



IMFT - Purchasing

IMFT/Micron Barcode Receiving Guidelines





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1. CEA Standard & Contact Information

IMFT & Micron have adopted the Electronic Industry Association's CEA-556-C standard by which our systems have been developed around.

The latest CEA-566-C standard can be obtained by ordering a copy from the MHIA (Material Handling Industry of America) website:

CEA-556-C Document ordering page:

Or by contacting MHIA directly at:

8720 Red Oak Blvd., Suite 201
Charlotte, NC 28217-3992 USA
(704) 676-1190
Fax: (704) 676-1199

Please use the following contacts for questions regarding this guideline or the barcode specifications:

Project Coordinator – (801) 767-4586

Micron Business Analyst – (208) 368-4061



2. Objective & Scope

Objective

Micron Technology encourages standardized barcode receiving labels and packing slips for all inbound shipments. This guideline is designed to help drive performance excellence and achieve requisite levels of automated information handling and Micron's warehouse receiving and accounts payable processes.

This document details the guidelines created by Micron for its barcode receiving labels and packing slips to achieve the above objective.

Scope

- This guideline is applicable for shipments to all Micron US facilities including Boise, IMFT – Lehi, MTV – Virginia and might be applicable to other international sites in the future.
- Labeling guidelines for all shipments that Micron receives from its suppliers, including capital, raw materials, Gases, and Chemical components.
- Labeling guidelines include shipping labels and packing slips.
- Guidelines for barcodes, label layout and print design.
- Guidelines for placement of barcode shipping labels and packing slips on all shipments.



3. Receiving Labels and Packing Slip Standards

This section details the general information, do's and don'ts in regards to receiving labels and packing slips and their location, material, and details with special shipment categories etc.

3.1 Labels and Packing Slip Location

- The barcode label shall be permanently attached to the exterior of each package shipped.
- The packing slip shall always be placed in a plastic shipping sleeve placed on the outside of the box.
- Positions to affix the barcode receiving label and packing slip are as shown in exhibit 5.
- To ensure placement, quality, legibility of the label and packing slip during transit and handling the following considerations must be kept in mind while affixing labels to packages.
 - Labels shall be applied wrinkle free to avoid obscuring label information.
 - Labels are to be affixed on the side of the boxes to ensure ease of scanning.
 - Labels and packing slips shall not be placed on the bottom end of the package.
 - Labels shall be protected against moisture, abrasion, and other harsh environments.
- It is recommended to affix labels on the top right hand corner of the largest space of the box and not on the top or bottom sides of the box.
- Irregularly shaped packages that are cylindrical in nature or have no flat plane surface still need to have the label applied to the material as shown in exhibit 5.
- If multiple boxes are consolidated into one shipment, there should be no barcode labels on the outside box. Instead, all internal boxes should include the barcode label per PO lines. The consolidated packing slip shall still be affixed to the outer box in a secure plastic jacket.
- If there are multiples boxes for one item, then the box count field must be compulsorily populated on the receiving label and packing slip attached to the respective boxes.
- Packing slips should be affixed on the top surface of boxes in a secure plastic sleeve. If there are no flat surfaces, they will be tagged to the irregular shaped package.
- Refer to exhibit 3 for recommended label size specifications.

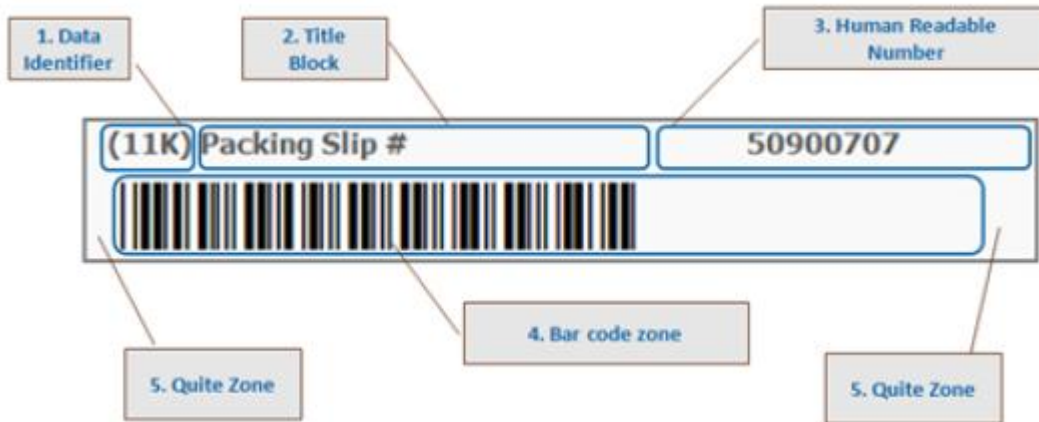


3.2 Barcode Characteristics

- The label material/paper must be white with black text and lines or borders printed with ink that does not smear if the label were to get wet.
- The recommended width of the narrow elements (bars & spaces) and the Inner-character gaps should be 0.010 inch (0.254mm) to 0.017 inch (0.432mm).
- A quiet zone (clear area) is required before and after a bar code. It is recommended that the bar code shall not start or stop within 0.25 inch (6.35mm) on either end of the bar code.
- The recommended height of the bar code is 0.4 in (10.2mm) minimum to 0.5 inch (12.7mm) maximum.
- Each label needs to contain a title for all of the pieces of data. The title and the human readable data need to have a height of no less than 0.1 in (2.54mm) and cannot be in the upper left hand corner of the row or block containing the data.
- Bar code symbols must comply with ANSI X3.182. This consist of the barcode start character * followed by the data identifier, and the field details ending with the character *. They shall be measured at B660 nanometers (nm) and shall meet the following:
 - Code 39 per ANSI/AIM-BC1 needs to be used.
 - Minimum print quality grade shall be C/10/660.
 - Minimum reflectance difference greater than 37.5 percent.

3.3 Barcode Block Components

- **Data Identifier Zone:** Each block shall begin with the proper Data Identifier (DI) as specified in this field specification. The DI is the accordance with ANSI MH10.8.2 standard. The parenthesis () is not part of the DI and is not included in the barcode but only in the human readable Data Identifier Zone.
- **Title Block:** Each block must be appropriately titled to match what is specified within the standards of their guideline and in a human readable form in the English alphabet, numerals, and standard keyboard symbols.



- **Human Readable Number:** The human readable number shall not include the start stop (*) character of the barcode or DI prefix.
- **Barcode Zone:** The barcode symbol should be left justified in the lower half of the block and quiet zones must be maintained as shown.
- **Quiet Zone:** Are clear areas on both ends of the barcode symbol stretching out to the outline boarder of the label, and for optimum scanning this area should be at least 0.25 inch (6.35mm) on either end of the bar code.

4. Label Field Characteristics

The lists of fields described below are common for both the receiving label and the packing slip. The detailed guidelines may not apply for the packing slip, but the only requirement is that all fields listed on the barcode receiving label must also be present in the packing slip preferably in the same order. Refer to exhibit 1 for the complete bar code label and exhibit 2 for labels with fields that are generally optional but necessary in special cases (necessary for Micron to receive using current ERP system).

4.1 Row (1A) & (1B) Address and package Weight

- Requirement: Necessary field.
- Format: Necessary field in human readable format only.
- Data Field Identifier: None.



- Left box (1A from address) shall contain the full name and address of the supplier.
Right box (1B Package Weight) shall contain the weight of the packages.

From Address: Type your company name Number and Street name City, State - Zip Code	Package Weight 10 LBS
--	--

Row1: From Address - (mandatory field) Display full name and address from where the shipment is made, including building, dock etc. To the right of it is the weight of the package in pounds. Both in a human readable format.

Note: The first row must be divided with a vertical line to separate the weight of the packages from the name and address of the supplier.

4.2 Row 2 (To Address)

- Requirement: Necessary field.
- Format: Necessary field in human readable format only.
- Data Field Identifier: None.
- The second row shall contain the name and address where the shipment needs to be delivered including the facility name; address, building number, floor and mail stop location if applicable.

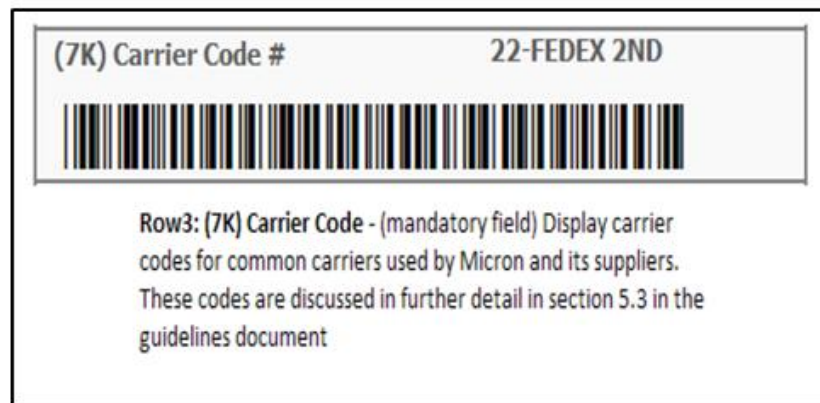
To Address: IM Flash Technologies, LLC ATTN: Receiving Dock, BLDG 20 1550 East 3400 North, Lehi, UT 84043

Row2: To Address - (mandatory field) Display full name and address to where the shipment is made, including building, dock etc. In a human readable format



4.3 Row 3 (7K) - Carrier Code#

- Requirement: Necessary field.
- Format: Both human readable and barcode required.
- Data Field Identifier: (7K) represents the carrier number.
- Barcode characters example: **7K22-FEDEX 2ND***.
- The third row shall contain the pre-assigned commercial carrier's code. This is an important field for Micron to automate the entry of waybill information coming from the labels affixed by the carriers and their service levels.
- If the supplier is delivering the parts via the supplier's truck or a carrier not provided in this specification, you will then enter NONE. Refer to exhibit 4 for complete listing of commonly used carriers and service levels.

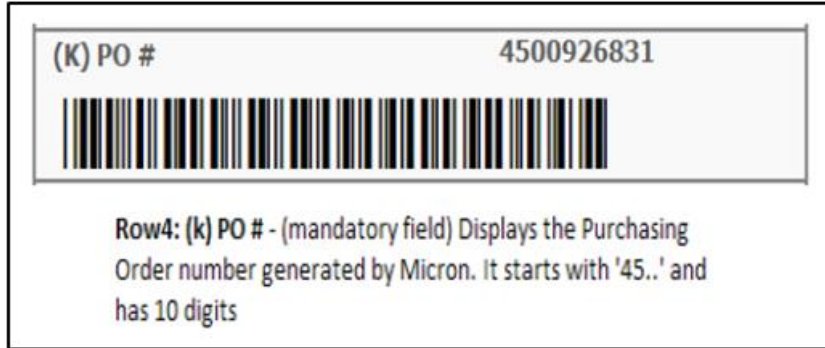


4.4 Row 4 (K) PO Number

- Requirement: Necessary field (always required).
- Format: Necessary filed in both human readable and barcode format.
- Data Field Identifier: (K) represents the purchase order number.
- Barcode characters example: *K4500926831*.



- This row displays the Purchasing Order Number (PO#) generated by Micron when the purchase order is sent to the suppliers. It follows a standard format starting with '45' and has 10 digits.



4.5 Row 5 (P) Material Number

- Requirement: Necessary field.
- Format: Necessary field in both human readable and barcode format.
- Data Identifier (P) is the Micron part or material number.
- Barcode characters example: **P980-02927**.
- The material or part number can be found on the Micron Purchase Order (PO). This number consists of 9 digits including the dash and must appear exactly as it appears on the PO.





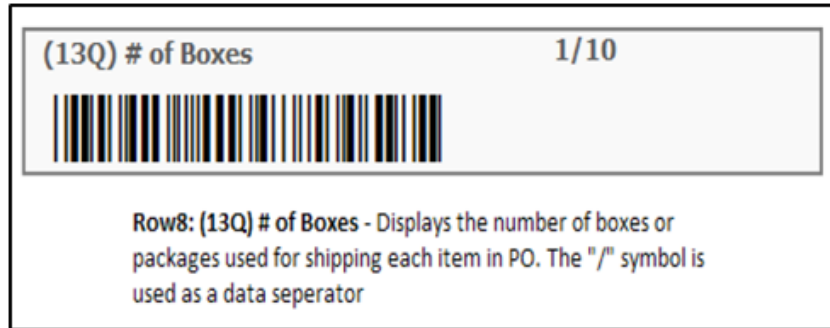
4.6 Row 6 (11K) Packing Slip Number

- Requirement: Necessary field.
- Format: Optional field in both human readable and barcode format.
- Data Identifier: (11K) is the supplier's package/delivery slip or invoice number.
- Barcode characters example: **11K50900707**.
- The packing list number or invoice number is a record of transaction and helps cross-referencing with PO and package if required. It can contain a maximum of 16 digits. Packing slip or supplier invoice is a detachable copy of the receiving label but can have other fields like part descriptions, data, contacts etc. It is required that the packing slip be attached to all shipments made to Micron in a secure plastic pouch outside of the package.



4.7 Optional (13Q) Number of Boxes

- Requirement: Necessary for shipments with multiple packages per PO or optional.
- Format: Human readable and barcode required.
- Data Identifier: (13Q) is the quantity of material in the box followed by the unit of measure.
- Barcode characters example: **13Q1/10**.
- This optional row shall contain the number of packages/boxes (e.g. 1/10). If there is only one package for the PO it will be represented as 1/1.



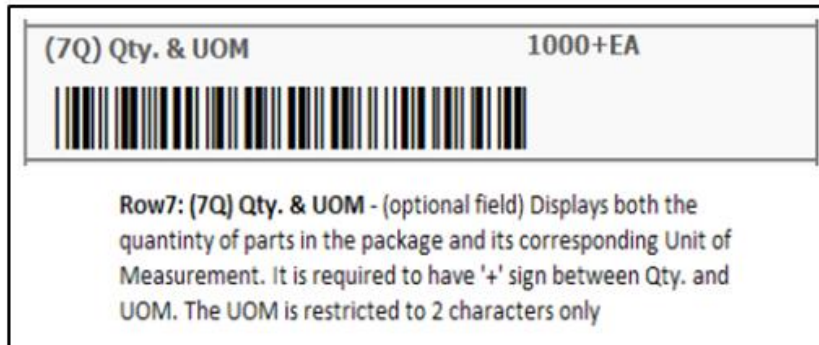
4.8 Optional (1T) or (Z) Lot Number

- Requirement: Necessary for shipment of items manufactured in a batch or lot by suppliers or it is an optional field.
- Format: Human readable and barcode required.
- Data Identifier: (1T) is the Lot Number or (Z) is a mutually defined identifier for lot number followed by the product expiration date.
- Refer to exhibit 2 for display of Lot number fields in the barcode.
- If the product shipped is manufactured in a batch like wafer suppliers, chemicals, slurries, pads etc. Micron tracks the batch or lot number for individual items. There are 2 options for bar-coding the lot number field as follows:
 - Option 1: Consists of just the lot number, which has the data identifier as 1T. Lot number can be a maximum of 10 digits. Example: *1T123456789*.
 - Option 2: Consist of lot number (maximum 10 digits) preceded with the mutually defined data identifier (Z) and followed by the character (+) and then the product expiration date in (YYYYMMDD) format. Example: **Z123450+20090202**



4.9 Optional (7Q) Qty and UOM

- Requirement: Optional field.
- Format: Optional field in both human readable and barcode format.
- Data Identifier: (7Q) is the Quantity in the box followed by the unit of measure.
- Barcode characters example: **7Q1000+EA**.
- The seventh row shall contain the quantity (Qty) and unit of measure (UOM) as defined in the purchase order. The UOM is required to contain only two characters (e.g. each = EA). The quantity and the UOM shall be combined in a single line with no data separators.



4.10 Row 9 () Additional optional fields

- Any other additional optional fields that the supplier wants to print on the labels can be done with prior approval from Micron and would follow the standards discussed in this document.



5. Example 1 – Barcode Fields

Example of the complete barcode receiving label with mandatory fields only

From Address: Type your company name Number and Street name City, State - Zip Code	Package Weight 10 LBS
To Address: IM Flash Technologies, LLC ATTN: Receiving Dock, BLDG 20 1550 East 3400 North, Lehi, UT 84043	
(7K) Carrier Code # 	22-FEDEX 2ND
(K) PO # 	4500926831
(P) Material # 	980-02927
(11K) Packing Slip # 	50900707

Row1: From Address - (mandatory field) Display full name and address from where the shipment is made, including building, dock etc. To the right of it is the weight of the package in pounds. Both in a human readable format.

Row2: To Address - (mandatory field) Display full name and address to where the shipment is made, including building, dock etc. In a human readable format

Row3: (7K) Carrier Code - (mandatory field) Display carrier codes for common carriers used by Micron and its suppliers. These codes are discussed in further detail in the spec document

Row4: (k) PO # - (mandatory field) Displays the Purchasing Order number generated by Micron. It starts with '45..' and has 10 digits

Row5: (P) Material # - (mandatory field) Displays the part number or material number as specified in Micron's PO. If there is no part number, then leave the field blank

Row6: (11K) Packing Slip # - (mandatory field) Displays the packing list or slip number to cross reference to the details in packing slip with the package itself



6. Example 2 – Barcode Field Options

Barcode labels below exhibit fields that are generally optional but necessary for special cases along with the mandatory fields as highlighted.

From Address: Type your company name Number and Street name City, State - Zip Code	Package Weight 10 LBS
To Address: IM Flash Technologies, LLC ATTN: Receiving Dock, BLDG 20 1550 East 3400 North, Lehi, UT 84043	
(7K) Carrier Code #	22-FEDEX 2ND
(K) PO #	4500926831
(P) Material #	980-02927
(11K) Packing Slip #	50900707
(13Q) # of Boxes	1/10

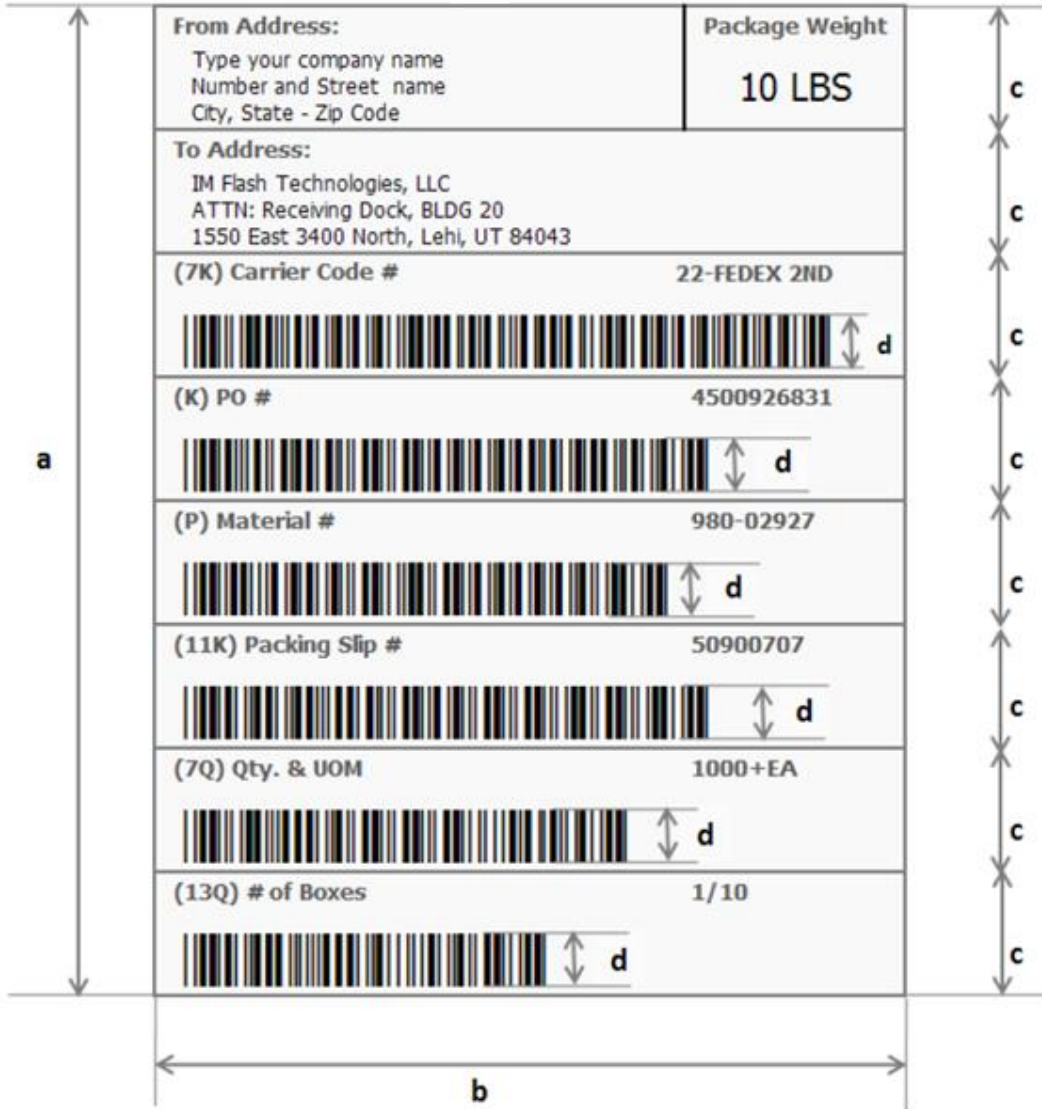
When a single PO line item ordered is shipped in multiple packages, where-in the # of boxes field is mandatory.

From Address: Type your company name Number and Street name City, State - Zip Code	Package Weight 10 LBS
To Address: IM Flash Technologies, LLC ATTN: Receiving Dock, BLDG 20 1550 East 3400 North, Lehi, UT 84043	
(7K) Carrier Code #	22-FEDEX 2ND
(K) PO #	4500926831
(P) Material #	980-02927
(11K) Packing Slip #	50900707
(Z) Lot #	123450+20090202

Shipping packages containing parts that are manufactured in a batch in which case a Lot # field is mandatory



7. Example 3 – Bar-Coding Dimensions Spec



Feature Size	Recommended	Minimum	Maximum
a	6.5 (165 mm)	4.0 (102 mm)	6.5 (165 mm)
b	4.0 (102 mm)	4.0 (102 mm)	5.0 (127 mm)
c	0.8 (20 mm)	0.6 (16 mm)	1.0 (25.4 mm)
d	0.3 (8 mm)	0.27 (7 mm)	0.4 (10 mm)
Font Size	0.1 (2.54 mm)	0.1 (2.54 mm)	0.2 (5.08 mm)

Dimensions are in inches (mm)



8. Example 4 – Micron’s Commonly Used Carrier Codes

No.	Delivery Carrier and Service	Barcode
1	02-DELIVER	
2	04-UPS BLUE	
3	07-UPS RED	
4	10-UPS GROUND	
5	69-UPS FREIGHT	
6	19-FEDEX P1	
7	22-FEDEX 2ND	
8	25-FEDEX STANDARD	
9	68-FEDEX INTL	
10	2H-FEDEX HEAVY 1 DAY	
11	2M-FEDEX GROUND	
12	3C-DHL	
13	5F-ESTES	
14	6G-TRANSPORT	
15	50-SONIC AIR	
16	82-BELLAIR	
17	9P-QUICK	



9. Example 5 – Label & Packing Slip Locations

Locations of receiving label and packing slip on shipments of various categories.



BOX OR CARTON

LABEL SHOULD BE LOCATED ON UPPER CORNER.



PALLET BOX

LABEL SHOULD BE LOCATED ON UPPER CORNER.



CARTONS ON PALLET



RACK

TAG WITH LABEL ON ONE VISIBLE PIECE NEAR TOP.



DRUMS, BARRELS, OR CYLINDRICAL CONTAINERS

LABEL SHOULD BE LOCATED NEAR CENTER AS SHOWN.



BUNDLE

TAG WITH LABEL SHOULD BE LOCATED AT ONE END.



BALES

LABEL SHOULD BE LOCATED ON UPPER CORNER.



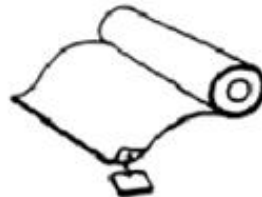
BAG

PLACE ONE LABEL AT CENTER OF FACE.



BASKET, WIRE MESH CONTAINER

LABEL SHOULD BE LOCATED ON UPPER CORNER.



ROLL

HANG TAG WITH LABEL NEAR END OF MATERIAL AND IF WRAPPED, ON OUTER WRAPPER.



METAL BIN OR TUB

TAG WITH LABEL ATTACHED TO ONE PIECE IN TOP OF BIN.



CABLE REEL

PLACE A LABEL ON A TAG ATTACHED TO THE START END OF THE CABLE AS SHOWN.



10. Definitions

- **Barcode Symbol:**
Code 39, also known as Code 3 of 9 is used as specified by ANSI/AIMBC1 Uniform Symbology Specification.
- **Shipment:**
An incremental delivery for one part number, purchase order number (PO), work order number (WO), and item number.
- **Barcode Character:**
A barcode character is composed of vertical elements (dark bars & light spaces). A Code 39 barcode character has nine vertical elements, five bars & four spaces. Three of these nine elements are wide, and the other six are narrow.
- **Human Readable Characters:**
A human readable interpretation (usually in English alphabets and numerals) of the barcode symbol characters, without the data identifiers or the start/stop (*) characters. This interpretation usually appears directly above the barcode symbol.
- **Data Identifier:**
A specified character, or sting of characters, that defines the intended use of the data element that follows. They will be the alphanumeric as defined in ANSI MH10.8.2.
- **Carrier Code:**
All major carriers (land, air, sea) have a SCAC code, which is assigned through the National Motor Freight Traffic Association.
- **Waybill Number (WB):**
The unique tracking number used by a commercial freight carrier.
- **Quiet Zone:**
The area before the first character and the area following the last character. A quiet zone is required before and after a barcode symbol.
- **ANSI:**
American National Standards Institute is an organization which creates and maintains national standards in the United States.