

**3M**

# Fire Protection Products

**Technical Bulletin No.: 06-1026****Title: FireDam Spray 200 MVTR****Date: November 1, 2006****Issued By: George Frost****TITLE: FireDam Spray 200 Water effects for MVTR, Fungus resistance, and Water soak.**

FireDam Spray 200 properties with respect to water are:

1. **MVTR, moisture vapor transmission rate, shows the dried film coating to be a water vapor barrier**, yet allows for breathing via moist vapors. ASTM F-1249 (similar to older ASTM E-96) results show a perm rating of 0.30. This is in English terms of grains/h x sf x inch-Hg, and there is a metric perm of 0.0082. This is from a dried film of 0.08 inch thickness and tested at 23 C /50% RH. Additional subjective and descriptive terms could be used such as a **water resistant** coating, and even better, water vapor diffusion retarder.

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A vapor barrier or vapor diffusion retarder (VDR) is a material that reduces the rate at which water vapor can move through a material. The older term "vapor barrier" is still used even though it may inaccurately imply that the material stops all of the moisture transfer. Since everything allows some water vapor to diffuse through it to some degree, the term "vapor diffusion retarder" is more accurate.

The ability of a material to retard the diffusion of water vapor is measured by units known as "perms" or permeability. A perm at 73.4°F (23°C) is a measure of the number of grains of water vapor passing through a square foot of material per hour at a differential vapor pressure equal to one inch of mercury (1" W.C.) Any material with a perm rating of less than 1.0 is considered a vapor retarder.

2. **Fungi or mold resistance, as an applied and dried film, is very good.** ASTM G21 (dried film challenge) results show that the spray does not support fungal / mold growth from the five fungal spore suspensions sprayed onto the dried films, and incubated for 28 days at 28 C / 95% RH. A mold, mildew, or fungal legal claim cannot be made as the spray does not contain an EPA registered fungicide (antimicrobial pesticides), and/or at a recommended level for that fungicide. Additionally, a liquid challenge for in-pail shelf-life (termed a preservative) showed that the added biocide was sufficient for 7 of 8 bacterial inoculations. In both the dry and wet challenges, a finite number of organisms can be tested, but one has to be aware that there are a vast number of bacterial / fungal organisms that could inoculated the spray as it is water based and close to a safe, neutral 7 pH.
3. **Upon drying, the coating will not re-dissolve nor go back into a solution coating.** Film tensile properties will decrease when soaking in water, but upon re-drying, the tensile strength will return to the previous dry strength with no loss. It is not water-tight per UL 2079.

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