TK HOLDINGS INC.
NAO SAFETY SYSTEM SUPPLIER TRANSPORT LABEL

TEMPLATE SPECIFICATION REVISION 11, MARCH 22, 2011

INTRODUCTION

This standard describes the requirements for two common TK Holdings Inc. Safety system supplier Transport Label (STL) templates used on unit loads. This standard does not supersede or replace any applicable safety or regulatory marking or labeling requirements. This standard is to be applied in addition to any other mandated labeling requirements.

The following have been identified as the label types in use at TK Holdings:

- Individual container
- Master Load container

Note: Mixed pallets are also allowed and require proper individual container labeling.

In other words, mixed parts will require a master label for each part number on the pallets (resulting in multiple master labels).

Keep like parts together.

It is the responsibility of the supplier to provide bar code marked labels that meet the specifications outlined in this standard. Non-compliance with these requirements will be recorded and an Incident Report will be generated by TK Holdings. All associated costs for extra handling and relabeling will be supplier's responsibility.

Maximum weight (gross) of a container shall not exceed 40 lbs (18Kg) for any returnable or non-returnable container.

Maximum weight (gross) of a load unit (pallet) to be handled with a forklift or pallet jack shall not exceed 2400 lbs (1089Kg).

Container to be handled manually must fit within a standard 45" x 48" pallet.

Containers must be suitable for KANBAN racks. Any specific details regarding packaging refer to standard **QES 004**.

In this document, the word "shall" indicates a requirement and the word "should" indicates a recommendation.

All exhibits are for illustrative purposes only, and may not be to scale or bar code print quality standards.

LABEL CONCEPTS

This section defines a standardized label concept for the TK HOLDINGS Safety system supplier Transport and Master Labels.

LABEL SIZE

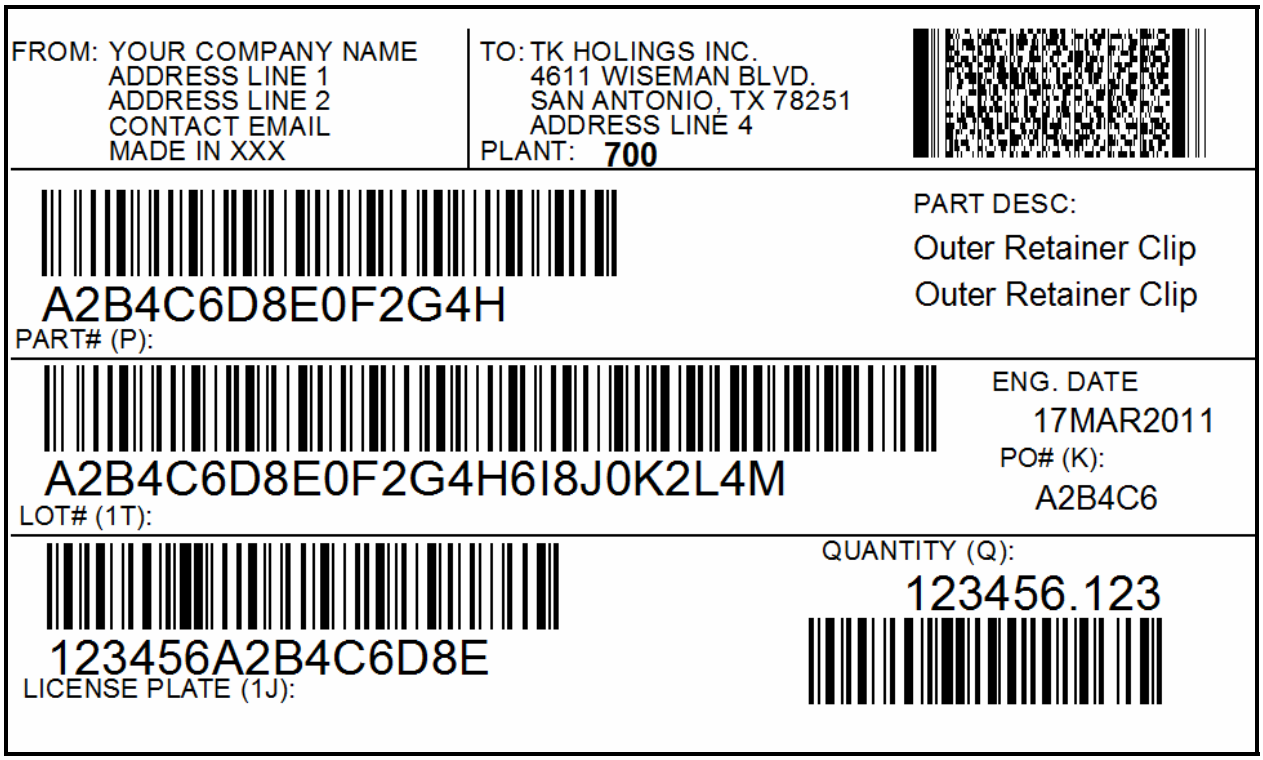
The TK HOLDINGS transport label is designed around the label sizes of the AIAG B-10, B-11 and B-16 with a minimum recommended size of 102 mm x 165 mm (4.0 inches x 6.5 inches).

BUILDING BLOCK

The following illustrations and matrix describe the distribution of data within the label templates:

- The label is divided into horizontal blocks or sub-blocks.
- Each block or sub-block may be left blank or may contain text /128 bar code data.
- Data content shall not exceed the stated block/sub-block limits.
- Building blocks shall be stacked vertically.
- A horizontal line shall separate building blocks.
- Each building block is approximately 18mm (0.87”) in height.

STL SINGLE CONTAINER TEMPLATE



STL SINGLE CONTAINER TEMPLATE (OPTIONAL SUPPLIER AREA)

FROM: YOUR COMPANY NAME
ADDRESS LINE 1
ADDRESS LINE 2
CONTACT EMAIL
MADE IN XXX

TO: TK HOLINGS INC.
4611 WISEMAN BLVD.
SAN ANTONIO, TX 78251
ADDRESS LINE 4
PLANT: **700**

A2B4C6D8E0F2G4H
PART# (P):

PART DESC:
Outer Retainer Clip
Outer Retainer Clip

A2B4C6D8E0F2G4H6I8J0K2L4M
LOT# (1T):

ENG. DATE
17MAR2011
PO# (K):
A2B4C6

123456A2B4C6D8E
LICENSE PLATE (1J):

QUANTITY (Q):
123456.123

SUPPLIER FREE AREA

MASTER STL CONTAINER TEMPLATE

MASTER LABEL

FROM: YOUR COMPANY NAME
ADDRESS LINE 1
ADDRESS LINE 2
CONTACT EMAIL
MADE IN XXX

TO: TK HOLINGS INC.
4611 WISEMAN BLVD.
SAN ANTONIO, TX 78251
ADDRESS LINE 4
PLANT: **700**

A2B4C6D8E0F2G4H
PART# (P):

PART DESC:
Outer Retainer Clip
Outer Retainer Clip

123
PACKS (7Q):

ENG. DATE
21MAR2011
PO# (K):
A2B4C6

123456A2B4C6D8E
LICENSE PLATE (6J):

QUANTITY (Q):
123456.123

DATA TITLE	DI	DESCRIPTION	B/C	# CHAR W/O DI	TYPE	FONT SIZE
FROM		Ship From: Max 5 Lines of Data, Company Name, Address, Contact Phone/email, *Country of Origin i.e. MADE IN / ASSEMBLED IN (See explanation below)	N	5L	A/N	10
TO		Ship To: Max 5 Lines of Data, Company Name (one line), Address (three lines)	N	5L	A/N	10
PLANT	21L	Plant Code assigned by Takata	2D	3 CH	A/N	18-20
2D SYMBOL PDF417 See: Annex A		Machine-readable combination of License Plate, Quantity, Part Number, Number of Packs, Lot Number, PO#, and Plant Code. Container-DataStream: [)>$^{R}_{S}$06$^{G}_{S}$1J123456A2B4C6D8E$^{G}_{S}$Q123456.123$^{G}_{S}$PA2B4C6D8E0F2G4H $^{G}_{S}$ 1TA2B4C6D8E0F2G4H6I8J0K2L4M$^{G}_{S}$ KA2B4C6 $^{G}_{S}$21LA2B4$^{R}_{S}$^{E}0$_{T}$ Master-DataStream: [)>$^{R}_{S}$06$^{G}_{S}$6J123456A2B4C6D8E$^{G}_{S}$Q123456.123$^{G}_{S}$PA2B4C6D8E0F2G4H $^{G}_{S}$ 7Q123PK $^{G}_{S}$ KA2B4C6 $^{G}_{S}$ 21LA2B4$^{R}_{S}$^{E}0$_{T}$	Y	85 CH	A/N	
PO #	K	Six Digit Shipping Control Number assigned by Customer	2D	6 CH	A/N	12-18
QUANTITY	Q	Quantity, Unit of Measure assumed to be "each" unless mutually defined by Takata and Supplier. Ref. Customer order. Base 6 digits, decimal, 3 suffix digits for a max of 10.	1D, 2D	10 CH	N	18-20
PART DESC		Description of part (two lines)	N	30 CH	A/N	12-18
PART #	P	Item Identification code assigned by customer	1D, 2D	15 CH	A/N	18-20
LOT #	1T	Trace ability Number assigned by Takata/Supplier to identify/trace a unique group of entities (lot, heat, batch)	1D, 2D	25 CH	A/N	18-20
# PACKS	7Q+ PK	Number of Individual Packs in a Master Pack followed by the two-character Unit of Measure code (Quantifier – PK used in 2D)	1D, 2D	3 CH	N	18-20
ENG. DATE		Date Structure Mutually Defined DDMMMCCYY as Engineering / Manufacturing Date	N	9 CH	A/N	12-18
Container License Plate See: Annex B	1J	License Plate (Serial Number) used for uniquely identifying an individual transport unit not to be repeated for 365 days. Supplier Code assigned by customer combined with supplier generated ship pack serial number.	1D, 2D	15 CH	A/N	18-20
Master License Plate See Annex B	6J	License Plate (Serial Number) Master packaging containing like items on a single order. Supplier Code assigned by customer combined with supplier generated ship pack serial number.	1D, 2D	15 CH	A/N	18-20
SUPPLIER AREA		Shall adhere to all guidelines set forth in AIAG B-10/16 standard, e.g. (1P) Supplier Part Number. For suppliers requiring additional space use a second below Takata label or use optional Takata STL format				
Note: Data Titles are all uppercase and the same size (6-9pt). Symbology: 1D=Code 128, should have an 'x' dimension of 0.015". Symbology: 2D=PDF 417 should have an 'x' dimension of 0.01". N=No Bar Code.						

FONTS

All fonts on the STL shall be bold UPPER CASE for readability. Font Size shall be as large as practical for information printed. Font should support slash zero and shall be sans serif (without tails, e.g. Arial, Helvetia or equivalent). Color fonts and Italics shall not be used. Font size selection shall accommodate the data to be printed. The same font size may vary between printers due to several factors, including printer resolution.

MADE IN / ASSEMBLED IN XXX

Products claiming to have been “MADE IN / ASSEMBLED IN (Country Name)” must have been “all or virtually all” made in the Country named in the label. This means all significant parts, processing and labor to produce the item must have originated in the country specified.

LINEAR BAR CODE

The linear symbology used in this standard shall be Code 128, allowing for a quiet zone at each end of the symbol, of at least 6.4 mm (0.25 inches). Note for specification on building 2D PDF417 symbols see Annex A.

- The four characters %, /, $, +, shall not be used.
- The minimum height of the symbol shall be 10.2 mm (0.4 inch).
- Part numbers with leading zeros and spaces shall not be omitted.
- "X" Dimension. The dimension of the narrowest element (X dimension) range shall be from 0.33 to 0.43 mm (0.013 to 0.017 inch) as determined by the printing device. Symbols with narrow elements at the lower end of this range may require special care to meet the print quality requirements.
- Each linear bar code shall have the appropriate data identifier included within the bar code data but not in the human readable. Example if you are shipping a quantity of 120 pieces the bar code would read Q120 when scanned but will should only 120 as the human readable above the bar code.

PRINT QUALITY

ISO/IEC 15438 and ISO/IEC 15415 Bar Code print quality test specification for Linear Symbols shall be used to determine the print quality. The minimum symbol grade should be 1.5/10/660, where:

- Minimum Print Quality grade = 1.5 (C) at the customer's point of scan
- Recommended Print Quality grade $\geq$ 2.5 (B) at the point of printing the symbol
- Measurement Aperture = 0.254 mm (0.010 inch)
- Light Source Wavelength = 660 nanometers (nm) $\pm$ 10 nm.

It is important that the linear bar code symbol be decodable throughout the system of use. The symbol quality and measurement parameters should ensure scan-ability over a broad range of scanning environments. Print quality at the point of production should be higher (Print Quality Grade $\geq$ B) than the requirements at the point of use. Unattended scanning may require a higher print quality grade than that identified above. Consequently, those implementing this standard for unattended applications should discuss print quality requirements with the labeler. To reduce errors associated with the mislabeling of containers, on-demand printing should be placed as close as possible to the point of application. Studies have shown that batch, central printing and pre-printed labels have higher error rates associated with mislabeling (wrong label on the container). Direct thermal and thermal transfer printer devices produce the most consistent results for symbol print quality and text uniformity. The safety system supplier should have an in-house verification process for ongoing quality control of all labels.

BEST PRACTICES THAT MUST BE FOLLOWED

Bar codes with a high bar gain/loss dramatically decrease scanner performance and decode-ability without affecting ANSI print quality.

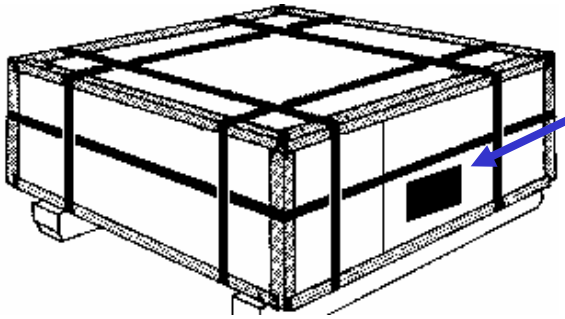
- Width of the narrow bars shall be the same width as the narrow spaces, ideally within +/- 10%, but shall be within +/- 25%.

Bar Gain/Loss can be caused by many factors in the printing process such as the ink applied to form the bars spreading on the background material. The ideal situation would be to have 0% variation. In case of high bar gain/loss, adjustments need to be made to the original artwork, plate marking, ink application, ribbon formulation, and print head temperature. Bar code verification equipment should be utilized in order to bring this deviation as close to zero as possible.

Note: Quality of media (i.e. labels and ribbon) can have a profound effect on image quality and subsequently a scanners ability to decode a bar code symbol. Safety system suppliers should utilize good quality print materials when making their STL labels.

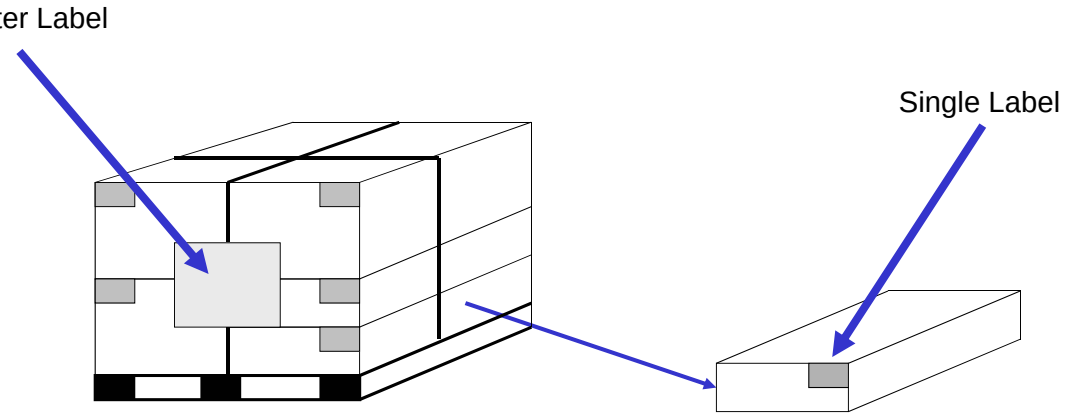
LABEL MATERIALS AND PLACEMENT

The STL shall be white with black print (Color should not be used as it may affect the scan-ability of the bar code symbol. The labels should be attached on adjacent sides in accordance to the following illustrations.



Individual Load

Master Load



TK HOLDINGS Supplier Transport Label Certification Program

To Become TK HOLDINGS Compliant

Aalstec Data Corp. is our certifying agent for the Container & Master Label. The goal is to ensure that all safety system suppliers shall produce TK HOLDINGS compliant labels. More information on this is available at www.aalstec.com.

If you cannot generate a compliant safety system supplier label, you can purchase ready-made formats and consultancy from Aalstec.

Certification

A fee of $75 USD is charged on a per label / occurrence basis. Aalstec will provide a report indicating a "pass" or "fail" of your label format. The testing criteria utilized were designed to evaluate the label for form, function and data integrity**.** The report will include analysis in the following areas:

- Dimensional/reflective characteristics of symbology and data
- Label format, and symbology syntax
- Data Integrity (information will be cross reference with TK Holdings databases for validity)
- Summary results to TK HOLDINGS

Note: Safety system suppliers with multiple (Ship From) locations are required to certify each location individually. Certification at a corporate or head office facility does not constitute blanket company certification.

Register for label certification at www.aalstec.com click on Label Certification on the left hand side.

SAFETY SYSTEM SUPPLIER BULLETIN

To: TK HOLDINGS Safety system suppliers

TK HOLDINGS is aggressively monitoring compliance with the standard. TK HOLDINGS plants are authorized to issue IRs (Incident Reports) when a product non-conformance is detected. As part of the TK HOLDINGS label initiative, safety system suppliers who receive an IR will require re-certification to ensure compliancy. Shipping labels must have all the required data elements, use specified fonts, and include bar codes that can be scanned successfully at all points in the supply chain as outlined in the NAO Safety system supplier Transport Label specification (this document).

Safety system suppliers may be required to re-submit labels on an annual basis to ensure continued compliancy through accurate and scan-able shipping labels. This will allow TK Holdings to monitor system success, as well as, introduce necessary and ongoing changes to the system. Through this process TK Holdings will be able to streamline efficiency, and increase accuracy with minor amount of resources to monitor and maintain label quality.

Special Note: The certification process requires a production shipping label sample with actual shipping data from the supplier company. Therefore, particular attention shall be paid to Part Number and Plant Code information. Part numbers are to be current and relevant with the proper base and suffix information.

Contact Aalstec Data for label submission at: http://www.aalstec.com

TERMS AND DEFINITIONS

TERM	DEFINITION
1D Symbol	1D **one-dimensional** or linear symbol, such as Code 128. An array (linear sequence) of variable width rectangular bars and/or spaces, arranged in a predetermined pattern, following specific rules, to represent elements of data; these bar and space patterns are referred to as **characters**. A bar code symbol typically contains a leading quiet zone, a start character, data character(s) including a check character (if any), a stop character and a trailing quiet zone.
2D Symbol	2D **two-dimensional** symbol**.** A machine-readable symbol that must be examined both vertically and horizontally to read the entire message. A 2D symbol may be one of two types of machine-readable symbols: a Matrix Symbol or a Stacked Symbol. 2D symbols differ from linear bar codes in that they have the capability for high data content, small size, data efficiency, and error correction.
AIAG	Automotive Industry Action Group
Alphanumeric	A character set that contains alphabetic characters (letters), numeric digits (numbers), and usually other characters such as punctuation marks.
Bar Code Symbol	The combination of symbol characters and features required by a particular symbology, including quiet zones, start and stop characters, data characters, check characters and other auxiliary patterns, which together form a complete scan able entity.
CAR	Corrective Action Request issued when a product non-conformance is detected.
Character (CH)	The smallest group of elements that represents one number, letter, punctuation mark or other information.
Code 128	For the purposes of this standard, Code 128 shall mean the symbology as described in ISO/IEC15417
Container	A receptacle or flexible covering for shipping goods. Example is a box, bag, package or pallet. (See also **Transport Unit** and **Pack, Package** or **Load.**)
Customer	In a transaction, the party that receives, buys, or consumes an item or service. I.e. TK HOLDINGS.
Customer Part Number	The part number as defined by the customer.

Data Element	The smallest named item of information that can convey data, analogous to a field in a data record or a word in a sentence.
Data Element Separator	The special character used to separate data elements in a data format.
Data Identifier (DI)	A specified character (or string of characters) that defines the general category or intended use of the data that follows. Data Identifiers are defined by ANSI MH10.8.2 / ISO 15418. The DI is not part of the data.
ECC (Error Correcting Code)	A technique used at the byte level to detect and correct data transmission errors. Supplemental bits introduced or source encoded into a data stream to allow automatic correction of erroneous bits and/or derivation of missing bits, in accordance with a specific computational algorithm. See also “Error Correction Level.”
Element	A single bar or space in a linear or stacked symbol or a single cell (module) in a matrix symbol (not the same as **Data Element**).
Element Width	The thickness of an element measured from the leading edge of an element to the trailing edge of the same element (see **X dimension**.)
Human Readable Interpretation	The human readable letters, digits or other characters representing the data encoded in/and printed along with the linear bar code or 2D symbol.
Item	A single part or material purchased, manufactured and/or distributed.
IPP	Initial Production Part
Label	A piece of paper, plastic, card stock or metal that is marked (by printing or some other means) and attached to an object to convey information. For purposes of this document, attachment of a label is to be on the exterior of a container.
Lot	A quantity of homogeneous material either manufactured or received.
Manufacturer	Actual producer or fabricator of an item; not necessarily the supplier in a transaction.
Master Load	A multiple pack or unit load of common items (sharing a single part number), such as a pallet.

Message	A continuous stream of data elements, including formatting characters and delimiters, to be encoded in a (two-dimensional) symbol or set of symbols.
Message Envelope	A pair of elements consisting of a Message Header and a Message Trailer that delimits the start and end of a data stream in a given message.
Message Header	A character or group of characters that defines the start of a Message Envelope.
Message Trailer	A group of character used to identify the end of a Message Envelope.
Pack, Package or Load	A transport package (container) that provides protection and containment of items plus ease of handling by manual or mechanical means, for example: bags, cartons, pallets, bins and racks.
Pallet	A platform to hold unit loads, permitting stacking of materials and transport packages, and the movement of the materials as a single load. A pallet may be either expendable (e.g. wood) or returnable (e.g. plastic).
Part	An identifiable item that has a unique name and/or number assigned to it.
Part Number	A unique code that identifies a part, assembly, component or kit.
Quantity	On a label, the marking that indicates the number of parts or items or the amount in any other unit of measure that is contained within the package.
Quiet Zone	Areas free from interfering markings surrounding a bar code symbol and, in particular, preceding the start character and following the stop character. Also referred to as “light margin” or “clear area”.
Reader	A device consisting of a scanner and a decoder.
Scanner	An electronic device to collect and convert reflected light from the elements (e.g., bars and spaces in linear symbols) of a symbol into electrical signals for processing by the decoder.
Serial Number	A string of numeric or alphanumeric characters in the issuer’s information system used for uniquely identifying an individual item or entity for its life.
Shall/Should	In this document, the word “shall” indicates a requirement and the word “should” indicates a recommendation.
Ship From	On a transport label, the address of the location where the carrier will return the shipment if the container is undeliverable.

Ship To	On a transport label, the address of the location where a carrier will deliver the shipment.
SQA	Supplier Quality Assurance is a department located at each assemble facility.
SSD	Supplier Support Development is a subgroup located at TK HOLDINGS corporate facilities.
Structure	The order of data elements in a message.
Supplier	In a transaction, the party that produces provides or furnishes an item or service.
Symbol	A graphic array of light and dark elements that forms a complete scan able entity.
Symbology	A standard means of representing data in bar code form. Each symbology specification sets out its particular rules of composition or symbol architecture.
Syntax	The way in which data are combined to form messages. Syntax also includes rules governing the use of appropriate identifiers, delimiters, separator character(s) and other non-data characters within the message. Syntax is the equivalent of grammar in spoken language.
Transport Unit	One or more transport packages or other items held together by means such as strapping, interlocking, glue, shrink wrap, or net wrap, making them suitable for transport, stacking, and storage as a unit.
Unit Load	One or more transport containers or other items held together by means such as strapping, interlocking, glue, shrink wrap or net wrap, making them suitable for transport, stacking and storage as a unit.
X Dimension	The intended width of the narrowest elements (for bar codes or two-dimensional symbols) required by the application, symbology specification, or both.
Y Dimension	The intended height of the elements dictated by the application, symbology specification, or both.

ANNEX A: PDF417 STRUCTURE DESCRIPTION

MESSAGE FORMAT

PDF417 Symbol

This section defines how data shall be formatted within the 2D symbol.
The data within a 2D symbol is called a *data stream*. A two-level structure called *enveloping* is used to *format* the data within the data stream.

The outermost layer of the message is a *Message Envelope* that defines the beginning and end of the message. The Message Envelope contains one or more *Format Envelopes* that contain the *formatted data*.

The Message Envelope consists of:

- A Message Header
- A Message Trailer

The Format Envelope within the Message Envelope consists of:

- A Format Header
- Formatted Data
- A Format Trailer

A Message Header

- A Format Header
- Formatted Data
- A Format Trailer
- A Message Trailer

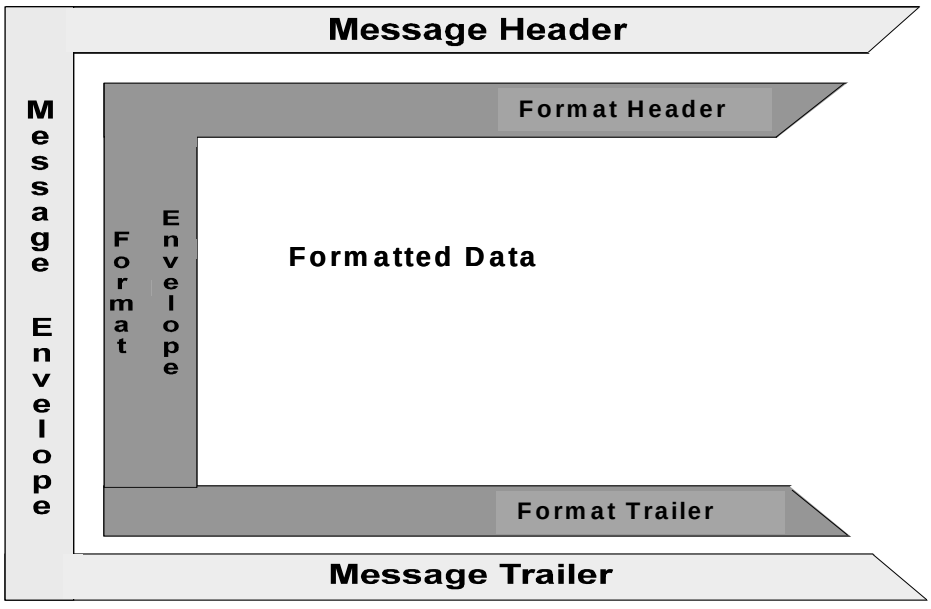


Figure 1. Pictorial Illustration of Enveloping Structure

Message Envelope

The Message Envelope defines the start and end of the data contained within the data stream and provides the following functions:

- Indicates that the message contained within the symbol is formatted using **D**ata **I**dentifiers (**DI**) in compliance with the rules of this Standard.
- Indicates the character that has been defined to separate Formats within the Message.
- Provides a unique character to indicate the end of the Message.

The structure within a data stream is as follows:

- A Message, containing one or more Formats
- A Format, containing one or more Segments
- A Segment, containing one or more Data Elements
- A Data Element (field), potentially containing one or more Sub elements (Sub fields).
- Message Header

The Message Header shall consists of two parts,

- The three-character Compliance Indicator
- The Format Trailer Character

The complete Message Header shall be: **[)>$^{R}_{S}$ or [)>RS** (See Table 1 below)

Table 1. Hexadecimal and Decimal Values - Subset of ASCII/ISO 646

ASCII/ISO 646 Character	**DECIMAL**	**HEX**
[	91	5B
)	41	29
>	62	3E
$^{R}_{S}$ or **RS**	30	1E
$^{G}_{S}$ or **GS**	29	1D
$^{E}O_{T}$ or **EOT**	04	04

Compliance Indicator

The Compliance Indicator shall be the first three characters in the Message Header. The Compliance Indicator shall be **[)>** (left bracket, right parenthesis, greater than).

Format Trailer Character

The Format Trailer Character shall be the fourth character in the Message Header. The Format Trailer Character shall be the non-printable ASCII character represented as "$^{R}_{S}$". The Format Trailer Character is used to indicate the end of a Format Envelope.

Message Trailer

The Message Trailer identifies the end of the message within the data stream. The Message Trailer shall be the non-printable ASCII End Of Transaction character, "$^{E}O_{T}$" or "EOT". The Message Trailer character shall be used once, at the end of the message.

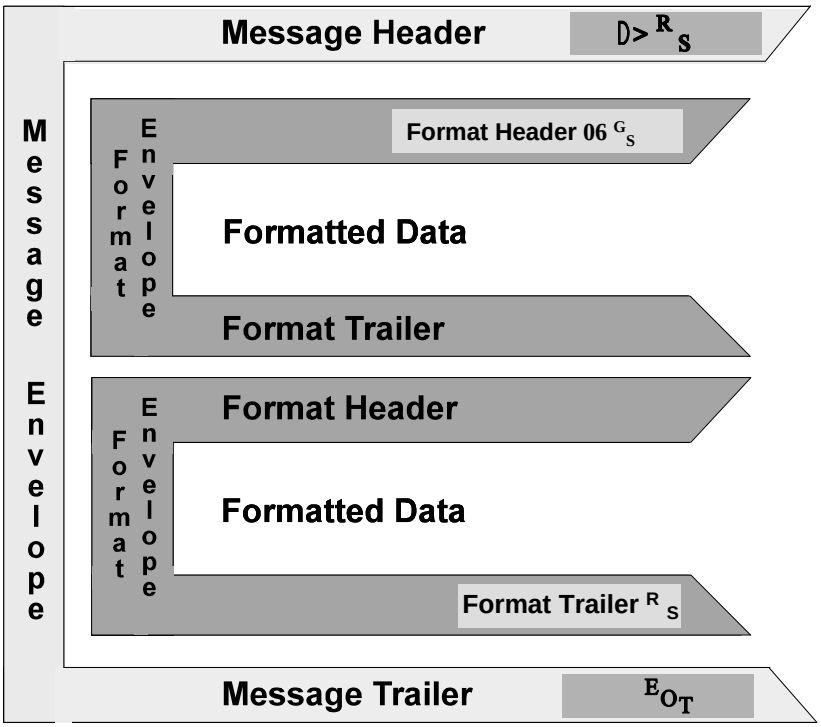


Figure 2. Enveloping Structure Showing Message Header and Message Trailer characters

Format Envelope

The Format Envelope defines the start and end of data in a given Format and provides the following functions:

- Identifies the Data Format used within the Envelope.
- Defines the character(s) used to separate the Segments, Data Elements (Fields).
- And Sub-elements (Sub-fields) within the data Format.
- Indicates any applicable date, release, or control information.

Format Header "06" - Data Using Data Identifiers

When using format header “06”, each Data Element in the format shall be preceded by the appropriate Data Identifier (DI) code and followed by the Data Element Separator character $^{G}_{S}$. When the Data Element is the last field in the Data Format, the Data Element Separator does not follow and the Data Element is immediately followed by the Format Trailer character $^{R}_{S}$.

The Format Header for data using Data Identifiers shall be represented as: 06$^{G}_{S}$ or 06GS
Where: $^{G}_{S}$ or GS is the Data Element Separator to be used between data Fields.

Format Trailer

The Format Trailer identifies the end of a Format Envelope. The Format Trailer shall be the Format Trailer Character, the non-printable ASCII character “$^{R}_{S}$” or RS (see Table 1).

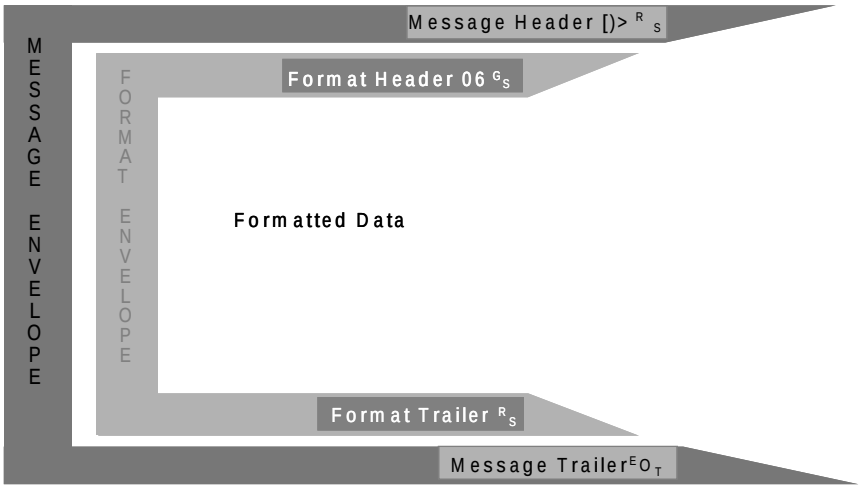


Figure 3. Message Envelope Showing Header and Trailer Characters for Both Message and Format Envelope

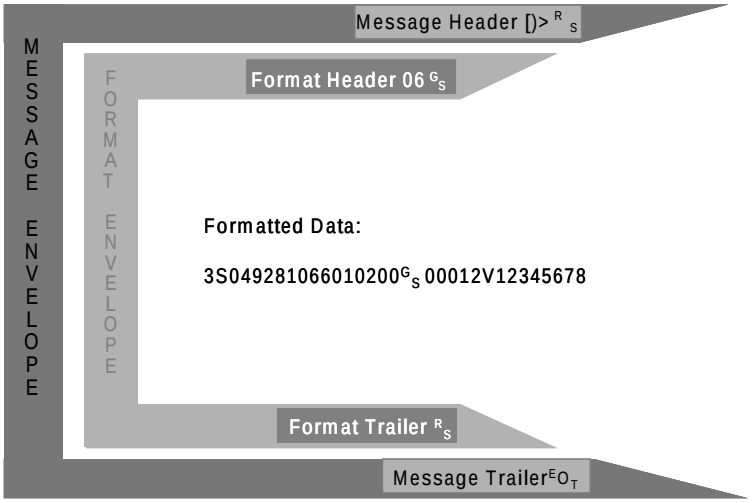
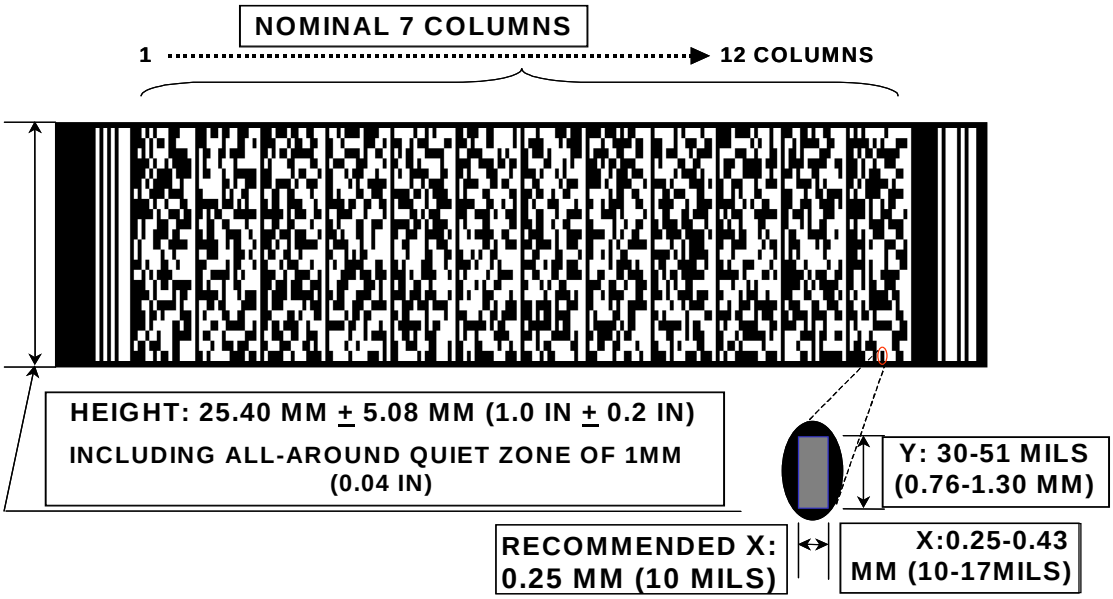


Figure 4. Message Envelope Showing Formatted Data with Header and Trailer Characters

USER GUIDELINE FOR PRINTING PDF417 SYMBOLS



Note: The STL standard specifies PDF417 symbols with no more than 12 columns.

Several factors must be considered when using the PDF417 two-dimensional symbol on the STL. These considerations include:

- Data requirements
- Printer capabilities
- Scanner capabilities **Note: You will require different scanning devices than those used for earlier traditional symbols such as code 128. Stacked codes such as PDF417 use Raster Laser and CCD / imager technology to decode a symbol. These types of scanners currently do not have the depth of field performance characteristics of 1D scanners. You will have to move the scan head closer to capture the data**.

All of these factors must be used to determine which values to use for PDF417 options, including:

- Number of data columns
- Narrow element dimension
- Error correction level (level 3 to 5 recommended)

The impact of the choice of "X" dimension and error correction level on the size of the PDF417 symbol can be seen in Fig. 5.

All symbols encode the data stream specified and demonstrate "X" dimensions of .25 mm (.10 inch), .33 mm (.13 inch) and .38 mm (.15 inch) and error correction levels of 3, 4 and 5.

DataStream:

[)>$^{R}_{S}$06$^{G}_{S}$1J123456A2B4C6D8E$^{G}_{S}$Q123456.123$^{G}_{S}$PA2B4C6D8E0F2G4H$^{G}_{S}$1TA2B4C6D8E0F2G4H6I8J0K2L4M
$^{G}_{S}$KA2B4C6 $^{G}_{S}$21LA2B4$^{R}_{S}$^{E}0$_{T}$ (characters: 85 on container, 86 on master with data identifiers)

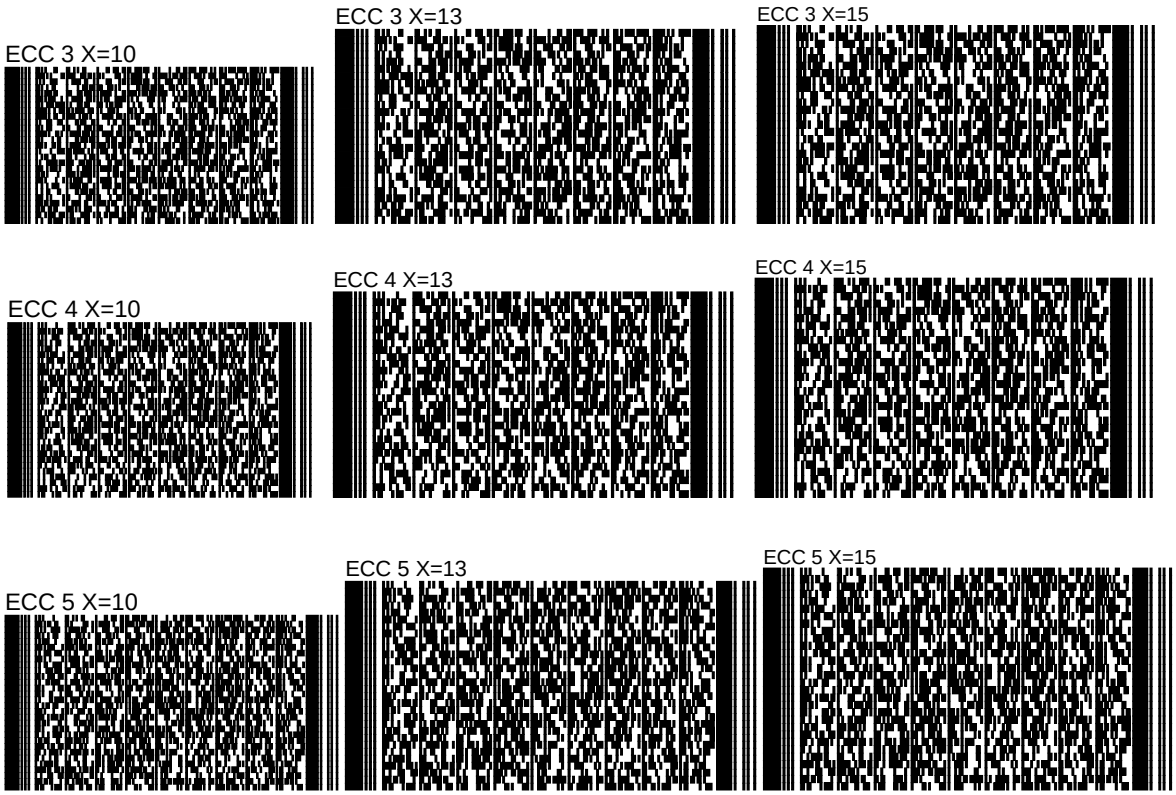


Figure 5 Comparative "X" Dimension and Error Correction Levels

Developers and users of 2D printing software should use the following standard when determining which values to use for PDF417 options. Since there are many designing decisions and potential solutions when configuring PDF417 symbols. These Standards will help ensure that valid symbols are printed. In addition, they will help ensure that a user's scanning and printing requirements have been considered.

Part I - Designing The Label Layout

The following steps will help the label designer to plan the size of the PDF 417 symbol.

1. Plan for the maximum amount of data.

- Determine which data fields are required in the message and the maximum anticipated character count of each field.
- Add in the additional characters needed for formatting, such as Message Header, Data Element Separators, Format Headers, Format Trailers, Message Trailer, etc.
- Plan for a data size equal to, or greater than the sum of, all the data fields plus the additional characters.

2. Plan for the maximum X dimension that may be used.

"X dimension" is another name for *narrow element width*. Since the supplier/printer of the label ultimately determines the X dimension at which the symbol will be printed, it is possible that a PDF417 symbol printed for a Shipping/Receiving application could be printed at any X dimension from 0.25 to 0.43mm (0.010 to 0.017 inches). The label designer should plan for the largest X dimension printable within the Standards of this document.

3. Find the appropriate size in the tables.

Table 3 to 5 give the approximate width of PDF417 symbols up to the stated number of alphanumeric characters, using X dimensions of 0.38 mm (0.015 inch), 0.33 mm (0.013 inch), and 0.25 mm (0.10 inch). The sizes are an approximation; actual sizes may vary based on many factors, including the compaction algorithm, the nature of the data to be encoded and the capability of the printer.

- Find the maximum number of characters (from step 1) you anticipate will be used for your application.
- Find the maximum X dimension you anticipate will be used for your application (from step 2).

Printing The Symbol On The Label

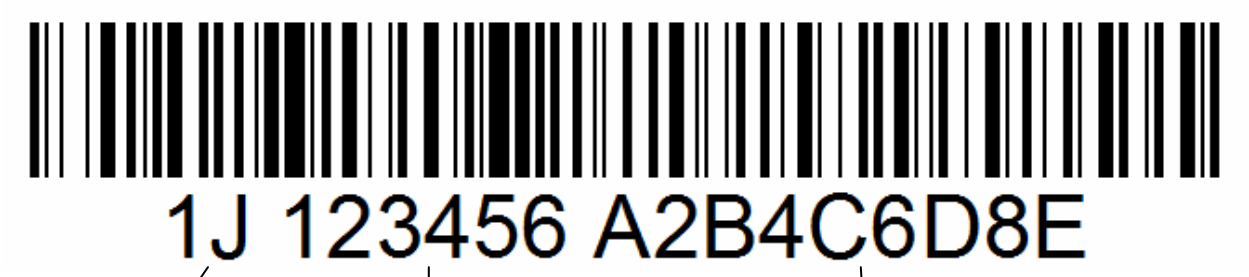
This standard recommends that PDF417 symbols for the STL be printed with no more than 12 Data Columns in width. This limitation, combined with the amount of space allocated for the symbol on the label, may influence the choice of X dimension for printing the symbol. The capability of your printing equipment will determine your choices of X dimension.

Lines-Per-Block (LPB) Calculations

Lines Per Block	Character Height (Points)	Character Height (Millimeters)	Character Height (Inches)
2 LPB	36 pts	12.7 mm	0.50 in
3 LPB	24 pts	8.46 mm	0.33 in
4 LPB	18 pts	6.34 mm	0.25 in
5 LPB	14 pts	4.94 mm	0.20 in
6 LPB	12 pts	4.23 mm	0.17 in
7 LPB	10 pts	3.52 mm	0.14 in
8 LPB	8 pts	2.82 mm	0.11 in
10 LPB	7 pts	2.47 mm	0.10 in

This table is provided as a reference only. Font sizes may vary depending on the software and printer used.

ANNEX B: CODE 128 BAR CODE STRUCTURE FOR LICENSE PLATE



Data Identifiers:
1J = INDIVIDUAL CONTAINER
6J = MASTER LOAD
Note: LPN's must be unique between container and master label

6 – Character Supplier Code
-Manufacturing site specific
-Fixed should never have to be changed

9 – Character Maximum Unique Serial Number
Generated by supplier
Leading zeros not recommended
Not repeated for a period of 365 days

OBTAINING NORMATIVE REFERENCES

Normative references are cited at the appropriate places in the text and the publications are listed hereafter.
AIAG B-10 Trading Partner Label Implementation Standard (B-10 02.00 03/00)
AIAG B-14 Standard for Use of Two-Dimensional Symbols with AIAG Trading Partner Labels (B-14 01.00 12/97)
AIAG B-16 / Global Transport Label Standard (B-16 02.00 11/02)
ISO/IEC 15438 and ISO/IEC 15415 Bar Code print quality test specification.
This document takes into account existing templates from Odette's Transport Label (OTL) and the GM 1724 ABC as well as design input from JAMA/JAPIA and is based on the AIAG B-10 Standard.

Contact the organizations listed below for information on the references listed in this document:

Label Certification: Aalstec Data Corp.
P.O. Box 43555 Renaissance Center
Detroit, MI 48243

Email: support@aalstec.com Web: www.aalstec.com