Proper Ventilation Practices

Providing ventilation via air exchanges allow for adequate curing is critical to acheiving the fire resistive properties and in-place physical perforamce properties of Spray-Applied Fireproofing, also know as, Spray-Applied Fire Resistive Materials (SFRMs).

Isolatek International, the world leader in passive fire protection, along with other SFRM manufacturers requires a minimum of four complete air exchanges per hour be provided until the SFRM is fully cured.

An air exchange system must completely remove the moisture-laden air associated with SFRM applications. Simultaneously, fresh air is introduced at the same rate as removal. This process creates an acceptable environment in which the SFRM can fully cure. Typically, new construction affords the SFRM an ample drying environment because a large percentage of the steel structure is not enclosed and is exposed to atmospheric conditions (i.e. constant airflow, warm temperatures, etc.).

Enclosed areas such as basements, stairwells, shafts and small rooms often create damp, humid environments. In these situations, it is imperative that complete air exchanges be provided. Retrofit applications often create a challenge because ventilation is restricted. These situations generally require mechanically assisted ventilation (air exchange) to remove the excess moisture generated by the SFRM application and curing.

The lack of adequate ventilation during SFRM application and curing may lead to biological growth. Biological growth can reproduce under a variety of environmental conditions, especially in humid environments where organic materials are present.

Growth can occur on many construction material surfaces (i.e. concrete, gypsum wallboard, CMU wall) when materials are exposed to high humidity for prolonged periods of time. These conditions can exist during the construction cycle of a building if ventilation is not provided.

Commonly marketed Wet Mix SFRMs, which contain some organic raw materials, may contain a fungicide added at time of manufacturing. However, proper ventilation is especially critical following the installation of these products. Prolonged and repeated exposure to excessive humid conditions following the application could render the fungicide inactive and possibly result in biological growth. As a means of reducing the potential for biological growth, specifying a Dry Mix SFRM can offer added features and benefits in humid conditions.

Typically, Dry Mix SFRMs are portland cement based and formulated in such a way that they are essentially inorganic in composition and do not require a fungicide. Dry Mix products are conveyed in a dry state using pneumatic equipment to transport material to a nozzle where the water is introduced. The proper addition of water at the nozzle allows for hydration of the product's binders. Dry Mix SFRMs require approximately 30% less water than do Wet Mix SFRMs. This translates into less available moisture from the Dry Mix products throughout the curing process.

+ 1 973.347.1200
technical@isolatek.com | sales@isolatek.com
www.isolatek.com

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