Cold Storage Procedure

Overview

One of the fastest growing applications for SPF and coatings is cold storage for fruits, vegetables, and other foods that must be stored in carefully controlled environments.

TPR2 manufactures fire resistant coatings that will help make your cold storage project code and EPA food-contact compliant.

Procedures for coating/foam systems for cold storage must be carefully observed and include prep, coating application and post coating treatments to ensure proper drying of coating and long service life.

This procedure has been created as a guide to aid certified TPR² coating sprayers in the proper selection and installation of TPR² coating over SPF insulation in a cold storage application. The procedure can and will be updated periodically. Please refer to http://www.tpr2.com/for the latest version before using

Scope

This procedure is valid for only:

1. TPR² Fire barrier coatings over approved closed-cell foams.
2. FireShell® F10E coating and F1 nonflammable top coat as a system only.
3. Storage facilities zero degrees Fahrenheit (0 ºF) and above.

NOTE: Contact TPR² for storage applications below zero degrees Fahrenheit (< 0 ºF). Contact TPR² for recommended closed cell foams preferred for cold storage.

Preparation

During the planning phase, it is critical that the foam/coating applicator strive for the smoothest foam possible to provide a good base surface for consistent coating thickness. Closed-cell foam should have a smooth surface with an orange-peel texture to ensure best combination of coating coverage and adhesion as shown in the image.

The closed cell foam should be allowed to cure until the core temperature is at ambient. Core temperature must be verified

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using a meat thermometer or other thermometer with a probe. Proper safety and ventilation procedures should be used. The foam application should be done to manufacturer specs.

After SPF has been installed the area where the coating will be applied must be brought to 'conditioned space' status or:

- ☐ ≥ 60 ºFahrenheit
- ☐ ≤ 60% RH (relateive humidity)

NOTE: Temperatures and humidity levels must be verified in all areas where coating is to be applied, especially in large facilities with high ceilings where moisture can become trapped and temperatures can vary greatly from ground to ceiling.

Equipment

- ☐ TPR² Checklist http://www.TPR2.com/directions/PreSprayChecklist.pdf
- ☐ Humidity meter-ambient air
- ☐ Contact style humidity reader- surface
- ☐ Ventilation Procedure http://www.TPR2.com/directions/ventilation4-15-13.pdf
- ☐ Cross ventilation equipment
- ☐ Dehumidifiers (if required per the product Technical Data Sheets ventilation instruction parameters

Coating Application

NOTE: The appropriate temperature and humidity at the location the coating will be applied (ceiling, high wall, low wall) must be confirmed before spraying the coating.

Optimal performance in cold, damp storage units is achieved with a proprietary coating system developed by TPR² which includes:

- ☐ FireShell® F10E intumescing base coat
- ☐ FireShell® F1 nonflammable, durable top coat

NOTE: Refer to FireShell® F10E and FireShell® F1 Technical Data Sheet (TDS) for proper installation guidelines. Refer to TPR² Ventilation Procedure if temperature or humidity are within specified range

- ☐ Apply the first coat of FireShell® F10E at sufficient thickness to meet Thermal Barrier/IBC 803.1.2 code compliance.
- ☐ The first coat should fully dry and cured before applying the top coat. A minimum of 1 week in conditioned, low humidity space complying with the ventilation procedure.
- ☐ After the FireShell® F10E base coat has fully cured, apply the FireShell® F1 top coat at the 10 wet mils thickness which correlates to approximately 6 dry mils. Consult the TPR² Coating Measurement Procedure available at http://www.tpr2.com/

Scan here to get to Fireshell® coating/foam specs

Scan the QR code for technical data sheets, required mil thicknesses, approved closed-cell foams, and additional application information or visit: http://www.tpr2.com/

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Note: Prior to installation of FireShell® F1 top coat, the applicator must verify that temperature and humidity at the location the coating will be applied (ceiling, high wall, low wall) falls within the correct ranges specified on the technical data sheet and specified on the Ventilation Procedure

- ☐ After installation of the FireShell® F1 top coat the temperature and humidity levels in the application area must remain conditioned within the ranges specified on the TDS for at least 10 days to enable proper curing of coating. Mechanical ventilation and conditioning will be required. Refer to Ventilation Procedure linked here http://www.TPR2.com/directions/ventilation4-15-13.pdf for details.

Special Condition Areas

Some cold storage facilities duct the cold air very close to coated wall and ceiling surfaces. In these situations, thermal shock is possible when the system is brought in and out of service which can cause coating delamination.

Any air duct located within 12" of coated surface must have a barrier panel installed over the coating such as cement board, Durarock or other fire rated, moisture resistant material. The barrier panel should span at least eight feet (8') out from the duct in all directions to minimize thermal shock to the coated surface.

In Service Final Inspection

Acceptable Humidity and temperature readings should be maintained for at least 10 days after the F1 is sprayed with documented daily records of those readings in hand before the space is brought into service. Bringing the space into service should be done over an extended time. TPR² requires a minimum 48 hour cool down procedure, which most facilities do as a standard operating procedure.

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