

Delivery specification – Labelling of components and products

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Status	Approved
Created on	31.01.2017
Version	3.0

Change control

Version	Date	Name	Comments
V 2.0	30.09.2015	Dominik Halbeisen	Approved version
V 3.0	31.01.2017	Dominik Halbeisen	Implementation of the MRO/ID in Rail Standard

List of abbreviations

Abbreviation	Explanation
AL	Address label
ANSI	American National Standards Institute
GIAI	Global Individual Asset Identifier (GS1)
GTIN	Global Trade Item Number (GS1)
HU	Handling Unit
IEC	International Electrotechnical Commission Standards
ISO	International Organization for Standardization
KLT	Small load carrier
PL	Product label
TS	Name plate
TSI	Technical Standards on Interoperability (in the rail system)
VL	Shipping label

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1 Purpose of the document

This document describes the requirements for labelling all the products, associated packaging and handling units that are sent to Swiss Federal Railways.

This labelling concept has the following objectives:

- Clear identification and error-free handling of products through the whole supply chain and over the entire lifetime of the product (component marking/name plate)
- Clear identification of handling units (address label/shipping label) and the products they contain (product label)
- Efficient handling through the use of barcodes and electronic identification systems
- A basis for complying with legal requirements (traceability/TSI)

The following are excluded from the labelling requirements specified in this document:

- Complete, functional rolling stock
- Complete, functional machinery or equipment (according to Machinery Directive 2006/42/EC)

2 Packaging hierarchy and associated labels

As a fundamental rule, every product must be clearly identifiable in both its packed and unpacked state. Therefore, the labelling concept for logistical units is associated with the packaging concept.

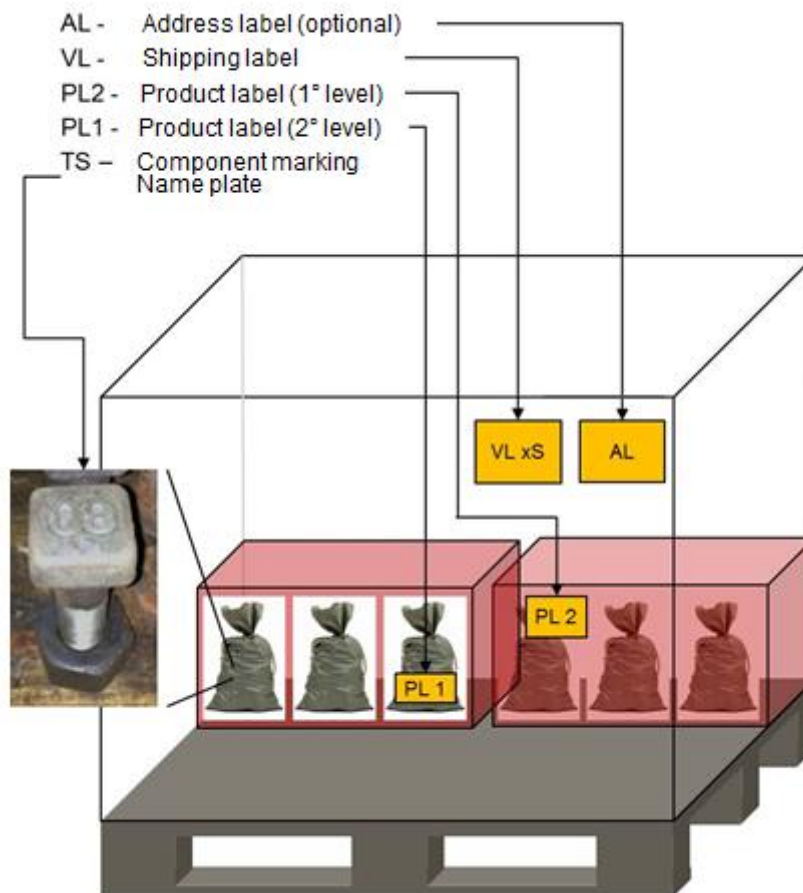


Figure 1: Example of label hierarchy

A distinction is made between three complementary forms of labelling:

1. Component markings and name plates:

For solid materials, the **name plate** is located directly on the article. Its simplest form is a **component marking** which allows the article to be identified reliably (e.g. an engraved or embossed number).



Figure 2: Examples of component markings



Figure 3: Examples of name plates

2. Product labels:

Product labels must be applied to all product packaging. This means if there are several layers of packaging, each one must have a product label. If the information required in the following specification is already present on the product packaging, it is not necessary to affix a specific label in addition.

3. Shipping labels:

Shipping labels enable efficient identification and processing of handling units (pallets, parcels, intermodal containers, other containers etc.). Shipping labels must be applied to all handling units that are moved as individual units during transport.

The simplest type of shipping label is the **address label**, which includes the sender's and recipient's addresses as well as a clear handling unit number. More detailed shipping labels (e.g. according to ANSI standard 3S-7S) contain further information depending on the articles and order references included in the handling unit, e.g. the order number or article number. The shipping label enables efficient handling during goods receipt.

3 Contents of the labels/markings

The minimum information required for each type of labelling (component marking, product label, shipping label) is specified below. Where labelling requirements already exist, it is necessary to assess on a case-by-case basis how the minimum information defined below is to be included. It may be expedient to use parts-specific labelling requirements.

3.1 Component marking and name plate

A component marking/name plate contains **at least** the information specified below. Whether a batch number or serial number is required, or further information, will be determined during the design process.

Products with no batch or serial number:

Every component not recorded by SBB under a batch or serial number must be given a visible, indelible identification in accordance with one of the following two options:

Option 1:

- SBB material number
- Index or version status.

Option 2:

- A consistently standardised, unambiguous material number in accordance with the industry standard *GS1 Identification of Components and Parts in the Rail Industry – Application Standard* or in accordance with applicable industry standards (e.g. rolling marks on rails according to DIN EN 13674-1 or ELDAS number)

Where possible and practical, a material designation in text form must also be added.

Products with a batch number:

Every component recorded by SBB under a batch number must be identified in accordance with one of the following two options:

Option 1:

- SBB material number
- Index or version status
- Manufacturer's or supplier's batch number in accordance with the industry standard *GS1 Identification of Components and Parts in the Rail Industry – Application Standard*

Option 2:

- A consistently standardised, unambiguous material number in accordance with the industry standard *GS1 Identification of Components and Parts in the Rail Industry – Application Standard* or in accordance with applicable industry standards (e.g. rolling marks on rails according to DIN EN 13674-1, ELDAS standard, etc.)
- Manufacturer's or supplier's batch number in accordance with the industry standard *GS1 Identification of Components and Parts in the Rail Industry – Application Standard*

The batch number must be structured so as to ensure clear traceability at all times.

Products with a serial number:

Every component recorded by SBB under a serial number must be identified visibly and indelibly in accordance with one of the following two options:

Option 1:

- SBB material number
- Index or version status

- Manufacturer's serial number which is unambiguous and unduplicated in accordance with the industry standard *GS1 Identification of Components and Parts in the Rail Industry – Application Standard*

Option 2:

- Manufacturer's serial number which is unambiguous and unduplicated in accordance with the industry standard *GS1 Identification of Components and Parts in the Rail Industry – Application Standard*

Wherever possible, the manufacturer's serial number should also be machine readable (preferably by means of a 2D Data Matrix code in accordance with ISO 16022).

Note: Unduplicated means that a serial number can only occur once anywhere in the world, not just within the manufacturer's own companies.

Component markings must be configured in such a way that, **at the least**, the visual readability of the information contained on the label is guaranteed over the entire lifetime of the individual product/component. Readability must be guaranteed at all times under the loads that are specified in EN 50125-1, EN 50125-2 and EN 50125-3 and are to be expected during railway operation.

If possible, the label must be applied in such a way that it can be seen and read with minimum effort, in particular on products/components incorporated in larger machinery or equipment.

The technology used for labelling must not in any way damage the component in terms of its technical properties or function.

3.2 Product label

3.2.1 Data fields on a product label

Product packaging must be labelled with the following information at all packaging levels (see Figure 1). On exterior product packaging, this information should always be easily legible from the outside in order to facilitate goods receipt.

The recommended font is Arial Narrow. The minimum font size for field labels should be as follows wherever possible: 6pt (2.1mm), and 8pt (2.8mm) for plain text.

Field labels contain an identifier so that they are clearly identifiable. Identifiers that comply with ANSI MH10.8.02 or GS1 may be used. A mix of ANSI and GS1 field names is not permitted.

Composite 1D barcodes are not to be used. 1D barcodes must not contain an identifier. ANSI or GS1 identifiers must be used with 2D barcodes if more than one data field is being coded, to allow different information to be read.

Data field	Fixed field label		Variable data		Remarks
	With identifier ANSI MH 10.8.02	With identifier according to GS1*	Plain text (max. no. of characters, left aligned)	Barcode 1D/2D	
Manufacturer/supplier logo				No	
Manufacturer/supplier name	Mfr./suppl.	Mfr./suppl.		No	
Manufacturer/supplier material number	(1P) Mat. no. Supplier	(240) Mat. no. Supplier	18	1D/2D	
Manufacturer/supplier material number	(25P) Mat.no. Supplier	(01) GTIN	18	1D/2D	Alternative to (1P) for part numbers acc. to ISO 15459
GTINEAN13	(3P) GTIN	(01) GTIN	18	1D/2D	Alternative to (1P)
Manufacturer part number	(6P) MPN	(97) MPN	30	1D/2D	Alternative to (1P)
Manufacturer/supplier batch number	(1T) Batch	(10) Batch	10	1D/2D	If required by SBB
Manufacturer/supplier serial number	(1S) Serial no.	(21) Serial no. ¹ (8004) Serial no.		1D/2D	If required by SBB








¹ According to the GS1 standard, the serial number (21) is only ever unambiguous in combination with a GTINEAN (or sGTIN for short). However, the serial number (8004) (or GIAI for short) is not meaningful and is unambiguous without a reference to a material number. The serial number (7023) (or parent GIAI for short) is a serial number which corresponds to a GIAI, but it is used for serial assemblies.

		(7023) Serial no.			
SBB material number	(P) Mat. no. SBB	(241) Mat. no. SBB	18	1D/2D	If possible
Material description in 3 languages: DE, FR, IT or EN	(11Z) DE (12Z) FR (13Z) IT (14Z) EN	(91) DE (92) FR (96) IT (94) EN	40 per language	Optional 2D	Omit field label, use identifier only in 2D barcode
Version status (change status)	(2P) Index	(20) Index	2	2D	If required by SBB
Country of origin	(4L) CoO	(422) CoO	3 - ISO 3166	2D	
Quantity	(Q) Quantity	(30) Quantity	7	2D	
Quantity unit	(3Q) QU	QU	2	No	
Weight in kg (gross)	(2Q) Weight in kg	Weight in kg	13	No	if > 15 kg
Production date	(16D) PDAT (17D) PDAT -	- - (11) PDAT	8 - YYYYMMDD 8 - DDMMYYYY 6 - YMMDD	2D	If required by SBB
Expiration date	(14D) ED (15D) ED -	- - (17) ED	8 - YYYYMMDD 8 - DDMMYYYY 6 - YMMDD	2D	If required by SBB
State of the material (defective, refurbished, etc.)	(10Z) State	(95) State	10	2D	If required by SBB
Free text	Free text	Free text	1 x 30 or 2 x 30	No	Depending on field

* according to the "GS1 General Specifications"

3.2.2 Layout examples for product labels




Layout examples for the product labels are displayed below. The graphics of the layout may differ from the solutions shown.

Logo Lieferant			(1P) Mat.Nr. 0605.02.0044 
KLEMMPLATTE Kp IV 5 PLAQUE DE SERRAGE Kp IV 5 PIASTRELLA Kp IV 5			(1T) Charge 1234567890ABCDE 
(Q) Menge 20	(3Q) MEH Stk	(2P) Index C	(P) Mat.Nr.SBB 125-09-5 
(4L) CoO CH	(16D) PDAT 2014.02.24	(14D) MHD 2015.02.23	
			

Layout example 1: product label (101 mm x 76 mm) with ANSI identifier

Logo Lieferant			
(P) Materialnummer SBB / Numéro du matériel CFF/ Numero del materiale FFS 377-00-40			
(11Z) Materialbezeichnung / Description du matériel / Descrizione del materiale SILIKON-STUETZISOLATOR 25kV F.NT SILICON-ISOLATEUR DE SUPPORT 25kV P.NT SILIKON-STUETZISOLATOR 25kV F.NT			
(6P) Herstellerteilenummer	(2P) Index C	(4L) CoO CH	(1T) Charge 1234567890ABCDE
	(1P) Mat.Nr.: 139 242.002		
	(16D) PDAT 2014.02.24	(14D) MHD 2015.02.23	
	(Q) Menge 18	(3Q) MEH Stk	
	(2Q) Gewicht in kg 400		

Layout example 2: product label (A4 landscape for pallets) with ANSI identifier

Logo Musterfirma Musterfirma AG		(240) Mat.Nr. 73020100019C
KLEMMPLATTE Kp IV 5 PLAQUE DE SERRAGE Kp IV no 5 PIASTRELLA Kp IV no 5		(10) Charge abcde1234567890
(20) Index C		(241) Mat.Nr. SBB 211-52-1003
(95) Zustand neu		
(422) CoO GER		
(11) PDAT 2014.02.24	(30) Menge 20 Stk	
(17) MHD 2015.02.23	Gewicht in kg	

Layout example 3: VDA-KLT format product label with GS1 identifier

3.3 Structure and labelling of handling units

3.3.1 Structure of handling units

The structure of the handling units has a significant effect on efficiency during goods receipt. There are several variants (which are, for instance, also described in the ANSI standard), depending on the number of different articles and order references. Depending on the business case, the associated shipping labels contain various details pertaining to the content of the handling unit.

Shipping labels include more information than just an address label. The following table gives an exemplary overview of the differences using the ANSI structure.

Information	Shipping label on handling units					Address label
	(3S)	(4S)	(5S)	(6S)	(7S)	
ANSI code	1	1	n	1	n	-
Number of materials	1	1	n	1	n	-
Quantity per material	n	x*n	n	n	n	-
Number of order references	1	1	1	n	n	-
		master load	mixed load	multi order	multi mixed order	
Sender's address	X	X	X	X	X	X
Recipient's address	X	X	X	X	X	X
Unloading point	X	X	X	X	X	X
Handling unit number	X	X	X	X	X	X
Customer order number	X	X	X			
Material number (customer/supplier)	X	X		X		
Order quantity/quantity unit	X	X		X		
Batch number	X					
Weight	X	X	X	X	X	

To avoid incurring sorting expenses during the goods receipt process, handling units containing articles from different orders (7S) are normally not permitted. Exceptions to this rule (e.g. for projects) must be approved by the goods recipient at SBB.

At least two shipping and/or address labels must be clearly visible on the outside of the shipping packaging with one label on the front and one on the side. The recommended font for the label is Arial Narrow. The minimum font size for field labels should be chosen so that they can be read even from relatively far off and in poor light. The order number, material number and quantity, in particular, should be at least the following size: 12pt (5.0 mm)

Field labels contain an identifier so that they are clearly identifiable. Identifiers that comply with ANSI MH10.8.02 or GS1 may be used. A mix of ANSI and GS1 field names is not permitted.

Composite 1D barcodes are not to be used. 1D barcodes must not contain an identifier. ANSI or GS1 identifiers must be used with 2D barcodes if more than one data field is being coded, to allow different information to be read.

3.3.3 Data fields on the shipping label

Data field	Fixed field label		Variable data		Remarks
	With identifier ANSI MH 10.8.02	With identifier according to GS1 *	Plain text (max. no. of characters, left aligned)	Barcode 1D/2D	
Supplier logo					
Sender's address	Sender	Sender	40	No	Short name, works, postcode, city
Goods recipient	Goods recipient	Goods recipient	5 x 40	No	
Unloading point	Unloading point	Unloading point	20	No	
Identification of handling unit structure			(3S) single load (4S) master load (5S) mixed load (6S) multi order	No	See chapter 3.3.1
Handling unit number	(8S) SSCC (19S) DUNS+HU	(00) SSCC	18 – ISO 15459 18 – DUNS + HU no.	1D and 2D	Strictly 1D
Gross weight in kg	(2Q) Gross weight in kg	Gross weight in kg	13	No	
Shipping date	(9D) SDAT	SDAT	8 - DDMMYYYY	No	
Order number	(K) Order	(400) Order	10	2D	Where possible
Manufacturer/supplier material number	(1P) Mat. no. Supplier	(240) Mat. no. Supplier	18	1D/2D	Alternative to (P), if (P) not possible
Manufacturer/supplier material number	(25P) Mat.No. Supplier	(01) GTIN	18	1D/2D	Alternative to (1P) for part numbers acc. to ISO 15459
SBB material number	(P) Mat. no. SBB	(241) Mat. no. SBB	18	1D/2D	Where possible
GTIN/EAN13	(3P) GTIN	(01) GTIN	18	1D/2D	Alternative to (1P)
Manufacturer part number	(6P) MPN	(97) MPN	30	1D/2D	Alternative to (1P)
Material description in 3 languages: DE, FR, IT or EN	(11Z) DE (12Z) FR (13Z) IT (14Z) EN	(91) DE (92) FR (96) IT (94) EN	40 per language	No	Omit field label, use identifier only in 2D barcode
Version status (change status)	(2P) Index	(20) Index	2	2D	If required by SBB
Manufacturer/supplier batch number	(1T) Batch	(10) Batch	10	2D	If required by SBB
Manufacturer/supplier serial number	(1S) Serial no.	(21) Serial no. ² (8004) Serial no. (7023) Serial no.	18	2D	If required by SBB
Quantity	(Q) Quantity	(30) Quantity	7	2D	
Quantity unit	(3Q) QU	QU	2	No	
Production date	(16D) PDAT (17D) PDAT -	- - (11) PDAT	8 – YYYYMMDD 8 – DDMMYYYY 6 – YMMDD	2D	If required by SBB
Expiry date	(14D) ED (15D) ED -	- - (17) ED	8 – YYYYMMDD 8 – DDMMYYYY 6 – YMMDD	2D	If required by SBB
State of the material (defective, refurbished, etc.)	(10Z) State	(95) State	10	2D	If required by SBB
Free text	Free text	Free text	1 x 30 or 2 x 30	No	Depending on field

* according to the "GS1 General Specifications"

² According to the GS1 standard, the serial number (21) is only ever unambiguous in combination with a GTIN/EAN (or sGTIN for short). However, the serial number (8004) (or GIAI for short) is not meaningful and is unambiguous without a reference to a material number. The serial number (7023) (or parent GIAI for short) is a serial number which corresponds to a GIAI, but it is used for serial assemblies.

3.3.4 Layout examples for shipping labels

Layout examples for the shipping labels are displayed below. The layout may differ from the solutions shown; however, the shipping label must be 105 mm, 148 mm or 210 mm wide.

Absender		Logo Lieferant	
Musterfirma / Musterstrasse 1 / 4711 Musterort / Schweiz			
Empfänger SBB Infrastruktur I-ESP-LOG-RWT		Abladestelle Magasin Biel/Bienne	
Schwanengasse 49 2503 Biel / Bienne			
Auftragsdaten			
Versandlabel		3S	
			
(K) Bestell-Nr.	4512345678		
(D) Versanddatum	14.03.05		
(Q) Anzahl / (3Q) Einheit	36 Stk		
(2Q) Gewicht in kg	456 kg		
(1P) Mat.Nr.	139 242 002		
(11Z) Materialbezeichnung	SILIKON-STUETZISOLATOR25kV FNT		
(P) Mat.Nr.SBB	377-00-40		
(1T) Charge	abcde1234567890		
(8S) SSCC		123456781234567890	
			

Layout example 4: 3S shipping label with SSCC

Absender		Logo Lieferant	
Musterfirma / Musterstrasse 1 / 4711 Musterort / Schweiz			
Empfänger SBB Infrastruktur I-ESP-LOG-RWT		Abladestelle Magasin Biel/Bienne	
Schwanengasse 49 2503 Biel / Bienne			
Auftragsdaten			
Versandlabel		5S – MIXED LOAD	
(K) Bestell-Nr.	4512345678		
(D) Versanddatum	14.03.05		
(2Q) Gewicht in kg	456 kg		
(8S) SSCC		123456781234567890	
			

Layout example 5: 5S Mixed Load shipping label with SSCC

Absender		Logo Lieferant	
Musterfirma / Musterstrasse 1 / 4711 Musterort / Schweiz			
Empfänger SBB Infrastruktur I-ESP-LOG-RWT		Abladestelle Magasin Biel/Bienne	
Schwanengasse 49 2503 Biel / Bienne			
Auftragsdaten:			
Versandlabel		6S – MULTI ORDER	
(D) Versanddatum	14.03.05		
(Q) Anzahl / (3Q) Einheit	36 Stk		
(2Q) Gewicht in kg	456 kg		
(1P) Mat.Nr.	139 242 002		
(10Z) Materialbezeichnung	SILIKON-STUETZISOLATOR25kV FNT		
(P) Mat.Nr.SBB	377-00-40		
(8S) SSCC		123456781234567890	
			

Layout example 6: 6S Multi Order shipping label with SSCC

Absender		Logo Lieferant	
Musterfirma / Musterstrasse 1 / 4711 Musterort / Schweiz			
Empfänger SBB Infrastruktur I-ESP-LOG-RWT		Abladestelle Magasin Biel/Bienne	
Schwanengasse 49 2503 Biel / Bienne			
Auftragsdaten			
Versandlabel		7S – MULTI MIXED ORDER	
(D) Versanddatum	14.03.05		
(2Q) Gewicht in kg	456 kg		
(8S) SSCC		123456781234567890	
			

Layout example 7: 7S Multi Mixed Order shipping label with SSCC

Warenempfänger SBB Industriewerk Olten Industriestrasse 151 4600 Olten Schweiz			2D Barcode 	Logo Lieferant 
Abladestelle Drehgestell-Halle			Absender Musterfirma AG, 1234 Musterort	
(241) Mat.Nr. SBB 711-16-104			4S – MASTER LOAD	
(10) Charge abcd 01234567			(400) Bestellung 4512345678	
(241) Mat.Nr. SBB 711-16-104			(20) Index B	(95) Zustand neu
KEGELROLLLAGER			(422) CoO GER	WADAT 150120
(10) Charge abcd 01234567			Freitext Hier kann Ihr Text stehen mit 2 x 30 Zeichen. Hier kann das Gefahrstoffzeichen platziert werden.	
(30) Menge 24	MEH St	Gewicht brutto in kg 779	Freitext Hier kann Ihr Text stehen mit 2 x 30 Zeichen. Hier kann das Gefahrstoffzeichen platziert werden.	
(17) MHD 151008		(11) PDAT 141008		
(00) SSCC  (00)012345678012345678				

Layout example 8: A5 format shipping label with GS1 identifiers

Warenempfänger SBB Zentrallager Infrastruktur Industriestrasse 16c 4657 Dulliken Schweiz			2D Barcode 	Logo Lieferant 
Abladestelle LKW Rampe Wareneingang			Absender Musterfirma AG, 1234 Musterort	
(17) Charge abcd 1234567890			3S – SINGLE LOAD	
(17) Charge abcd 1234567890			(40) Bestellung 4512345678	(00) WADAT 20141007
SILICON ISOLATOR 25kV F. NT			(39) Index B	(102) Zustand neu
(P) Mat.Nr. SBB 377-00-40			(422) CoO GER	(160) PDAT 20141006
(17) Charge abcd 1234567890			(1P) Mat.Nr. Lieferant 139.242.002	(140) MHD 20151008
(3) Menge 36	MEH St	(32) Gewicht brutto in kg 456	(125) DUNS-VE  01234567801234567890123456789	
Freitext 2 x 30 Zeichen oder Gefahrgutsymbol 012345678901234567890123456789			012345678012345678	

Layout example 9: VDA-KLT format shipping label with ANSI identifiers

3.4 Delivery notes together with packing and shipping lists

Each delivery must include a delivery note and corresponding packing lists (separate or incorporated in the delivery note).

Each shipment must also contain a shipping list.

As a basic principle, field labels used in the delivery note and the packing and shipping list contain a unique identifier. Identifiers that comply with ANSI MH10.8.02 or GS1 may be used. A mix of ANSI and GS1 field names is not permitted.

Composite 1D barcodes may not be used, and 1D barcodes must not contain an identifier. An identifier must be used with 2D barcodes if more than one data field is being coded to allow different information to be read off.

3.4.1 Delivery note (for purchase orders)

Delivery notes must contain the information listed below **at the very least**.

- SBB purchase order number
- Sender
- Goods recipient
- Unloading point (if known)
- Delivery note number
- SBB material number for each item delivered (unless the packing list is incorporated in the delivery note)
- Quantity for each item delivered (unless the packing list is incorporated in the delivery note)
- Unit of quantity for each item delivered (unless the packing list is incorporated in the delivery note)
- Manufacturer/supplier batch number for each item delivered (if required by SBB and not already stated in the packing list). If there are several manufacturer/supplier batch numbers for each item delivered, these must be listed separately
- The serial number of the manufacturer/supplier for each serial part or product delivered (if required by SBB and not already stated in the packing list).
- HS customs tariff number(s) including gross weight (including packaging) for each customs tariff number
- Country of origin for each customs tariff number
- Value of goods for each customs tariff number
- The SBB material number pertaining to each customs tariff number (if more than one customs tariff number is listed)
- Statutory hazardous material declaration

The following information must be encoded in a 1D barcode:

- SBB purchase order number
- Delivery note number

A 2D data matrix code may also be used in addition to the 1D barcode.

3.4.2 Packing list (for a shipment unit)

At the very least, the following information must be listed on a separate packing list (consignment note) or as part of the delivery note **for each shipment unit delivered**.

- Manufacturer/supplier material number for each item delivered
- SBB material number for each item delivered
- Quantity for each item delivered
- Unit of quantity for each item delivered

- Manufacturer/supplier batch number for each item delivered (if required by SBB). If there are several manufacturer/supplier batch numbers for each item delivered, these must be listed separately
- The serial number of the manufacturer/supplier for each serial part or product delivered (if required by SBB)
- Statutory hazardous material declaration

And, additionally, if the packing list is not part of the delivery note:

- Sender
- Goods recipient

The following information must be encoded in a 1D barcode:

- Shipment unit number (preferably GS1 SSCC code) for each shipment unit delivered
- Batch numbers (packed onto the shipping units) (where applicable)
- Serial numbers (packed onto the shipping units) (where applicable)

A 2D data matrix code may also be used in addition to the 1D barcode.

3.4.3 Shipping list (for shipment)

At the very least, the following information must be listed on a separate shipping list (consignment note).

- Sender
- Goods recipient
- Number of shipment units
- Total shipment weight
- Shipment number
- Shipment unit number (preferably GS1 SSCC code) for each shipment unit delivered
- Gross weight for each shipment unit
- Dimensions of each shipment unit (if possible)
- Volume for each shipment unit (if possible)
- Type of shipment unit (e.g. pallet, spool, reel, crate, etc.)
- Statutory hazardous goods declarations (where applicable)

4 Definition of barcodes

The following barcode specification must be followed to ensure continuous, error-free readability and interpretation of the coded data.

4.1 Definition of the 2D barcode

A Data Matrix ECC200 code according to ISO/IEC 16022:2006 is used as a 2D barcode. Data Identifiers according to ANSI MH10.8.2 or Application Identifiers according to the GS1 standard may be used. To represent an individual data field, the individual data elements must be labelled with the appropriate ANSI identifier according to ANSI MH10.8.2 or the appropriate GS1 identifier. The content of the 2D barcode must be coded in accordance with ISO/IEC 16022:2006.

Leading zeros are only allowed to be coded for data fields with a fixed length (this can occur with GS1 data elements). Trailing zeros that belong to the effective numeric or alphanumeric content must always be coded. Decimal places should not be coded. Values should be rounded up, or the next-smallest quantity unit should be used.

The barcode has the following format:

Barcode type	Data Matrix ECC200 or GS1 Data Matrix
Max. barcode height and width, excluding quiet zone	Component marking: 16.2 mm x 16.2 mm Product label: 20.2 mm x 20.2 mm Shipping label and delivery notes: min. 20.2 mm x 20.2 mm max. 34.3 mm x 34.3 mm Quiet zone must be at least 2 x module (dimension X) (> 1mm)
Module (dimension X)	Component marking: 19.9 mil = 0.505 mm Product label: 19.9 mil = 0.505 mm Shipping label and delivery notes: 19.9 mil = 0.505 mm max. 32 mil = 0.816 mm
Max. barcode size in number of rows and columns, excluding quiet zone	Component marking: 32 x 32 Product label: 40 x 40 Shipping label and delivery notes: 40 x 40
Maximum data capacity (alphanumeric characters)	Component marking: 91 Product label: 169 Shipping label and delivery notes: 169
Maximum data capacity (numeric characters)	Component marking: 124 Product label: 228 Shipping label and delivery notes: 228
Horizontal readability range with a standard industrial scanner (distance from scanner to barcode)	Component marking: min. 6 cm, max. 39 cm Product label: min. 6 cm, max. 39 cm Shipping label and delivery notes: min. 6 cm, max. 39 cm (19.9 mil) min. 6 cm, max. 65 cm (32 mil)
Error correction	Component marking: min. 36.7% Product label: min. 29.6% Shipping label and delivery notes: min. 29.6%
Barcode quality	All barcodes: <ul style="list-style-type: none"> • AS9132 (aerospace standard) • Must meet at least quality level 1.5 or ANSI C according to ISO/IEC 15415.
Permissible contrast pattern	All barcodes: dark on light background

4.2 Definition of the Code 128 barcode

Code 128 according to ISO/IEC 15417 or a GS1-128 code is used as a 1D barcode.

The barcode has the following format:

Barcode type	Code 128 according to ISO/IEC 15417 or GS1-128 code
Max. barcode height and width, excluding quiet zone	Component marking: depends on available space Product label: depends on available space Shipping label and delivery notes: depends on available space, 140 mm x 20 mm preferred Quiet zone at least 10 x module (dimension X) or 6.4 mm (depending on which is larger) left and right, and 2 x module (dimension X) above and below Barcode height: At least 15% of the barcode length in all cases
Module (dimension X)	Component marking: 19.9 mil = 0.505 mm Product label: 19.9 mil = 0.505 mm Shipping label and delivery notes: 19.9 mil = 0.505 mm
Horizontal readability range with a standard industrial scanner (distance from scanner to barcode)	Component marking: min. 2.5 cm, max. not specified Product label: min. 2.5 cm, max. 106 cm Shipping label and delivery notes: min. 2.5 cm, max. 106 cm Depends on the scanner: details for 1D long range laser devices
Barcode quality	All barcodes: <ul style="list-style-type: none"> Must meet at least quality level 1.5 or ANSI C according to ISO/IEC 15415.
Permissible contrast pattern	All barcodes: dark on light background

5 Label approval and contact

5.1 Approval

In the course of contract negotiations, appropriate samples must be provided for approval. Once the labels have been approved, they must be used for all deliveries to SBB.

5.2 Contact

You will receive the component details (SBB material number, material description, etc.) from the responsible purchaser. Please direct technical questions relating to the label structure or product descriptions to the appropriate approval address.