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CCMC TECHNICAL BULLETIN

SPRAY FOAM: SITE-MANUFACTURING QUALITY ASSURANCE

The Canadian Construction Materials Centre (CCMC) has been involved in the Canadian spray-applied polyurethane foam thermal insulation (spray foam) industry for more than 20 years, and has actively participated in the development of code and standards requirements for spray foams, to support the industry and to participate in the protection of the health and safety of Canadians. To that end, the following information is provided to inform spray foam manufacturers, authorities and users of the importance of *site quality assurance* for the code compliant installation of spray foam.

Unlike plant-manufactured building materials, the installation of spray foam material is the manufacturing process, and that process occurs on the construction site. For spray foam, manufacturing the final product consists of the reaction of two chemicals, under controlled pressures and temperatures; like any manufacturing process, it is crucial that the quality of the product be monitored.

In a traditional plant setting, CCMC requires that manufacturers have a *quality management system* in place to monitor the plant's operation, typically consisting of, at minimum, a documented process for:

- manufacturing process control checks,
- employee training and competence, and
- finished product quality assurance.

For all spray foam materials the manufacturer's plant is effectively the construction site, and the manufacturing (installation) is performed by third-party installers. As a site-manufactured product a spray foam manufacturer's *quality management system* is operated, not in a plant, but on the construction site. As in a plant, CCMC requires, as directed by the Canadian Commission on Construction Materials Evaluations (CCCME), that the manufacturer operate a Site Quality Assurance Program (SQAP), through a CCMC-recognized certification organization, to provide the manufacturer with a documented process for:

- manufacturing process (installation) control checks,
- third-party installer training and competence, and
- finished product quality assurance.

Just like with plant-manufactured products, spray foam manufacturers are responsible for their finished product – in this case the installed foam. Without an SQAP program, the manufacturer has little or no information about the manufacturing process (installation), or their compliance with the application requirements in the code (e.g., National Building Code of Canada 2015, Sentence 9.25.2.5.(1), requiring installations of medium density spray foam to comply with the CAN/ULC-S705.2 application standard).

The Canadian Commission on Construction Materials Evaluation (CCCME) has directed CCMC to issue this (and other) technical bulletins to inform CCMC's audience, and the Canadian public, of matters of interest related to construction products.

Site quality assurance is therefore a necessary and important part of the manufacturing process, for demonstrating and maintaining code compliance, and for providing visibility from raw materials to finished product. It is important for the spray foam manufacturer, for authorities making approval decisions, and for users who expect a code compliant product to be installed in their building.

To that end all CCMC evaluated spray foams must operate an SQAP program which includes:

- manufacturing process (installation) control checks (e.g., daily work records to monitor application parameters);
- third-party installer training and competence (e.g., installers are trained and licensed by the SQAP provider), and
- finished product quality assurance (e.g., daily work records to check installed foam density and adhesion).

With *site quality assurance* being such an important part of the manufacturing of spray foam products, it is our goal that manufacturers, authorities, and users of spray foam will consider the information presented in this bulletin when making decisions about the sale, installation, approval and use of spray foams in Canadian construction.



CCMC BUILDING OFFICIAL HELPDESK

CCMC has been involved with the Canadian spray foam industry since its inception, working with manufacturers, developing research-based technical criteria, and supporting the industry's implementation of site quality assurance. Many site manufactured products have advantages in their performance (e.g., air leakage control, reduction of thermal bridging, etc.), and when installed correctly, with the correct measure of site quality assurance, can become an integral part of the modern built environment.

This bulletin is to inform Canadian authorities having jurisdiction that CCMC evaluations have been developed over decades, in consultation with the Canadian spray foam industry, to confirm code compliance and protect the health and safety of Canadians

Any building official or authority having jurisdiction (AHJ) with questions about spray foam or any other CCMC evaluation can contact CCMC's Building Official Helpdesk at 613-993-6189 or const.ccmcbuildingofficialhelpdesk@nrc-cnrc.gc.ca



CCMC MANDATE

At the request of the Provinces and Territories, the regulators of construction across Canada, CCMC was created as Canada's official evaluation service for building officials and the construction industry in 1988. Formalizing this relationship was a Memorandum of Understanding between Canada's Federal Government and Provincial and Territorial Governments (PTs). Also at the request of the PTs, CCMC was centralized at the National Research Council of Canada (NRC) a federal government organization, in Ottawa, working closely with Codes Canada and research expertise. CCMC's mandate is to provide a technical opinion that a product or system complies with the requirements of Canada's Building Codes as an 'alternative solution' and to provide verification that a product conforms to a recognized product or material standard. As a Federal Government organization and part of the NRC, CCMC's due diligence on all evaluations is impartial, neutral and science-evidence based, intended to protect the health and safety of Canadians first and foremost. CCMC applies the same objective, factual and rigorous process on all evaluations and provides an expert, unbiased opinion on Code and Standard compliance without commercial interest in the products evaluated. Also as a federal government entity, CCMC stands behind all of its technical evaluations

For further information, questions, or inquiries, please contact CCMC at ccmc@nrc-cnrc.gc.ca or (613) 993-6189.

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