-readable at all times, and withstand environmental influences and transport damage at the place of delivery.

7. Barcode, 2D Code and Optional RFID Tag (MAHLE)

7.1 1D barcode (MAHLE)

This barcode is a Code 128 barcode. It contains the package ID (license plate). In readable versions, the data identifier (1J, 5J, 6J) is omitted. Otherwise, the barcode matches the readable version of the package ID. Spaces are only included to make the printed text more readable but are omitted in Code 128.

The following module widths apply in Code 128 depending on the selected paper format:

- A5, A6 and 6" x 4":
module width X = minimum 0.51 mm (20 mil) and
maximum 0.64 mm (25 mil).
- SLC1 and SLC2 (SLC):
maximum module width X = 0.46 mm (18 mil).

The quiet zone to the left and right must be at least ten times the module width X. The size of the quiet zone (X * 10) must always be guaranteed depending on the selected module width and DI.

The minimum height of Code 128 for SLC, A6 and 6"x4" Labels is 15 mm. For A5 Labels, the minimum height is 17 mm. However, for A5 Labels we recommend that the barcode is 20 mm in height.

For displaying the license plate (Code 128), 3-character sets are available for programming the symbol characters:

- Character set A contains the standard alphanumeric keyboard and punctuation characters

(without lower case letters) as well as control characters and seven special characters.

- Character set B contains all standard alphanumeric keyboard characters including lower case letters and seven special characters.
- Character set C contains the 100 pairs of digits 00 to 99 as well as three special characters. It allows numeric data to be encoded in pairs within a single barcode character. This achieves double the density of the other data.

For a numeric package ID (1J UN 123456789 123456789), character set C should be used. It is possible to change the character set within the license plate. The printer software can be set to automatically use the required character set. To generate the barcode, it can be defined in the print software whether only one character set or the automatic, which always uses the compressed version with, if necessary, different character sets, should be used:

- 1J UN 1 Character set A;
- 23456789 Character set C;
- Character for character set change;
- 123456789 (package ID) Character set C

7.2 2D DataMatrix symbol (VDA 4994)

This chapter is not applicable to MAHLE.

7.3 RFID tags used in conjunction with smart labels (VDA 4994)

This chapter is not applicable to MAHLE.

8. Delivery Scenarios and Requirements [...] (MDA 4994)

This chapter is not applicable to MAHLE.

9. Label for Shipments of Empty Packages (VDA 4994)

This chapter is not applicable to MAHLE.

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