Fire Retardancy Support

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Overview

The US has implemented federal Fire Retardancy regulations affecting the Sleep
Products industry, and any product manufactured on or after July 1, 2007 must
comply. Manufacturers are required to verify, through testing, that the
manufacturing methods and materials used in each of their products meets these
FR requirements. Consequently, each item manufactured must reference a tested
"Prototype" and maintain the same construction techniques and materials used in
that prototype. In addition, records must be kept of the lot numbers of key
components (assigned by their manufacturers), and each shipped piece must be
assigned a lot number by the Sleep Products manufacturer. Finally, there are
additional FR labeling requirements.

This added record-keeping is difficult to manage and maintain without good
processes and practices. Recognizing the burden these regulations place on
manufacturers, we added functionality into Freedom for Bedding that will allow the
necessary information to be collected in an automated and consistent manner, with
a minimum of additional work. This document describes how the system operates
and outlines the hardware and software requirements necessary to support it.

While we believe the ideal method of collecting this information is to use labeling
and scanning techniques, we understand that some manufacturers will not be able
to justify the up-front capital outlay and other associated costs involved in setting up
such a system. We have consequently provided two approaches to handling the FR
requirements – one that utilizes factory-floor scanning, and one that doesn't. There
are different benefits to each approach.

Common Functionality

There are a number of things that must to be tracked or recorded whether a scanning or non-scanning solution is chosen. Following are details of these common items.

Raw Materials

In order to provide raw material traceability, the raw material lot number (RMLN) must be recorded with each received package, and a unique Certificate of Analysis (COA) must be received and retained for each lot received. The COA(s) may arrive in paper form (with the shipment), or in electronic form (e.g. via email).

Freedom has added the following fields to the Raw Materials screen to support compliance:
1. A check-box to indicate that this raw material is traceable for F/R purposes.
2. A check-box list indicating which Operations this raw material is used in.

Freedom has added the following fields to each line on the Receipt of PO Goods screen:
1. A text box in which the RMLN can be recorded.
2. A file reference / text box where the electronic COA file may be attached, or where any notes relating to the location or identification of a paper COA may be entered.

For F/R Raw Materials, the product's integrity and quality must be verified upon receipt. Consequently, Freedom has provided two new status values, "QA Hold" and "QA Reject", to support this function. Any received item marked "QA Hold" or "QA Reject" will not be available for use in production. "QA Hold" items must be dispositioned as acceptable (status goes to "In Stock"), or unacceptable (status goes to "QA Reject"). Unacceptable items will be returned to the manufacturer for replacement.

Finished Products

All product shipped must be traceable to a "prototype" that has successfully passed the standardized flammability tests. There are three types of prototypes defined: Confirmed, Qualified, and Subordinate.

Freedom has a new tab available under Product Development that will contain the following fields:

1. A text field to record the Prototype ID of the related Qualified, Confirmed, or Subordinate prototype.
2. A set of radio buttons to record whether this model is referencing a Qualified, Confirmed, or Subordinate prototype.
3. A multi-line text field to record which foundations this mattress can be sold with (as required on the new F/R label).
4. A multi-line text field for keeping notes related to F/R for this model.

Manufacturing Lot Numbers

Each item produced will belong to a Manufacturing Lot Number (MLN). This number is generated automatically by Freedom and is based on the date of manufacture. As required, the MLN will be printed on the new F/R label.

F/R Labeling

The F/R requirements specify an additional Federal F/R label be affixed to each piece shipped. We have designed a combination label that includes: Shipping label, Construction instructions, Piecework tickets, State law tag, Federal law tag. Freedom prints these labels on demand, based on the product being manufactured.

Non-Scanning Solution

This approach does not depend on using barcode scanners to track the various components used in the manufacturing process. Instead, as a lot is taken from inventory to be used, it's marked in Freedom as "In Use", and the date, process, and machine it's used in is recorded. When the raw material is used up, it's marked as "Depleted" in Freedom. Any product built during the time a given raw material lot is open will be automatically associated with that lot.

A 'Check out Raw Materials' screen is available for use when an F/R Raw Material is being taken from inventory. First, the Raw Material is selected from a list of F/R-designated Raw Materials. Next, the RMLN is chosen from a list of RMLN's currently in stock for that Raw Material. Finally, the manufacturing Workstation and Operation are selected to indicate how the raw material is being used.

A spreadsheet-style screen called 'Raw Material Traceability' is available for use at the completion of each Manufacturing Lot. This screen lists all the pieces included in that Manufacturing Lot, and shows the RMLN of each of the F/R raw materials used in each piece (there is a column for each Workstation/ Operation). These RMLN's are pre-filled, but may be overridden as necessary by selecting from a list of RMLN's that are in use on that date.

Using this technique, each manufactured piece is associated with your MLN, and is traceable to all associated RMLN's.

The 'Check out Raw Materials' screen will generally be used by factory personnel on a computer in the Inventory area, and the 'Raw Material Traceability' screen will be used on a computer at the end of the Production area. Some companies may wish to do one or both of these functions in the office.

Scanning Solution

This approach depends on identifying the various components to be tracked by using bar coded Internal Serial Number labels (ISN's). These labels contain a number that, in itself has no meaning, but acts as a lookup device for the needed information.   Keep in mind that using scanning in this way provides other production tracking and control benefits already available in Freedom.

The scanning solution works as follows:
1. When raw materials are received, a pre-printed ISN label is attached to the packaging and scanned along with a barcode on the Receiving Sheet (produced by Freedom). This ISN associates this particular physical package with the item on the receiving sheet and it's Freedom Part Number.
2. Either at the same time, or later in the office, the received item's RMLN (assigned by the vendor) can be entered by using the ISN as a reference. Now the lot number is attached to the ISN and the raw material.
3. When a new lot of a raw material is to be used, it will be retrieved from inventory and taken to the appropriate workstation. At that time its ISN will be scanned, along with a label identifying the Workstation and the Operation (attached to the machine), and possibly the Employee's ID number (on his badge). This marks the raw material lot as In-Use at that workstation.
4. As the raw material is used, another ISN label is attached to the newly built assembly, and scanned to associate it with the RMLN's used in its construction. This ISN label will now identify this assembly.
5. The above steps will be carried out for all the applicable components that make up the finished product.
6. When these components are assembled into a finished product, the individual ISN's of each component will be scanned along with the product's Serial Number (located on the Law Label). This will associate each of the ISN's with the finished Serial Number, and hence the RMLN's as well.

Border

Typically borders are made in advance and inventoried until needed. Rolls of border are long enough for use in several finished products, and these may be part of several MLN's. Consequently simply applying one ISN label to a roll will not work.

We suggest that the ISN label be attached to the inside end of the roll. Many manufacturers cut the border and attach the law label at one workstation. In this case the Serial Number on the Law Label and the ISN on the roll will be scanned to associate them with each other. The roll can then be put away, keeping the original ISN attached to it for use later.

For those manufacturers who don't attach the Law Label at this point, after the border is cut, the cut piece would simply have it's own ISN label affixed, and it would be scanned along with the original ISN label in the center end of the roll in order to associate the cut piece with the raw materials used for the entire roll. In other words the border roll would be treated as if it were just a raw material from a Vendor.

Panels

Panels, like border, are often manufactured in batches and inventoried until needed later. We propose handling this in much the same manner as the border.

When a panel is completed, an ISN will be affixed to it, and then scanned along with the ISN's of the raw materials used in its construction. This will associate the panel with the specific Raw Materials used in its manufacture. Later, when the panel is being added to a finished product, its ISN can be scanned along with each of the other component's ISN's, and the Serial Number from the Law Label. This will now associate this piece's serial number with all the RMLN's it incorporates, via the ISN labels.

Conclusion

While the record keeping functions of the US Federal F/R regulations are stringent, Freedom for Bedding has minimized the additional work required to a manageable level. Whether you want to use a scanning solution or not, Freedom can help significantly. Once the information is recorded as described in this paper, reporting and tracking functions are straight forward.