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CHEMICAL PERFORMANCE WITH EARTH-FRIENDLY RESULTS

**ecH2O™**  
ELECTROCHEMICALLY CONVERTED WATER

# Material Identification, External Suppliers

## Tennant Company

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## 1. INTRODUCTION

The following specification is intended to support accurate identification and efficient receiving of materials from Tennant external suppliers. In this specification, all examples are for illustrative purposes only and may not be exactly to scale or meet bar code print quality standards.

Tennant's external suppliers are required to provide adequate material information for the following purposes:

- Identification of a group of items sharing the same Tennant part number, which have been shipped together and which should be received against a common purchase order.
- Identification of items for movement and storage within Tennant warehouses.

To support these requirements this specification includes two types of labels:

- A purchase order label, and
- An item label

It is possible that the purchase order label can support both requirements. This depends on the material quantities and packaging configuration. The following guidelines should be applied:

- When multiple items of a single part are packaged into a single container, it is not necessary to have the items labeled if the container if the items were not packed into the container for purposes of shipment. In this case the purchase order label will suffice.
- When multiple items of a single part are packaged for shipping into a single container, the items should be identified with the item label if the items can accommodate the item label specified here, and one of the scenarios described in appendix II applies.
- When individual items are not packaged together, they should be identified with the purchase order label.

**Recommended Applications for Labels**, Appendix E describes examples of how labels can be attached to items or containers, and will enable you to determine when each label applies.

## 2. SAMPLE PURCHASE ORDER LABEL

The purchase order label is designed to support receiving of the material, and if possible the movement and storage of material within Tennant's warehouses. For parts shipped to Tennant each shipping container must have at least one Purchase Order Label applied. See **Definitions of Packaging and Application of Labels**, Appendix F for definitions of shipping containers.

Labels are to be sized so that when applied to a flat surface all data is readable. Labels should not be applied to surfaces which result in barcodes being unreadable. Please reference **Recommended Applications for Labels**, Appendix E for examples of how to apply the purchase order label to different types of material.

The label is to have dark printing with a contrasting background label color.

The adhesives used on labels are to be pressure sensitive and the label type should be a thermal transfer label.

Each field should have a thin border around it, and contain a field title in the upper left-hand corner of the border as shown on pp. 3 and 4. Titles should be approximately 0.06" (1.5 mm) high letters.

# Label Field Specifications

## 2.1 Sample Purchase Order Label

Note: size is not accurate to recommended dimensions:

For parts which will accept a larger format label the following layout is recommended for a label approximately 4" x 6":

PART NO. <b>1008883</b>  ACTUATOR, 24VDC. 50MM STROKE 500N		
QUANTITY <b>250 FT</b> 	 <b>6798945</b> PURCHASE ORDER NO.	
SUPPLIER JARVIS PEMCO KALAMAZOO, MI 49007	PART REVISION <b>3</b>	DATE MFG. <b>8/25</b> <b>2009</b>
SERIAL <b>278A5667</b> 	DELIVERY LOCATION TENNANT CO. 701 N. LILAC DRIVE MPLS, MN 55422	

For parts which will not accept the above label, the following layout is recommended in a 2" x 4" label format.

PART NO. <b>1008883</b>  ACTUATOR, 24VDC. 50MM STROKE 500N 12345	PART REV. <b>3</b>
QUANTITY <b>250 PC</b> 	PURCHASE ORDER NO. <b>6798945</b> 
JARVIS PEMCO KALAMAZOO MI 49007	From To TENNANT CO. 701 N. LILAC DRIVE MPLS, MN 55422

Descriptions of fields and data elements are provided in **Label Field Specifications**, Appendix B and **Data Area Characteristics**, Appendix C.

The recommended locations for this label are detailed in **Recommended Applications for Labels**, Appendix E, and **Definitions of Packaging and Application of Labels**, Appendix F.

## 2.2 Item Label Format

The purpose of the item label is to provide identification for material which is either broken from the packaging container that it was received in, or not packaged in a container for shipping to Tennant. This label should not replace the Purchase Order label as the purchase order is not included in these formats and thus they cannot support receiving.

Recommended label sizes:

**2" by 4"**

**1" by 3"**

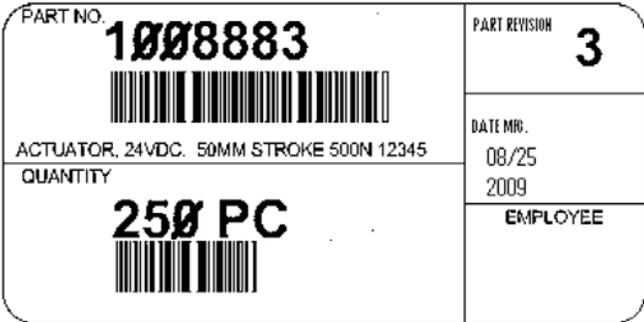
The following data elements must appear on the item label:

- ◆ Part number
- ◆ Description
- ◆ Quantity
- ◆ Unit of measure
- ◆ Part revision
- ◆ Part manufactured date

At least one blank field should be provided for internal Tennant use. If possible a blank field with the text "Employee" should be provided.

### Sample labels for each recommended size:

**Figure 1**  
2" x 4"



**Figure 2**  
1" x 3"



- ◆ The label must be placed in a highly visible location.
- ◆ The label needs to be attached to each part. A tag may be used on the part, or a label must be affixed to a bag or box that contains the part.

## 2.3 Mixed Load Identification

When material is shipped to Tennant, a single package could combine different purchase order items. These packages will need to be broken down to receive the items inside.

In this situation the following is recommended:

1. Apply the mixed load identification to the package or mixed pack.
2. Items should be bagged or boxed to identify separate purchase order items.
3. Apply the smaller format Purchase Order label to the individual bags or boxes.

Mixed loads per pallet should be identified with the **Mixed Load** identification.

Packing slips for all products on pallet must be in one location listing of all products with part numbers and quantities placed on top of the pallet load. Identical labels are to be located on two adjacent sides.

<p style="text-align: center;"><b><u>MIXED LOAD</u></b></p> <p><b>Supplier:</b> <b>Jarvis Pemco</b> <b>Kalamazoo, MI 49007</b></p> <p><b>Deliver to:</b> <b>Tennant Company</b> <b>701 N. Lilac Drive</b> <b>Minneapolis, MN 55422</b></p>
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## ***Appendix A Definition of Terms***

<b>Item</b>	A single part or material purchased, manufactured, and/or distributed.
<b>Label</b>	A card, strip of paper, etc. marked and attached to an object to convey information.
<b>Master Label</b>	A label used to identify and summarize the total contents of a multiple pack of the same part number.
<b>Mixed Item Pack</b>	A pack containing items with different part numbers.
<b>Mixed Load Label</b>	A label used to identify that the multiple pack contains different part numbers.
<b>Multi-Pack</b>	A pack containing smaller packages (subpacks) of items.
<b>Pack, Package or Load</b>	A unit that provides protection and containment for shipping items from one point to another.
<b>Shipping/Parts Identification Label</b>	A single pack, master or mixed load label used to identify the contents of a shipping pack.
<b>Single Pack</b>	A pack that contains one or more items with the same part number.
<b>Single Pack Label</b>	A pack that contains one or more items with the same part number.
<b>Subpack</b>	One of the smaller packs that makes up a larger multiple pack.
<b>Tag</b>	A label that is hung from an object.
<b>Container</b>	A unit of shipment for at least one item. A container can be a package, pallet, or a load.

## ***Appendix B Label Field Specifications***

<b>Part Number</b>	<ul style="list-style-type: none"><li>• Tennant Company's part number: 15-character alpha-numeric</li><li>• Human-readable format<ul style="list-style-type: none"><li>- Bold font</li><li>- Minimum of 0.375 (9 mm) high</li></ul></li><li>• Bar code format<ul style="list-style-type: none"><li>- Directly below the human-readable part number characters</li><li>- Font size a minimum of 0.375" (9 mm) high</li></ul></li></ul>
<b>Description</b>	<ul style="list-style-type: none"><li>• Tennant Company's description: 40-character alpha-numeric</li><li>• Human-readable format<ul style="list-style-type: none"><li>- Font size a minimum of 0.125" (3 mm) high</li></ul></li></ul>
<b>Quantity</b>	<ul style="list-style-type: none"><li>• Quantity related to the container with the label: 5 digit numeric</li><li>• Human-readable format<ul style="list-style-type: none"><li>- Bold font</li><li>- Font size a minimum of 0.375" (9 mm) high</li></ul></li><li>• Bar code format<ul style="list-style-type: none"><li>- Directly below the human-readable part number characters</li><li>- Font size a minimum of 0.375" (9 mm) high</li></ul></li></ul>
<b>Purchase Order</b>	<ul style="list-style-type: none"><li>• Tennant Company Purchase Order: 10-character alpha-numeric</li><li>• Human-readable format<ul style="list-style-type: none"><li>- Font size a minimum of 0.125" (3 mm) high</li></ul></li><li>• Bar code format<ul style="list-style-type: none"><li>- Directly below the human-readable characters</li><li>- Font size a minimum of 0.375" (9 mm) high</li></ul></li></ul>
<b>Supplier</b>	<ul style="list-style-type: none"><li>• 25-character alpha-numeric</li><li>• If there isn't enough room to print the complete supplier name, an appropriate abbreviation may be used</li><li>• Human-readable format<ul style="list-style-type: none"><li>- Font size a minimum of 0.125" (3 mm) high</li></ul></li></ul>
<b>Part Revision</b>	<ul style="list-style-type: none"><li>• Part revision related to the container with the label</li><li>• Human-readable format<ul style="list-style-type: none"><li>- Bold font</li><li>- Minimum of 0.375 (9 mm) high</li></ul></li></ul>

### *Label Field Specifications cont.*

<b>Date Mfg.</b>	<ul style="list-style-type: none"><li>• Date Mfg. related to the container with the label</li><li>• Human-readable format<ul style="list-style-type: none"><li>- Bold font</li><li>- Font size a minimum of 0.125" (3 mm) high</li></ul></li></ul>
<b>Serial Number</b>	<ul style="list-style-type: none"><li>• Use when appropriate for component type</li><li>• Human-readable format<ul style="list-style-type: none"><li>- Font size a minimum of 0.125" (3 mm) high</li></ul></li><li>• Bar code format<ul style="list-style-type: none"><li>- Directly below the human-readable characters</li></ul></li><li>• Font size a minimum of 0.375" (9 mm) high</li></ul>
<b>Destination</b>	<ul style="list-style-type: none"><li>• Human-readable format<ul style="list-style-type: none"><li>- Font size a minimum of 0.125" (3 mm) high</li></ul></li></ul>

## Appendix C Data Area Characteristics

DATA AREA	TITLE	HUMAN READABLE MIN LETTER HGHT	MAX LENGTH	SPECIAL NOTES	BAR CODE SYMBOL
<b>Part Number</b>	PART NO.	0.375 in (9 mm)	--	Designated by Tennant Co.: if none, use Purchase Order item number	<ul style="list-style-type: none"> <li>▪ Code 39</li> <li>▪ No \$, /, +, %</li> <li>▪ No check digits</li> <li>▪ X dimension = 0.13 - .017 in.</li> <li>▪ Wide/Narrow Ratio range 2.8:1 to 3.2:1</li> <li>▪ Max length 5.5 in (140 mm)</li> <li>▪ Min Height 0.375 in (9 mm) Incoming</li> <li>▪ Min Height 0.25 in (6 mm) Aftermarket</li> <li>▪ Quiet Zones = .250 in (6.4 mm)</li> <li>▪ Start/Stop code = *</li> <li>▪ PCS ≥ 75%</li> <li>▪ MRD ≥ 37.5%</li> <li>▪ ANSI GRADE 2.5</li> </ul>
<b>Quantity</b>	QUANTITY	0.375 in (9 mm)	5+ (Q)	See Appendix B for Unit of Measure codes	
<b>Purchase Order Number</b>	PURCHASE ORDER NO.	0.125 in (3 mm)	7+ (K)	Avoid horizontal alignment with the quantity bar code symbol	
<b>Serial Number</b>	SERIAL	0.125 in (3 mm)	--	Use when appropriate for component type	
<b>Description</b>	N/A	0.125 in (3 mm)	40 max	Designated by Tennant Co.	
<b>Supplier</b> (Name, city, state and zip)	SUPPLIER or From	0.125 in (3 mm)	25 max		
<b>Part Revision</b>	PART REVISION	0.375 in (9 mm)	--		
<b>Manufactured Date</b>	Date Mfg.	0.125 in (3 mm)	--		
<b>Delivery Location</b>	DELIVERY LOCATION or To	Tennant Co. Street City State Zip 0.1 in (2.5 mm) Other Delivery Info 0.2 in (5 mm)	Freeform	Include delivery info from purchase order or material release	

**Appendix D Barcode Technical Specifications**

**Bar Code Symbology:**

Bar codes SHALL be Code 39 symbology and SHALL conform to the specific requirements in this section.

**Code Configuration**

The four characters (\$, /, +, %) **SHALL NOT** be used on the Incoming Containers for Bulk Materials Label.

**Check Digits**

Check digits SHALL NOT be added to the bar codes or human readable interpretation.

**Code Density and Dimensions**

This standard requires that the bar codes meet a minimum height and that the bars and spaces maintain specific sizes and ratios. Acceptable (100%) scanner read rates also require that quiet zones and gap widths be a specific size.

**Bar Height**

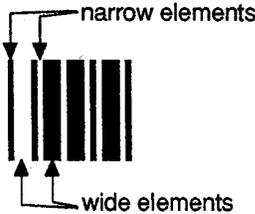
The bar height for Incoming Containers for Bulk Materials Labels SHALL be a minimum of 0.5 inches (13 mm).

The bar height for Aftermarket Parts Labels SHALL be a minimum of 0.25 inches (6 mm).

**Narrow Elements**

The bars and spaces in a symbol are called elements. For each bar code symbol, the narrow element width (known as the X dimension) SHALL be within the range of 0.013 to 0.017 inches (0.33 to 0.43 mm)

**Wide to Narrow Element Ratio**



The ratio of the average width of the wide elements to the average width of the narrow elements **SHALL** be 3:1, with an allowable range of 2.8:1 to 3.2:1.

**Quiet Zones**

For optimum scanning, a symbol's leading and trailing clear area known as the quiet zone **SHOULD** be at least 0.25 inches (6.24 mm).



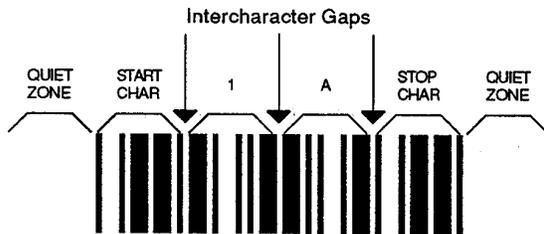
# Label Field Specifications

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## Intercharacter Gap Width

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Nine bars and spaces represent a character. An intercharacter gap is the space between characters.



The intercharacter gap width **SHOULD** be the same as the width of the narrow elements.

## Reflectivity and Contrast

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Reflectivity and contrast **SHALL** pass infrared light testing at B900 nanometers. Labels passing infrared testing can be read with both visible and infrared equipment, while labels produced with visible light material can only be read with visible light equipment.

Bar code symbols **SHALL** comply with traditional AIAG requirements of either ❶ Print Contrast Signal (PCS) or ❷ Minimum Reflectance Difference (MRD); or ❸ **SHALL** meet the alternate (preferred) ANSI Print Quality Grade requirement.

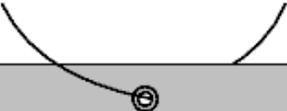
Symbols **SHALL** meet at least one of the following specific requirements:

- ❶ Print Contrast Signal (PCS) > 75%
- ❷ Minimum Reflectance Difference (MRD) > 37.5%
- ❸ American National Standards Institute (ANSI X3.182-1990) Print Quality Grade **SHALL** be a minimum grade of 1.5 when received at Tennant Company and **SHOULD** be a minimum of 2.5

**Appendix E Recommended Applications for Labels**

**Hanging Tags:**

When it is not possible to attach a label to an item, container, or package without folding it is recommended to use a hanging tag, and use the purchase order format. The label should attach to one side and not extend beyond the edges of the tag. The tag and wire needs to be durable enough to prevent damage in shipping and handling.



PART NO. <b>1008883</b>  ACTUATOR, 24VDC, 50MM STROKE 500N		
QUANTITY <b>250 FT</b> 		PURCHASE ORDER NO. <b>6798945</b>
SUPPLIER JARVIS PEMCO KALAMAZOO, MI 49007	PART REVISION <b>3</b>	DATE MFG. <b>8/25 2009</b>
SERIAL <b>278A5667</b> 	DELIVERY LOCATION TENNANT CO. 701 N. LILAC DRIVE MPLS, MN 55422	

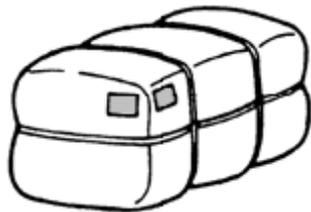
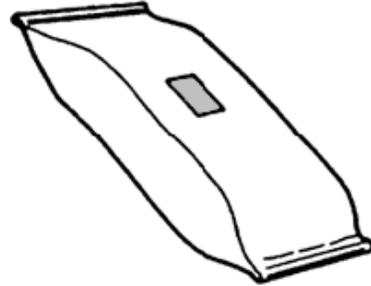
# Label Field Specifications

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On the following pages are examples of identification types and location of label placement.

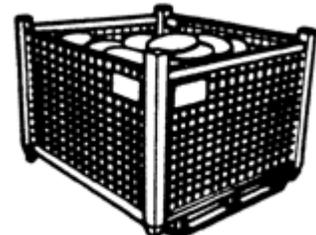
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**BAG** – Place one label at the center of face.



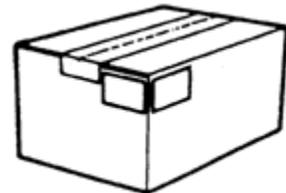
**BALES** – Identical labels shall be located at the upper corner of an end and the adjacent side.

**BASKET, WIRE MESH CONTAINER** – Identical labels shall be located on two adjacent sides.



**METAL TUB** – Attach hang tag label to ear of tub, or use a label holder.

**Box OR CARTON** – Identical labels shall be located on two adjacent sides. The upper edges of the labels should be as high as possible up to 20 inches from the bottom of carton.



# Label Field Specifications

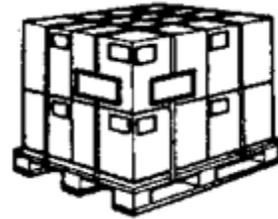
## Identification Location Examples (cont.)



**BUNDLE** – Identical tags shall be located at each end.

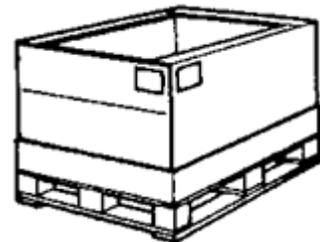
**CARTONS ON PALLET** – Each carton shall be individually labeled as described in **Mixed Load Identification**, pg. 5.

Use “Mixed Load” labels as necessary.



**DRUMS, BARRELS, OR CYLINDRICAL CONTAINERS** – Identical labels shall be located on the top and near the center of the side.

**PALLET BOX** – Identical labels shall be located on two adjacent sides.



**RACK** – Attach hang tag label to ear of rack.

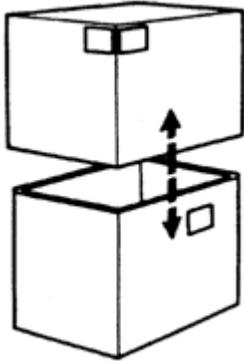
# Label Field Specifications

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## Identification Location Examples (cont.)

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**ROLL** – Hang one tag 2.0 in. (51 mm) from end of the material.



**TELESCOPIC OR SET-UP CONTAINERS** – Identical labels shall be located on two adjacent sides of the outer box. Some applications may also require identification of the inner box.

### ***Appendix F Definitions of Packaging and Application of Labels***

For purposes of material identification, Tennant defines the following levels of packaging:

- ◆ Unit pack: The smallest unit of packaging. This can contain one or more items. The unit pack is typically the stocking level and it can be used as a shipping container.
- ◆ Shipping container: This is the container which is used to ship items for a single purchase order item. The shipping container should only include unit packs of items for on purchase order. the shipping container can include one or more unit packs.
- ◆ Multi-Pack: A pack containing smaller packages of items. A Multi-pack is a shipping container and should not include items from different purchase orders.
- ◆ Mixed Pack: A pack containing multiple items from different purchase orders. This can be a pallet.

When applying labels to items shipping to Tennant Company the following guidelines should apply:

1. Either the PO label or the Item label can be applied to the Unit pack level. The PO label must be applied if the unit pack is not packed inside a shipping container.
2. The PO label must be applied to a shipping container if the contents do not have the PO label.
3. A PO label or an item label must be applied to a multi-pack. The PO label is required if the items inside do have the PO label.
4. The Mixed Pack should have a Mixed Load label or identification. The next level inside the mixed load should have the purchase order labels applied.

## ***Appendix G Unit of Measure Table***

<b>Term</b>	<b>Definition</b>
<b>5GL</b>	5 Gallon
<b>CM</b>	Centimeter
<b>FT</b>	Feet
<b>G</b>	Gram
<b>GAL</b>	Gallon
<b>IN</b>	Inch
<b>KG</b>	Kilogram
<b>L</b>	Liter
<b>LB</b>	Pound
<b>M</b>	Meter
<b>M2</b>	Square meter
<b>ML</b>	Milliliter
<b>MM</b>	Millimeter
<b>OZ</b>	Ounce
<b>PAC</b>	Pack
<b>PC</b>	Piece
<b>PT</b>	Pint
<b>QT</b>	Quart
<b>ROL</b>	Roll
<b>SET</b>	Set
<b>SQF</b>	Square Feet
<b>YRD</b>	Yard