

Capillary Breather Tubes In Insulating Glass Units

DEFINITION: Capillary breather tubes are 12" or longer with an internal diameter of 20 mils or less. They are inserted into the edge spacer of an IG unit to allow the unit to breathe during internal and external pressure changes. The current most commonly used material is stainless steel.

The use of breather or capillary tubes in IG units has always been a controversial issue. They have been used successfully for many years to relieve pressure differentials within IG units. The controversy centers on whether they are effective in keeping moisture out of the IG and whether manufacturers are capable of inserting and sealing them properly.

Historically, Vitro (formerly PPG Industries) has avoided their use. However, occasionally severe shipping, handling, and glazing conditions have dictated that they be installed. In those cases no IG warranty was given. Today Vitro still holds the belief that their use will reduce the life expectancy of an IG unit. The degree of reduction depends upon the following:

1. Quantity and initial dryness of desiccant in the IG.
2. How well the tube is sealed at the point of insertion through the spacer.
3. Whether the exposed end of the tube is sealed or left open.
4. The internal diameter of the tube.
5. The length of the tube, if left open.
6. The exposure of the unit before sealing the tube.

7. The in-service exposures of the unit (dry or wet climate).

In the manufacture of Intercept® IG units, Vitro has no control over any of the above items. So, we leave the decision to use or not use breather tubes to the manufacturer of the units. If you do decide to use breather tubes, here are several factors to keep in mind.

1. If you want the IG to stay flat in all conditions, and choose to use "leave-open" tubes, expect shorter IG life - all things being equal, larger units will have shorter life than smaller units - however, since all things are hardly ever equal, you may not see this relationship in actual practice.
2. If you want to increase unit life while using breather tubes, leave tubes open until they reach their final destination, allow them to equilibrate, then crimp and seal the tubes - the units will be flat initially, but after the tubes are sealed, flatness will vary with changes in temperature, atmospheric pressure, and wind load. If the tubes are sealed thoroughly and properly, unit life will be longer than with "leave open" tubes, but will depend on the conditions to which the unit was exposed before sealing the tubes.
3. Don't skimp on desiccant, and use extra care in sealing around the tube where it enters the IG unit.
4. Do not use breather or capillary tubes in gas filled units - the gas will leak out.

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5. Check with your coated glass supplier to verify whether a particular coated glass can be used in IG units with breather tubes. Hard-coat products can usually be used with open tubes, even though IG longevity is reduced. With soft-coat products, in general the tubes must be crimped and sealed after the IG units reach equilibrium at their destination. This will help protect the coating as well as improve IG longevity.

Vitro MSVD Soft Coat Products: Closed breather tubes for high altitude applications may be utilized in insulating glass units incorporating Vitro MSVD Low-E coated glass, providing the tubes are opened at the

installation altitude, allowed to stabilize for four to six hours, and then **crimped closed** and **completely** sealed with butyl to insure air tight integrity. This procedure will help to protect the coating as well as improve IGU longevity, and may be performed at the time of receipt at the installation altitude, or at the job site. Permanently opened breather tubes should not be used, and are never recommended.

Again, if you can avoid the use of breather or capillary tubes, do so.

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HISTORY TABLE		
ITEM	DATE	DESCRIPTION
Original Publication	12/11/2001	TD-103
Revision 1	2016-10-04	Updated to Vitro Logo and format

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