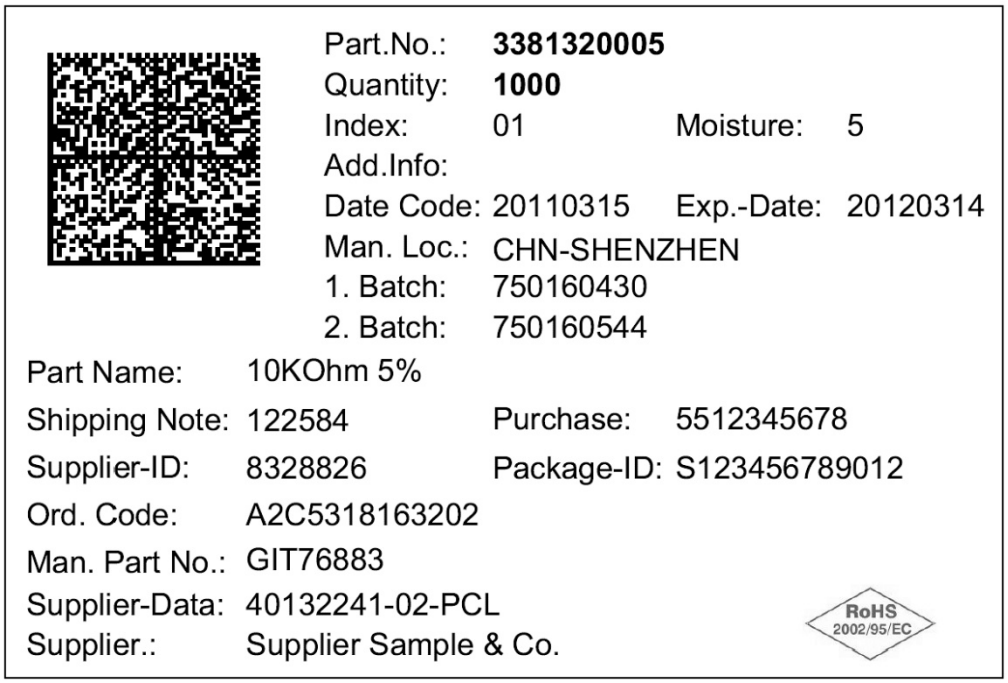
Requirements on Marking of Goods and Accompanying Information for Purchased Production Parts (MAT-Label, Version 2.5)



I. Table of Contents

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II. Change History

Version 2.4	First official release
Version 2.5	2.4 errata version. Formal corrections in the chapters “List of Abbreviations” and “Related Documents”. New sample pictures. Request to place a code on shipping note removed (moved to company-specific specification).

III. List of Abbreviations

ADC	–	Automatic data capture
ANSI	–	American National Standards Institute
BC128	–	Bar Code according to ISO/IEC 15417 (Abbrev. = BC 128)
BOM	–	Bill of material
CCD	–	Charge-coupled device
DIN	–	Deutsches Institut für Normung e.V. (German Institute for Standardization)
DMC	–	Data Matrix Code
DUNS	–	Data Universal Numbering System
EC	–	European Commission
ECC	–	Error Correction Code
ESDS	–	Electrostatic Sensitive Devices
GTL	–	Global Transport Label
IEC	–	International Electrotechnical Commission
IPC	–	Association Connecting Electronics Industries – formerly known as Institute for Interconnecting and Packaging Electronic Circuits
ISO	–	International Organization for Standardization
JEDEC	–	Solid State Technology Association - formerly known as Joint Electron Device Engineering Council
LED	–	Light Emitting Diode
ODETTE	–	Organization for Data Exchange by Tele Transmission in Europe
RoHS	–	Restriction of the use of certain hazardous substances in electrical and electronic equipment
VDA	–	Verband der Automobilindustrie e.V. (German Association of the Automotive Industry)

IV. Related Documents

ANSI MH10.8.2	Data Identifier and Application Identifier Standard
2002/95/EC	Restriction of the use of certain hazardous substances in electrical and electronic equipment; EU-RoHS; (non automotive related)
IPC/JEDEC J-STD-020	Moisture/Reflow Sensitivity Classification for Non-hermetic Solid State Surface Mount Devices
ISO 780	Packaging – Pictorial Marking for Handling of Goods
ISO 3166-1	Codes for the representation of names of countries and their subdivisions - Part 1: Country codes (3 Alpha Character Country-Code)
ISO/IEC 15417	Information technology - Automatic identification and data capture techniques - Code 128 bar code symbology specification
ISO/IEC 15434	Information technology -- Automatic identification and data capture techniques -- Syntax for high-capacity ADC media
ISO/IEC 16022	Information technology -- Automatic identification and data capture techniques -- Data Matrix bar code symbology specification
UN/ECE Rec. 20	Recommendation No.20 of WP.4: Codes for units of measure used in international trade
VDA 4902	Warenanhänger (barcode-fähig)[1]
VDA 4922	Speditions-Auftrag[1]

V. List of terms

Consumables	Material of the BOM which is used in the product or process beside the electrical and mechanical components like solder paste, glue, lacquer, sealing material
Consignment Advise	Document which verifies the instruction to advise the consignment
Transport Authorization	Document which verifies the authorization to transport the consignment.
Unit load	A package which consist of smallest package units

1. Purpose and Scope

The automotive industry places increasing demands on traceability along the whole supply chain. To ensure this traceability, material flow and information flow from suppliers to customers have to be aligned. This can be achieved by a unique material label on the smallest package unit containing a clearly defined set of traceability information. Up to now, there is no common industry standard for such a label.

The defined standard material label "MAT-Label" is based on the existing Siemens VDO label according to SN 55228-2. The MAT-Label is a complement to existing labels such as VDA 4902, Odette and GTL. These existing logistics labels are taken into account and referenced.

2. Validity and Transition Period

The following document is valid for Bosch, Hella, Siemens I DT MC, Continental Automotive and Zollner and replaces former versions. It can also be applied by other companies. Upon further notice existing company specific labeling specifications are valid.

3. Release process for the Data Matrix Code (DMC-Code) on MAT-Label[1]

If the DMC-Code on the MAT-Label (package label of a supplier) was approved by a customer[2] plant and the approval is based on the requirements listed in the following, then the approval is also valid for all other plants of the customer.

The label has to be used immediately for all receiving plants which demand the label as soon as they have been approved.

One sample has to be sent from each logistic center of the supplier to the releasing plant of the customer.

The approval can be differentiated in a general and a plant specific release.

The general approval is valid for all customer plants which will use a MAT-Label for packaging identification. Plant specific data contents have to be verified by each individual plant (e.g. data field "Add. Part Info", respective Supplier ID).

The data content of customer defined fields can be different from plant to plant.

The original approval of the DMC-Code on the shipping note and the approval of the MAT-Label have to be kept carefully and presented upon request.

[1] MAT-Label is always referring to the material label on the smallest package unit.

[2] Customer refers to the respective company applying this standard, e.g. Bosch, Hella, Siemens I DT MC Continental Automotive, Zollner or other.

4. Marking of a Unit Load

4.1. Marking of a Unit Load as the smallest Package Unit

If the unit load (shipping container) should at the same time represent the smallest package unit, then the approval of the particular receiving plant has to be requested in general depending on the Customer Part Number / drawing number.

If the approval is given, then a MAT-Label in master version will become necessary. The layout of the MAT-Label has to be selected in such a way that the Customer Part Number and amount can also clearly be read from distance. If this is not feasible, an additional ODETTE-Label (also VDA or GALIA) will become necessary. In this case, the MAT-Label has to be applied on the ODETTE-Label.

Sample: KLT-Label

4.2. Part Packaging (smallest Package Unit)

The smallest package does not contain any additional sub-packaging usually.

In case of a “Dry Pack” the protective packaging or the protective bag enclose the smallest package unit. Each packaging has to get one MAT-Label.

Only one e.g. reel per Dry Pack is allowed, see also following chapter.

Other definitions pertaining to part packaging have to be coordinated with the particular receiving plant depending on the Customer Part Number / drawing number.

Figure 1: Example of a MAT-Label (size of image reduced)

4.3. Marking of Dry Pack Packaging

For Dry Packs the MAT-Label has to be peel-able (removable) in one piece without partial damage.

If the MAT-Label has already been applied to the reel inside of the Dry Pack then the type of label has to be permanent on reel and Dry Pack (e.g. contract manufacturing). Both MAT-Labels have to be identical including Package-ID.

4.4. Additional Requirement

The following marking for RoHS compliance can also become necessary in addition.

- If the part complies to EU 2002/95/EC a symbol for RoHS compliance shall be printed on the MAT-Label.

Figure 2: Example for a symbol for RoHS compliance

If the printing of the RoHS symbol is not possible the marking with “RoHS“ is allowed alternatively.

5. MAT-Label Requirements

This chapter describes the universally valid aspects of the MAT-Label:

- Label size and layout (recommendation for the print-out style sheet)
- Attachment on the smallest package unit / attachment location
- Information Content
- Plain text and Machine-readable Codes (data syntax and print parameters)

5.1. Size and Layout

The MAT-Label consists of black printing on white label. Examples of valid layouts are defined and listed in the Appendix A.

The size of the MAT-Label can be chosen by the supplier considering the size of the smallest package unit. Recommendations are shown in Appendix A.

- Compare the planned size of the MAT-Label with the smallest free space on the part packaging (smallest packaging unit), to avoid using too large labels.

- To ensure to have enough free space for the code, its quiet zone and for the plain text, create a layout with maximum filled data fields.

  For customer fields consider the maximum field length as specified. For own (supplier) fields, consider the maximum field length within your company now and in future.

  Example: If the Manufacturer Part Number has maximum 10 characters in any cases, than it is not mandatory to reserve place for 35 characters.

- A border line around the label is not allowed. The pictures in Appendix A are showing the outline of the label only.

- Sufficient free area around the printing (not to close to the edges) has to be maintained. Consider to possible paper handling and printer tolerances.

- The MAT-Label samples in Appendix A are shown with real data. Spaces between data fields can occur, because the data does not occupy the maximum field length.

- The customer part number and the quantity have to be highlighted against the other information by using larger or bold type.

- All data fields have to be adjusted in that way, that there is enough space among each field for the maximum defined data length (in particular Batch-No. #1 and Batch-No. #2).

5.2. Attachment, Attachment Position

The supplier has to make sure, that the MAT-Label is easily and completely readable, does not cover up any other supplier-created data and is safely positioned on the packaging and against damages during transportation and opening at customer. The attachment with wire is not allowed.

- The MAT-Label has to be attached permanently on the smallest package unit and covering box where applicable and peel-able on Dry Packs, see Chapter 4.3.
- Reusable Containers (Durable Systems)

  The MAT-Label shall not be attached permanently and over the entire surface. The attachment of labels with bonding dots is permissible. The label and its attachment (bonding dots) have to be removable without residue.

5.3. Information Content

The following table lists the data fields which the supplier has to provide on the MAT-Label. It defines the format, length and the data identifier. The data fields are explained in detail afterwards.

The 2D-Code on the MAT-Label has to contain all data fields in the order represented by the column number.

It is strictly distinguished between the manufacturer, who actually produces the part and the supplier, who delivers the part to the customer.

The Batch-Number, Quantity and Expiration Date on the MAT-Label must be exactly the same as the Batch-Number and Expiration Date printed on the manufacturer part label if present.

Please note that the data content of respective fields e.g. customer plant number can be different from plant to plant.

Nr.	Data Field	Definition / Description	Data Identifier	Length	Format [3]	Examples	Machine-readable Code DataMatrixCode ECC200	Printed Text on the label
Label Information								
1.	Label Version	The revision level is a fixed entry and serves the recognition of the label or its version.	12S	4	N ("0002")	0002 (fixed data)	yes	no
Part Information								
2.	Customer Part Number [4]	Part number of the customer; e.g. the 8-digit SAP number.	P	Max. 18	A/N	718.187-04 A2C53216419	yes	yes (highlighted)
3.	Manufacturer Part Number	Internal manufacturer part number.	1P	Max. 35	A/N	SL105C103MAA-S	yes	yes
4.	Ordering Code [6]	Code for the part which non-ambiguously can be used for ordering it. Compared to the "Manufacturer Part Number", the Ordering Code may contain more information, e.g. Software Version in case of Microcon-trollers or package form.	31P	Max. 35	A/N	SC441427CFNR2 A2C53216419/02	yes	yes
5.	Part Description (Part Name)	Clear-text description of the part (or part name), so that persons who are not familiar with the manufacturer's naming convention can understand what kind of component this is	-	Max. 30	A/N	10 nF / 50 V / Ker W204KLA	no	yes
6.	Manufacturer Number	Explicit identification for the manufacturer, e.g. DUNS-Nr. or mutual agreed manufacturer number.	12V	Max. 13	A/N	123456789	yes	no
7.	Manufacturer Location	Naming the manufacturing location / locations	10V	Max. 20	A/N	DEU-BERLIN CHN-BEIJING	yes	yes
8.	Revision Level / Index [6]	Revision status of the part.	2P	Max. 14	A/N	AA 01	yes	yes
9.	Additional Part Information	Used differently by each plant, flexible filled, e.g. brightness of the LEDs.	20P	Max. 30	A/N		yes	yes
More Part Information								
10.	Date of Manufacturing	Date of manufacturing is related to the last manufactur-ing process	6D	8	YYYYMMDD	20080330	yes	yes
11.	Expiration Date	The Expiration Date of the part (defined by the manufacturer (depending on production date).	14D	8	YYYYMMDD	20081031	yes	yes
12.	RoHS	Indicator for RoHS compliance N: no RoHS Y: RoHS 0: not applicable	30P	1	A/N (upper case)	Y	yes	Logo

[3] N = numerical, A/N = alphanumerical, D = day, M = month, Y = year

[4] Capital letter formatted analogue to the order

Nr.	Data Field	Definition / Description	Data Identifier	Length	Format [5]	Example	Machine-Readable Code DataMatrixCode ECC200	Printed Text on the label
13.	MS-Level	Moisture Sensitivity Level according to IPC/JEDEC J-STD-020.	Z	Max. 2	A/N, "N" if not applicable	5	yes	yes
Logistic and Traceability Information								
14.	Purchase Order Number [6]	Order number assigned by customer to identify a purchasing transaction.	K	Max. 18	A/N	753013	yes	yes
15.	Shipping Note Number	Shipping Note Number of the shipping note and MAT-Label must be the same.	16K	Max. 12	A/N	54003333	yes	yes
16.	Supplier Name (no real data field!)	The Supplier Name.	-	Max. 30			no	yes
17.	Supplier-ID (vendor number) [6]	The vendor number (of the customer) for the supplier. It has to be taken over from the order.	V	Max. 10	A/N	884566	yes	yes
18.	Package-ID	The explicit, unique number per single package. It has to be unique per supplier-id (vendor number) and package. It is always related to the smallest package unit. If possible, chronologically related to the production process (e.g. reel-ID).	3S	13	A/N Capital letter only	S123456789012 (first Byte reserved for specifying single or master)	yes	yes
19.	Quantity	Quantity of the smallest package unit.	Q	Max.18	12ISO3 to be aligned to the right,	10KGM020 (printed: 10,02)	yes	yes (highlighted)
20.	Batch Counter	Batch Counter identifies the number of batches (1 or max. 2 batches per reel possible).	20T	1	N	2	yes	no
21.	Batch-No. #1	With this number the supplier has to be able to retroactively provide information about the batch (e.g. volume, production, delivery) A batch identification should be based on same manufacturing conditions. If a manufacturing condition changes batch number should be changed too.	1T	Max. 17	A/N	750160429	yes	yes
22.	Batch-No. #2	Batch number for the second batch - if applicable.	2T	Max. 17	A/N	750160430	yes	yes
Other								
22.	Supplier Data	Supplier own information that may be used by the supplier.	1Z	Max. 30	A/N		yes	no

[5] N = numerical, A/N = alphanumerical, D = day, M = month, Y = year

[6] Capital letter formatted analogue to the order

Please note

Additional Barcodes on the label in the format BC128 might be necessary to be compatible to existing equipment in the plants of the customer. Therefore the customers describe this requirement in appended papers. Samples of label with a Barcode are displayed at the Appendix.

Label Information

1.Label Version

The label version is a fixed entry and serves as the recognition of the label and its version. The current label version described in this specification is 2 and the fixed entry of this data field is “0002”.

Part Information

2.Customer Part Number

Part number of the customer; e.g. the max. 18-digit SAP number. The format and design of the customer part number has to be analog to the order.

The customer part number and the quantity have to be highlighted in bold font.

3.Manufacturer Part Number

Part number under which the manufacturer identifies the part and which is used for the release of the part by the customer.

4.Ordering Code

The ordering code is a mutually agreed code for the part which unambiguously can be used for ordering it. Compared to the "Manufacturer Part Number", the Ordering Code may contain more information, e.g. SC441427CFNR2, software version in case of microcontrollers, kind of packaging etc.

5.Part Description

Description of the ordered part (or part name) using plain text.

6.Manufacturer Number

Explicit identification of the manufacturer by DUNS-No or mutually agreed between customer and supplier.

7.Manufacturing Location

Identification of the manufacturing location (preferred the location of the final test of the component) as mutually defined between supplier and respective customer.

Example: *DEU-BERLIN* *(in case of only one location in town)*

DEU-BERLIN1
DEU-BERLIN2 } *(in case of two locations in town)*

The field with a maximum of 20 digits consists of 3 Characters Country-Code analogue ISO3166-1 ALPHA-3 [3 digits] + „-„ [1 digit] + Plant-Location [required digits] + Plant-Number [0 or 1 digits (if more then 1 plant)]

8.Revision Level / Index

Revision level of the part if applicable.

9. Additional Part Information

This field can be flexibly used for additional information about the part, e.g. for the brightness of LEDs. The content of this field has to be mutually agreed upon between manufacturer (supplier) and the receiving customer plant.

10. Date of manufacturing

The date of manufacturing (also called ‘Date Code’) as defined by the last manufacturing process.

Definition / Date Format:

YYYYMMDD

Example: 20110330 Dots (separators) are not allowed as code content.

11. Expiration Date

The Expiration Date of the part is defined by the manufacturer (depending on the production date).

This is the date until the part may be kept under the specified storage conditions (shelf life) and until this part has to be processed by the customer (e.g. soldered in case of electronic components).

Definition / Date Format:

YYYYMMDD

Example: 20111231 Dots (separators) are not allowed as code content.

12. RoHS

In the 2D-Code, a “Y” means compliance to the current RoHS directives and an “N” means non-compliance.

If RoHS is not applicable, the field entry is "0" (zero).

In case the parts are RoHS compliant the RoHS symbol has to be printed onto the MAT-Label. If this is not possible the printing of “RoHS” is allowed.

13. MS-Level

If the part is moisture-sensitive, then the MS-Level (Moisture Sensitivity Level) has to be entered according to the industrial standard IPC/JEDEC J-STD-020 (see also 4.3).

If the part is not moisture-sensitive (e.g. mechanical parts), then the letter “N“ has to be printed (for not moisture-sensitive).

Logistics and Traceability Information

14. Purchase Order Number

The purchase order number is assigned by the customer to identify a purchasing transaction. It has to be identical to the one on the Shipping Note.

15. Shipping Note Number

Shipping Note Number identifies the shipping. It has to be identical to the one on the Shipping Note.

16. Supplier Name

The supplier name will only be printed as plain text and is not part of the 2D-Code.

17. Supplier-ID (Vendor Number)

The Supplier-ID is the vendor number under which the customer identifies the supplier. The Supplier-ID has to be taken-over from the order.

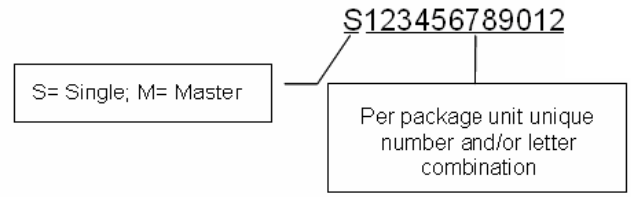
18. Package-ID

The Package-ID is the unique number per smallest package unit of each supplier characterized by Supplier-ID. The Package-ID has to be defined by the supplier and has to be unique world-wide per Supplier-ID. The Package-ID will be used for costumer purposes only to distinguish the package units.

The MAT-Label applies for the smallest package unit according to definition. Therefore the first Character has to be an “S“.

If the MAT-Label is required for a unit load by customer the first character has to be an “M“.

Example for a Package-ID:



The concatenated data fields Supplier-ID and Package-ID represent the unique trace code for the smallest package unit.

Examples in defined sequence:

G_SV884566**G_S**3SS123456789012**G_S**

@V884566@3SS123456789012@

19. Quantity

The quantity is the number of parts or the amount contained in the package unit

The format in the 2D-Code is 12ISO3, i.e. maximum 12 significant places and exactly 3 decimal places. For the significant digits do not use leading zeros. For the decimal places, use always exactly 3 decimal places and fill up with zeros for the case that there are less than 3 decimal places given in the amount.

ISO denotes the identifier for the measuring unit (e.g. pieces, liters, etc.) according to the Recommendation No. 20 of WP.4 of the UN/ECE which is generally accepted for the use in Electronic Data Interchange (EDI) and supported e.g. by SAP.

The format used for the printed plain text should be 12,3 and given in the plain text measuring unit instead of the ISO Code. Separators (periods) can be added to make it easier to recognize thousands places. If different formats for 2D-Code and printed information is technically not possible, then the quantity has to be printed in the same way as it is contained in the 2D-Code.

Excerpt from the UN/ECE Recommendation 20:

Measured Quantity	Measuring Unit	ISO Code
Number of Articles	Pieces	NAR
Mass	Kg	KGM
Mass	Metric Ton	TNE
Mass	Grams	GRM
Volume	Liters	LTR
Volume	Cubic meters	MTQ
Length	Meters	MTR
Length	Km	KMT

Examples:

Quantity	Printed plain text	2D-Code
12 Kg	12 Kg	12KGM000
12.03 Kg	12.03 Kg	12KGM030
3000	3000	3000NAR000

20. Batch-Counter

The Batch-Counter is the total number of batches in the smallest packaging unit. A maximum of two different batches are allowed in one smallest package unit.

Examples:

Package unit includes only one Batch (e.g. Batch-Number: 0105086).

Field name:	*Data (content):*
Batch-Counter:	1
1. Batch-No.:	0105086
2. Batch-No.:	(empty)

Package unit includes two Batches (e.g. Batch-Number 0105086 and 0105087).

Field name:	*Data (content):*
Batch-Counter:	2
1. Batch-No.:	0105086
2. Batch-No.:	0105087

21. Batch-No. #1

The data field Batch-No. #1 contains an identification code for the production batch of the part (batch number, lot number, trace code, date code …). With this number the supplier has to be able to retroactively provide all traceability information about the production batch (e.g. volume, production, delivery, half-finished goods used in the production, production machine(s), operator …).

A batch identification should be based on same manufacturing conditions. If the conditions (machine, half-finished goods, operator …) change the batch number should also change. Collective batches are not allowed.

22. Batch-No. #2

The data field Batch-No. #2 contains an identification code for the second production batch of the part (batch number, lot number …) and has to be filled only when the Batch-Counter = 2

Additional supplier information

Supplier Data

This data field may freely be used by the supplier.

5.4. Requirements on the 2D- and 1D-Codes

- **Print Parameters for the Data Matrix Code**
  - Code Type — DMC (acc. ISO/IEC 16022)
  - Failure Correction — ECC 200
  - Module width — min 0,25 mm (3 Dot / Mod)
  - Code size — maximum of 80 x 80 modules
    corresponding to a maximum allowed amount of usable characters of 453 including control characters (the sum of all maximum field sizes exceeds the 80 x 80 module limit)
  - Rest zone — min. 4 modules
    (1 mm for 0,25 mm module width)

- **Label Material Properties**

  a) Non-removable label
  - Face Material — white, reverse coated, mat
  - Adhesive — Permanent adhesive adjusted to the material of the smallest package unit
  - Recycling regulations have to be obeyed

  b) Peel-able label
  - Face Material — white, reverse coated, mat
  - Adhesive — Removable adhesive adjusted to the material of the smallest package unit, residue free
  - Recycling regulations have to be obeyed

- **Data Contents and Data Syntax based on ISO/IEC 15434**

  According to ISO/IEC 15434 the data matrix code is structured into data fields with separators. The content of each data field is described by a data identifier. Within each data field, the data identifier precedes the data.

  Make sure that 06 has to be used as format indicator (part of the format header).

  No blanks or line feeds are permissible between the data fields. If mutual agreed, blanks are only permissible in the data fields, if they are part of the information content or if they were provided to the supplier as stated in the order.

- **Data Content and Data Identifier**

  The previous table (table capital 5.3) lists the data, data length, format and data identifiers that have to be encrypted in the code. All fields are mandatory fields.

  All Data Identifiers have to be listed, also in case of an empty data field. Their sequence is defined by table 5.3.

  The data syntax is generally based on ISO/IEC 15434. The symbols $^{R}_{S}$, $^{G}_{S}$ and $^{E}O_{T}$ are in accordance to ASCII/ISO 646.

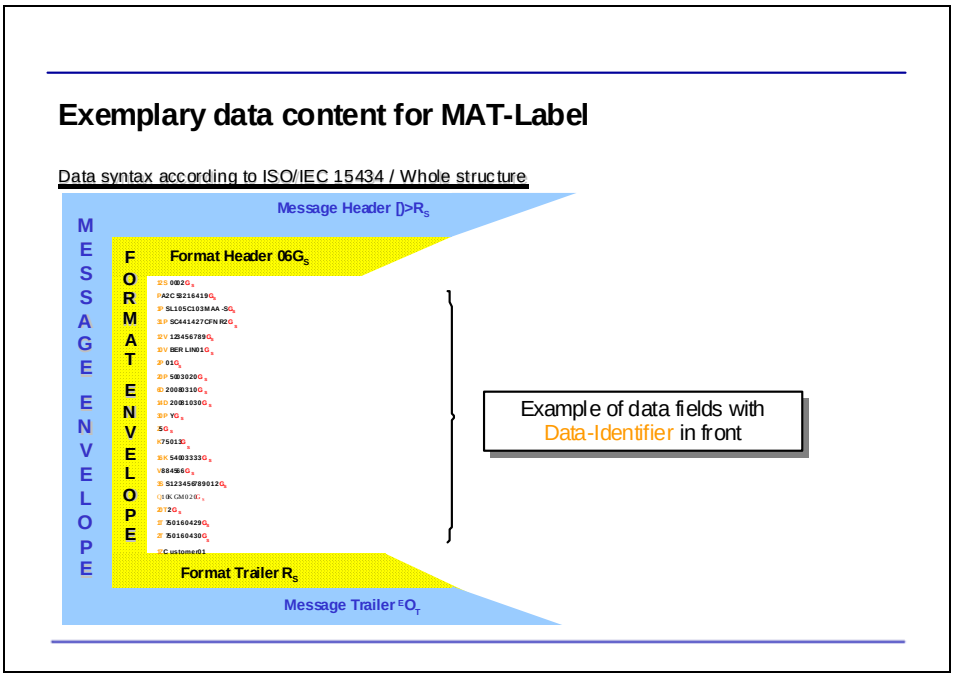
  Due to technical compatibility Bosch, Hella, Siemens I DT MC and Zollner AG are requesting @ as trailer and separators (R_S, G_S and $^{E}O_{T}$). Continental AG allows this also as an exemption after clarification with the respective location.

  Syntax with $^{R}_{S}$, $^{G}_{S}$ and $^{E}O_{T}$:

  []>$^{R}_{S}$06$^{G}_{S}$12S0002$^{G}_{S}$PA2C53216419$^{G}_{S}$1PSL105C103MAA-S$^{G}_{S}$31PSC441427CFNR2$^{G}_{S}$12V123456789$^{G}_{S}$10VBERLIN1$^{G}_{S}$2P01$^{G}_{S}$20P5003020$^{G}_{S}$6D20080310$^{G}_{S}$14D20081030$^{G}_{S}$30PY$^{G}_{S}$Z5$^{G}_{S}$K753013$^{G}_{S}$16K54003333$^{G}_{S}$V884566$^{G}_{S}$3SS123456789012$^{G}_{S}$Q10KGM020$^{G}_{S}$20T2$^{G}_{S}$1T750160429$^{G}_{S}$2T750160430$^{G}_{S}$1ZCustomer01$^{R}_{S}{}^{E}\mathbf{O}_{T}$

Syntax with @ instead of $^{R}_{S}$, $^{G}_{S}$ and $^{E}O_{T}$:

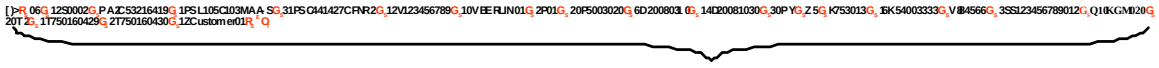
[)>@06@12S0002@PA2C53216419@1PSL105C103MAA-S
@31PSC441427CFNR2@12V123456789@10VBERLIN1@2P01@20P5003
020@6D20080310@14D20081030@30PY@Z5@K753013@16K54003333
@V884566@3SS123456789012@Q10KGM020@20T2@1T750160429@2T7
50160430@1ZCustomer01@@



5.5. Summary of the Data Content

Exemplary data content for MAT-Label

Data flow for a fictitous example



Part of the whole structure	Data Identifier	Data Content	Data Element Separator	Formated Data Content
Message Header				[)>R$_S$
Format Header				06G$_S$
Data Content	12S	0002	G$_S$	12S0002G$_S$
	P	A2C53216419	G$_S$	PA2C53216419G$_S$
	1P	SL105103MAA-S	G$_S$	PSL105103MAA-SG$_S$
	31P	SC44127CFNR2	G$_S$	31PSC44127CFNR2G$_S$
	12V	123456789	G$_S$	12V123456789G$_S$
	10V	BERLIN01	G$_S$	10VBERLIN01G$_S$
	2P	01	G$_S$	2P01G$_S$
	20P	5003020	G$_S$	20P5003020G$_S$
	6D	20080310	G$_S$	6D20080310G$_S$
	14D	20081030	G$_S$	14D20081030G$_S$
	30P	Y	G$_S$	30PYG$_S$
	Z	5	G$_S$	Z5G$_S$
	K	753013	G$_S$	K753013G$_S$
	16K	54003333	G$_S$	16K54003333G$_S$
	V	884566	G$_S$	V884566G$_S$
	3S	S123456789012	G$_S$	3SS123456789012G$_S$
	Q	10KGM020	G$_S$	Q10KGM020G$_S$
	20T	2	G$_S$	20T2G$_S$
	1T	750160429	G$_S$	1T0750160429G$_S$
	2T	750160430	G$_S$	2T0750160430G$_S$
	1Z	Customer01		1ZCustomer01
Format Trailer				R$_S$
Message Trailer				E O$_T$

6. Team

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Viola Rebay von Ehrenwiesen, Zollner Elektronik AG

APPENDIX A: Examples of the MAT-Label (Various Layouts)

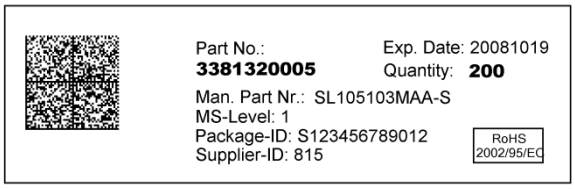
Proposals for field description:

- Part No.	= Customer Part Number
- Man. Part No	= Manufacturer Part Number
- Quantity	= Quantity
- Add.Info	= Additional Part Information
- Man.Date or Date of Man.	= Date of Manufacturing
- Exp. Date	= Expiration Date
- Suppl.	= Supplier Name
- 1. Batch	= Batch-No. #1
- 2. Batch	= Batch-No. #2
- MSL or MS-Level	= Moisture Sensitive Level
- Index	= Material Revision (Part-Index)
- Purchase	= Purchase Order Number
- ShippingNote	= Shipping Note Number (Shipping Reference)
- Part Name	= Part Description
- Ord.Code	= Ordering Code
- Man.Loc.	= Manufacturer Location

Comprehensive Label (70 x 48 mm, as sample):

Example #1

Small Label (80 x 25 mm, as sample):



Example #2

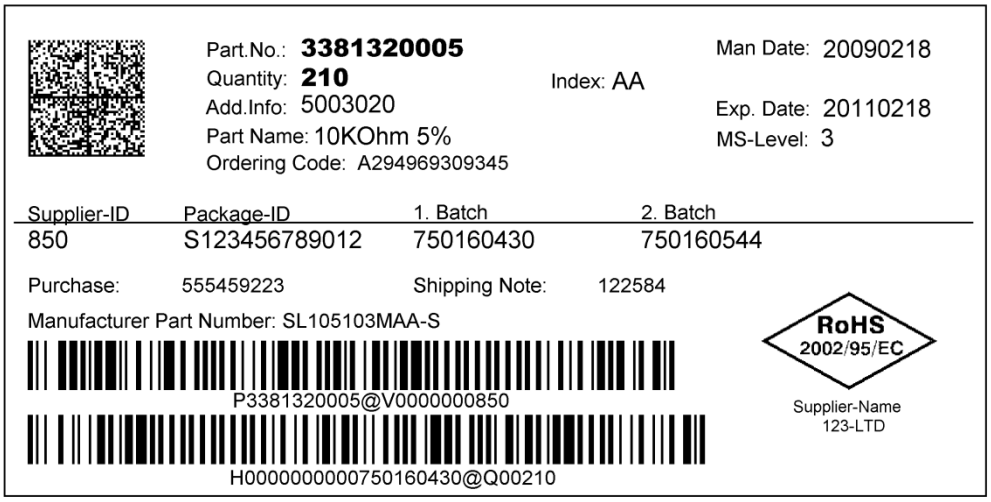
Very small Label (74 x 22 mm, as sample)

Example #3

Samples with Barcodes

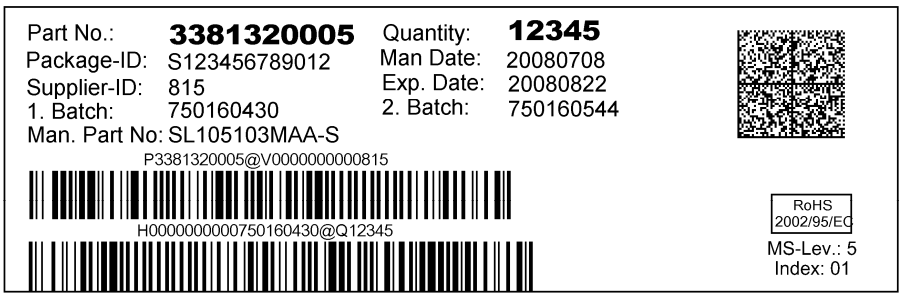
The format and the content of the Barcodes are described by the requiring company.

Bosch/Hella sample (large 120 x 60 mm, as sample)



Example #4

Bosch/Hella sample (small 100 x 40, as sample)



Example #5

Continental sample (large 120 x 60 mm, as sample):

Example #6