Generally, when you look at a silicone joint, you see only the surface. Even with a typical “clear” silicone, it’s very difficult to tell what the inside of the joint looks like. However, with CRL Water Clear Silicone Sealant you see not only the surface but also everything within or behind the sealant. The exceptional clarity of the product means the sealant will not hide any application or tooling errors and substrates must be free of dirt particles.

A cure phenomenon that occurs in most sealants, including CRL Water Clear Silicone Sealant, is bubbling. Bubbles can form within a sealant for a variety of reasons. With most sealants, bubbles are not visible and not an aesthetic concern. With CRL Water Clear Silicone Sealant, however, any bubble or nonuniformity is clearly visible. This may not be aesthetically acceptable to a customer who has selected the sealant specifically for clarity and appearance.

The purpose of this document is to review the possible causes of bubbling, discuss precautions that can be taken, and address some potential remedies for the problem. Bubbling can be caused by a variety of situations such as:

1. Caulkers entrapping air into the joint as they are gunning the sealant. This is generally seen as a series of several bubbles that are nonuniform in size and are visible at the time of sealant installation.
2. Voids are formed in the joint as a result of movement during cure. This occurs when the sealant has a firm skin and the joint moves, opening a void as cure continues. In this situation, long, almost cylindrical voids may be formed. Typically this is seen in mitered butt joints in frameless shower door applications.
3. Cure byproduct accumulation. Sealants have some shrinkage as the cure byproduct leaves the system. As the sealant shrinks, the surface becomes slightly more concave. In a deep joint (i.e., 1/4" (6.4 mm) wide by 1/2" (12.7 mm) deep), the shrinkage may be seen as a bubble because the cure byproduct accumulates within the sealant and doesn’t escape at the surface. This type of void is seen as an almost spherical bubble within the sealant, it is not present until the sealant has cured.
4. Entrapped air within the cartridge. This could be seen anytime an air bubble is actually incorporated within the sealant in the package. Quality control on the production line is designed to minimize this phenomena.
5. Other types of voids can occur within the sealant such as backer-rod outgassing, and small surface bubbles at the sealant/substrate interface which can occur on very hot surfaces (generally not applications where the CRL Water Clear Silicone Sealant would be used).

To prevent sealant bubbling, it is critical that the user/applicator take a few simple precautions:

1. Extreme care must be taken in workmanship. The joint must be filled completely. It is critical to tool the sealant surface correctly the first time and immediately after gunning.
2. Thin joints will have a better appearance than thick joints and will be less likely to bubble.
3. Avoid the use of this product in applications where movement is anticipated as the sealant is curing.

If a bubble is seen in the sealant joint, the void can be repaired by filling the cavity with additional sealant. This can be accomplished by cutting out the affected area and replacing it or by injecting a small amount of additional sealant directly into the void. However, the repair will not be perfect because of the ultimate clarity of the CRL Water Clear Silicone. Considerations should be made up front regarding standards of appearance and subsequent repairs (eg. limited to sight lines).