

Paths to Energy Code Compliance For Window Products

GG 003—2015-02-23

More and more state and local energy codes are driving the increase in demand for higher performing window and glass products. Along with this demand is a need to demonstrate that the products comply with the respective codes. This can be confusing as there is more than one path to show compliance.

Paths to Energy Code Compliance

There are essentially 3 main paths to demonstrate compliance:

1. **NFRC Product Certification (CPD)**
2. **NFRC Site Certification (CMA)**
3. **AAMA 507**

The first path, **NFRC Product Certification**, is primarily for residential windows. These products are typically produced in a window manufacturer's factory with consistent components that rarely change. In this process, a specific window product configuration is first tested and compared against a computer simulation of the entire window system. The testing and simulations are strictly monitored to conform to NFRC standards for determining window performance. A third party verifies that the testing and simulations were done correctly. After which the product is deemed certified then listed in the NFRC Certified Product Directory (CPD). A NFRC certification label is issued and applied to every window produced of that same configuration. Performance values of Ufactor, SHCG, and VT are determined for the total window product (not just the glass) and appear on the label. The NFRC certification label provides assurance to a code official that the performance values listed are appropriate for comparing to requirements given in the code.

For commercial windows, particularly store front windows and curtain walls, the NFRC Product Certification path is cumbersome and complicated. In the commercial sector, window products are often 'site built', with window components from several different manufacturers. The combination of components will vary from job to job. This makes it is challenging and expensive to have each and every possible window system evaluated for its energy performance by the NFRC process. Instead, NFRC offers a site certification approach called the **Component Modeling Approach (CMA)**. CMA uses an online library of certified performance data for the three basic window components: Framing, Glazing, and Spacer. A specially designed computer program, called CMAST is used for the integration of the selected window components specific to the given site. A NFRC approved calculation entity (ACE) uses the program and provides the performance values of Ufactor, SHCG, and VT for the entire window system. The process is reviewed by an accredited third party and an on-line NFRC Energy Label Certificate is then issued that can be used to show code compliance.

Paths to Energy Code Compliance For Window Products

Another path sometimes used to determine window product performance for commercial window products is **AAMA 507**. This path offers a uniform standard method using the same NFRC testing and computer simulation requirements used by the NFRC Product Certification path (NFRC 100, NFRC 200, NFRC Simulation Manual). Once a given window system is tested and found to compare within guidelines to computer simulation, further computer runs are performed with the same framing system but with various center of glazing (COG) performances. The results are then used to generate charts of Ufactor, SHGC, and VT relating total window system performance to the COG performance. In this way determination of a specific frame and glazing combination can be determined without having to test and model each combination. The process is completed by filling out a Certificate of Compliance that requires COG performance of the specific glazing used on the project, as well as a table comparing COG performance to the total system performance.

Code Body Acceptance

When it comes to which system is best to show compliance, the matter is often up to the actual state or local code that has jurisdiction for the project. For residential windows the only recognized path is the window label determined via the NFRC Product Certification path.

For commercial window products some jurisdictions will recognize either the AAMA 507 Certification of Compliance or the NFRC Energy Label Certification from the NFRC Site Certification process (CMA). However, there are some areas where only the NFRC Energy Label Certification is recognized. Some of this has to do with how the code is written and what by what the local building code official interprets and accepts. It is necessary to be familiar with what the requirements are where the window product will be used.

Conclusion

Trulite supports the use of any of the paths to code compliance described above. We can assist with providing the center of glass properties and spacer information used in our glazing products. Actual certificates or labels of certification for total window system performance however, need to be driven by the window manufacturer, builder, or glazing contractor complying with requirements of the select path to compliance.