
Ahead of the Game

BY JAY GRIMES

Interest and Confusion on the Rise When Selecting the Perfect Weather-Resistive Barrier

Interest in the weather-resistive barriers has been sparked by code revisions throughout the country. As interest has increased, confusion related to the selection of weather-resistive barriers also has increased.

In simple terms, weather-resistive barriers are designed to provide redundancy and work in conjunction with exterior cladding to protect the structure from water intrusion. Much of the confusion can be attributed to inconsistencies between the national building codes and the broad availability of products being marketed as weather-resistive barriers.

Federal Specification UU-B-790a classifies weather-resistive barriers based on three performance criteria: water resistance (ASTM D-779), moisture vapor transmission rate (ASTM E-96 Proc. A) and tensile strength (ASTM D-779). Each indi-

vidual weather-resistive barrier will then fall into one of four grades, A through D, based on its collective physical properties performance.

Typical Applications by Grade	
Grade A	Flashing membranes: asphalt laminated, barrier coated and bituminous.
Grade B	Open Framed Construction and Underlayments: asphalt laminated.
Grade C	Not applicable.
Grade D	Exterior vertical wall assemblies; asphalt saturated building papers, asphalt saturated rag felt, Woven polyethylene, Non woven polyolefin

■ Grade A barriers offer high water resistance but low permeability.

■ Grade B barriers offer moderate water resistance but low permeability.

■ Grade C barriers are water resistant but offer limited vapor permeability

■ Grade D barriers offer minimum 10-minute water

resistance and are also water vapor permeable.

Greater interest for weather-resistive barriers is centered around the Grade D products due to the need for vapor per-

meability, or breathable attributes, for use in residential and light commercial construction.

Let It Breathe

Vapor permeable products allow moisture vapor created inside the building to exit through the wall cavity, beyond and onto the weather-resistive barrier before condensation occurs to protect moisture sensitive substrates such as oriented strand board or plywood.

A non-breathing product will prohibit air flow and cause condensation between the substrate and the weather-

physical properties, as described in federal specification UU-B-790a, balance the objectives of water resistance and vapor permeability

Asphalt saturated Kraft papers feature the best balance between water resistance and good vapor permeability. These papers also tend to be more pliable and stronger than rag felts. The lighter weight and increased pliability also provide for easier installation.

Asphalt saturated rag felts also have a high degree of water resistance. However, vapor permeability may work poorly close to the non-breather levels. Rag

Weather-resistive barriers fall into one of four grades, A through D, based on the barrier's properties.

resistive barrier, likely resulting in damage to the interior. There is also potential for problems associated with products with extremely high MVTRs. Water resistance and vapor permeability are typically found to be in direct correlation.

Within the class of Grade D, weather-resistive barriers offer a range of products. Among this vast group are asphalt saturated Kraft building paper with 10-, 30- and 60-minute water resistance, asphalt saturated rag felt, nonwoven polyolefin and woven polyethylene.

Each type of weather-resistive barrier has its strengths and weaknesses. The

felts also tend to be the least workable and most vulnerable to tearing when compared to all other weather-resistive barriers.

Nonwoven polyolefin and woven polyethylene tend to not be well balanced. They have extremely high vapor permeability that may contribute to lower water resistance. The strength of these products is typically high, although they tend to be more costly.

Proper Installation


An important aspect of all weather-resistive barriers is the need for correct installation. In many cases the perfor-

mance of the product depends heavily on the way it was installed.

Manufacturers and independent agencies, which have a wealth of information on installation methods of weather-resistive barriers, exterior cladding and design considerations, are an integral part of the building equation.

The interest in weather-resistive barriers will continue to rise. This interest is healthy for the wall and ceiling industry, and may lead to improved building practices, including correct wall, window and roofing flashing integration.

The confusion regarding weather-resistive barriers can be overcome by researching the products available and relating the

needs of the project in terms of product performance and cost. The balance between water resistance and vapor permeability is critical in the performance of weather-resistive barriers. Trade associations, promotional bureaus, manufacturers and other agencies have additional information available. 

Grade Requirements				
Physical Property	Grade A	Grade B	Grade C	Grade D
Water Resistance	24 + Hours	16 + Hours	8 + Hours	Minimum 10 minutes
Moisture Vapor Transmission	Max. 4 grams per square meter per 24 hours	Max. 6 grams per square meter per 24 hours	N/A	Max. 8 grams per square meter per 24 hours
Dry Tensile Strength	20 lb. minimum	20 lb. minimum	20 lb. minimum	20 lb. minimum

About the Author

Jay Grimes works in the Marketing Services Department of

Fortifiber Corporation, Fernley, Nev., and also acts as the company's Northeast sales representative.