BUILDING CHEMISTRY INDUSTRY

Method Statement for Building Chemistry Industry Polyurethane Spray Foam Application for concrete and steel surfaces@2 cm thickness with BC guard top

Scope

This method statement describes the process of applying polyurethane spray foam (PU foam) for thermal insulation, waterproofing, or acoustic purposes. It includes surface preparation, application techniques, and safety measures.

Materials & Equipment

Materials
Polyurethane spray foam (two-component system: polyol resin and isocyanate)
Topcoat or protective layer (if applicable)

Equipment

Graco EP 30 Spray foam machine (proportioner with heated hose)
Spray gun
Air compressor
Personal Protective Equipment (PPE): respirators, gloves, goggles, coveralls
Infrared thermometer (to measure surface temperature)

Responsibilities

Supervisor: Ensures proper implementation of the procedure and safety compliance.

Technicians: Perform surface preparation and spray foam application.

Safety Officer: Ensures safety measures are followed on-site.

Procedure

Concrete Preparation

Inspection:

Inspect the substrate for cleanliness, dryness, and stability.

Check for cracks, loose material, or other surface defects.

Steel preparation

Cleaning the Steel Surface

Remove Grease, Oils, and Contaminants: Use a solvent cleaner like acetone, isopropyl alcohol, or a degreaser to eliminate oils, grease, and other contaminants.

Wash the Surface: Use a mild detergent solution and water to remove dirt and dust.

Dry Thoroughly: Ensure the surface is completely dry before proceeding to the next step to avoid adhesion issues.

Rust and Mill Scale Removal

Mechanical Abrasion: Use abrasive blasting, grinding, or sanding to remove rust, mill scale, or old coatings.

Preferred method: Abrasive blasting to achieve a clean, uniform surface.

Achieve a surface profile of 1.5 to 3.0 mils (38-75 microns) for proper foam adhesion.

Chemical Treatment: In cases where mechanical methods are not feasible, apply rust converters or removers to stabilize the surface.

Surface Profiling

Spray foam adheres better to roughened surfaces.

Use abrasive blasting to achieve a SP 6 (Commercial Blast) or SP 10 (Near-White Metal Blast) standard, as defined by SSPC (Society for Protective Coatings).

Avoid polishing the surface, as it can reduce adhesion.

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Surface Cleaning:

Remove all dust, oil, grease, and debris using brushes, air blowers, or cleaning agents.

Ensure the substrate is dry using a moisture meter (surface moisture < 15%).

Masking:

Protect adjacent surfaces, openings, and fixtures with masking tape or polyethylene sheets.

Substrate Temperature:

Confirm the surface temperature is within the range specified by the product (typically 15°C to 45°C).

Avoid application during high humidity or rainy conditions.

Application

Equipment Setup:

Calibrate the spray foam machine according to the manufacturer's instructions.

Set the proper temperature (typically 40°C–60°C) and pressure for both components.

Mixing:

Ensure accurate mixing ratios for the two components (usually 1:1 by volume).

Application:

Start spraying at a controlled distance (15–20 cm) from the surface.

Spray in uniform, overlapping passes to achieve the required thickness.

Apply foam in layers (maximum thickness per pass: 20 mm) to prevent overheating or improper curing.

Allow sufficient curing time between layers as per manufacturer recommendations.

Thickness Verification:

Measure foam thickness at various points using a depth gauge to ensure uniformity and compliance with specifications.

Post-Application

Trimming:

Trim excess foam using a cutter or specialized tool to achieve the desired shape.

Topcoat Application BC Guard

Apply a protective coating (e.g., UV-resistant paint or elastomeric coating) to prevent degradation.

Inspection:

Conduct a visual inspection to ensure a uniform application without voids, gaps, or defects.

Clean-up:

Remove masking materials and clean equipment immediately after use.

Safety Measures

Ensure proper ventilation in the application area.
Wear full PPE, including a respirator with filters for isocyanates.

Follow local regulations for handling and disposing of chemical components.
Have fire extinguishers readily available as PU foam is flammable before curing.
Avoid direct skin and eye contact with foam components.

Quality Control

Verify material batch numbers and expiration dates.
Ensure all equipment is functioning correctly before application.
Record substrate moisture and temperature readings.
Inspect completed work for uniformity, adhesion, and thickness.

Environmental Considerations

Avoid spraying in windy conditions to minimize overspray.

Contain and properly dispose of waste material in compliance with local regulations.