
HISTORY OF THE SAFETY GLAZING CERTIFICATION COUNCIL
From its Founding in 1971 thru the Present

by Richard A. Paschel

The soda, lime and silica glass used today and known as float glass traces its origins to the glass first fabricated in Mesopotamia during the late Bronze Age circa 1600 BC. Today we have literally hundreds of different types (formulae) of glass for specialized requirements, with more being regularly created for new applications, for this very ancient, yet very modern material.

The initial application of glass for glazing purposes using small pieces of cast glass dates to the height of the Roman Empire and was limited to only the most luxurious villas. After the fall of the Roman Empire, the use of glass for glazing virtually disappeared and did not resume until the Early Middle Ages utilizing an adaptation of glass blowing techniques that first evolved around the 1st Century AD.

All of these early windows utilized very small pieces of glass that were usually held together with strips of metal, which remained the norm for several hundred years. By the 17th Century, on the eve of the onset of the Industrial Revolution, the technology to make larger pieces of annealed cast glass had been developed, resulting in windows with larger-sized panes of annealed glass, and

with it the increased risk of serious injury from breakage on human impact. This, in turn, drove the need for safety glass, which is fabricated so that should it break, the potential for serious injury is minimized.

Laminated safety glass, generally associated with the Automotive Industry in the early part of the 20th Century, was the first true modern safety glass to be developed. The first automobiles were fully open and had no windscreen or any kind of glazing, with the driver and/or passengers simply wearing goggles. As autos developed and gained sophistication, a front windscreen of ordinary annealed glass was incorporated into the design, which turned out to be dangerous and unacceptable.

The development of laminated safety glass, which was initially intended for automotive applications, is credited to a Parisian scientist named Edouard Benedictis in 1903. Though its initial application was actually in lenses for gas masks during the First World War, Henry Ford made laminated safety glass standard for automotive windshields in the 1920's, and it was subsequently used in many other glazing applications.

Since there was a range of glazing applications for which the early versions of laminated safety glass were not particularly suitable, and as the performance limitations of the early existing interlayers became more apparent, it also became apparent that another type of safety glazing would be needed.

Thermally tempered safety glass, also initially intended for automotive applications, was first developed also in France by the ST. GOBAIN research laboratories in the early 1920's. By 1929, they were finally able to commence initial production of this early thermally tempered flat glass fabricated in limited quantities, sizes, and thicknesses, though expanded in 1933 to also fabricate some early bent tempered glass.

The development of commercially viable hi-volume production processes for fabricating a wider range of sizes and thicknesses of tempered safety glass in both flat, as well as bent, was the work of several individuals, including the inventive genius Harold McMaster of Perrysburg, Ohio, in the late 1940's. The Company he founded in 1948, PERMAGLASS, initially supplied tempered flat glass for household domestic appliances, TV sets, and display applications, eventually extending to a range of other applications for which safety glazing was not previously available. By 1958, this included thermally tempered bent safety glass primarily for, but not limited to, automotive applications.

The 1950's also saw the introduction of large-sized glass in commercial architectural applications, highlighted by the opening in 1958 of the *Seagram's Building* on Park Avenue in NYC, designed by the noted architect Ludwig Mies van der Rohe and arguably the world's first "glass" skyscraper. This development accelerated the trend for architectural use of larger sizes of glass which quickly

carried over into the residential sector, with new homes frequently having large panoramic picture windows and sliding glass patio doors. Unfortunately, in many instances, these applications did not utilize safety glazings, with tragic consequences similar to that which had occurred with early automotive windshields fabricated from ordinary glass.

Despite the availability by the late 1950's of safety glazing products in larger sizes and shapes for a wide range of applications, its usage was only slowly increasing, especially in residential applications, primarily due a lack of safety glazing codes mandating its use uniformly on a national basis. The various existing codes specifying the applications in which safety glazings were required, other than in automotive applications, were on a state or local jurisdiction basis and varied greatly, resulting in many instances where it was acceptable to use ordinary annealed glass in applications where safety glazings should have been applicable.

By 1966, as a result of the growing public awareness of the dangers of ordinary glass in many glazing applications, especially in larger sizes, the *U.S.A. Standards Institute* (today the AMERICAN NATIONAL STANDARDS INSTITUTE, better known as ANSI) first issued Specification Z.97-1 as a national standard for safety glazing requirements, with the individual manufacturer responsible for the compliance process.

Since it is frequently not possible to ascertain from simple visual inspection if a piece of glazing is in fact a true safety glazing, some type of certification testing and labeling identification process is necessary. In many countries, such processes are conducted under the auspices of National Governmental Authorities, but in the United States, by law, the responsibility is generally left to the manufacturer, though frequently with at least some Governmental direction and oversight.

In the U.S., some codes and specifications allow for the “self-certification” process wherein a manufacturer or fabricator can conduct their own in-house tests and issue their own certification stating that their production is a compliant safety glazing. Some companies handle certification in this manner while others base their statement of compliance on testing conducted by well-established, highly qualified and respected testing organizations to test-verify that their glazing is in compliance with the various applicable codes. However, since the manufacturer or fabricator is paying the testing facility directly for their services, a question may sometimes arise as to the actual “independence” of the testing process.

To ensure the validity of manufacturers’ statements of compliance and appropriate performance of the safety glazings, an independent neutral organization, the SAFETY GLASS CERTIFICATION COUNCIL (SGCC) was formed in 1971 thru the collaboration of several Industry and Public Interest Organizations. This included, but was not limited to, The National Safety Council,

Pittsburgh Plate Glass (PPG); Libbey-Owens-Ford (LOF); Ford Motor Company; Guardian Industries; Monsanto; Flex-O-Glass; American Saint Gobain (subsequently American Float Glass/AFG, and now known as AGC); GE Plastics; DuPont; Rohm & Hass; the Safety Glazing Industry Inc.(SGI); and the *Glass Tempering Association(GTA)*, now known as the Glass Association of North America (GANA), with additional support from ANSI, under the auspices of Miami Testing Labs as the first Administrative Secretariat. The SGCC essentially combined the existing, narrow-focused, though somewhat overlapping certification programs of SGI and GTA by establishing a nationally recognized and accepted entity providing a single comprehensive program for the third-party certification of all safety glazings --- laminated glass, tempered glass, solid and rigid plastics.

The structure of this new organization included “Public Interest” member-directors totally independent of Industry with an equal voice in the functioning of the SGCC. While bringing “Public Interest” members with equal authority into the organization was an unusual concept at the time, Norm Nitschke, then President of Glasstech, a glass fabrication equipment manufacturer, along with Don Vild of LOF, who were the driving forces behind the creation of the SGCC, strongly felt, correctly, that this would firmly establish the SGCC’s credibility as a valid independent neutral entity working truly in the public interest for the certification and promotion of safety glazing products.

However, since ANSI Z.97-1 was a voluntary standard, it had no mandated acceptance and its initial implementation was solely on a state-by-state basis. This necessitated groups of SGCC members, frequently headed by Don Vild of LOF, the first Chairperson of the SGCC Certification Committee, M. "Red" Zeolla of PPG, and/or Bob Nance of Miami Testing Labs, the first SGCC Administrative Manager, to lobby individual state legislatures to adopt the Z-97.1 Standard, though various states frequently adopted their own versions of how the Standard was to be implemented and applied. This, in turn, resulted in considerable confusion as to whether a piece of glazing that would be deemed in conformance in one state and/or jurisdiction would actually be in conformance in another state.

By the early 70's, there was a growing realization that there was a need for a mandated uniform national standard for safety glazing, since by the end of 1973 only 25 states had adopted some form of safety glazing codes, with the remaining 25 states still having no mandates for safety glazing whatsoever. This resulted in the formation of the "*Consumer Glazing Safety Committee*", an ad-hoc group composed of 28 Industry, Trade Union, and Public Interest entities, to lobby the U.S. Congress to mandate a Federal national safety glazing standard. This activity eventually resulted in the issuance in 1977 of Section 16CFR1201 to U.S. CONSUMER PRODUCT SAFETY COMMISSION (CPSC) ACT of 1972, specifying a national safety glazing standard and test method adapted from, and generally very similar to, ANSI Z.97-1. Since the CPSC Act is a Federal Statute, the use of safety glazing in many glazing applications finally became nationally

mandated by law, though the statute did not require compulsory third-party certification. With the issuance of 16CFR1201, the SGCC added CPSC Certification to its program.

As glass technology continued to expand and new glazing products entered the marketplace, the ANSI Z.97-1 Standard underwent a series of updates in the 1970's under the chairmanship of Phil Dykstra and Hans Grigo of the NATIONAL SAFETY COUNCIL (NSC) and in the mid 1980's into the mid 1990's under the chairmanship of Mario Cellarosi of the U.S. Govt's NATIONAL BUREAU of STANDARDS, with periodic updates continuing to this day.

Under the SGCC's Certification Program, which validates compliance to AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) Specification Z97.1 and/or the U.S. CONSUMER PRODUCT SAFETY COMMISSION (CPSC) Specification 16CFR1201, participating manufacturers and fabricators have their glazing products tested semi-annually by various approved independent testing entities under the auspices of the SGCC, which then reviews and certifies the results. The facilities of all manufacturers participating in the program regularly undergo visits by an SGCC inspector on both a scheduled and an unannounced basis to ensure that proper manufacturing techniques, and all SGCC protocols, are being correctly followed.

These certified products are then permanently labeled with a unique identifying number so that it is clear to any and all that these products are true, easily verifiable safety glazings as they are listed in the SGCC's CERTIFIED PRODUCTS DIRECTORY (CPD) which is updated regularly and published every six months. This directory also includes SGCC certified products from manufacturers and fabricators from many other countries that provide glazing products to the U.S. and highly value the SGCC certification as verification of their products' quality as recognized safety glazings.

During the early years of the SGCC's existence, there were also approved testing facilities also located in the U.K. and France. This was predicated on the intent to create a global program of cross-certification wherein a testing facility in one country would be able to test a product for the standards of a number of different countries which would then be certified by the SGCC for compliance to those countries' codes and specifications, thus facilitating the international marketing of certified safety glazing products.

Unfortunately, vested national interests of other countries did not permit the reciprocity of cross-certification, and the non-U.S. testing entities eventually withdrew from program participation as approved testing facilities. In more recent years, the SGCC has taken the position that if a glazing product is to be certified for compliance to U.S. codes and specifications, it must be tested by an approved testing facility physically located within the U.S.

U.S. testing entities that apply to become an approved SGCC test facility undergo an intensive review to verify that they have the proper expertise and equipment for testing and evaluating safety glazing. Once approved, these testing facilities, which are also listed in the SGCC's semi-annual Certified Products Directory, undergo regular audits and refresher training by the SGCC Administrative Office to ensure that they maintain their testing and evaluating proficiency.

For the nearly 40 years subsequent to its founding, the SGCC has been a leading force in the promotion of safety glazing and advocating for "Third-Party" certification for all applicable glazing products. This philosophy is equally beneficial to both Industry and the Public alike:

- First, it informs the general public that safety glazing products are available for use in the marketplace.
- Second, it helps to ensure that credible manufacturers of safety glazing materials compete on a level playing field with safety glazing products that are equally compliant with the established codes and specifications.
- And third, it serves to protect manufacturers in the event of litigation as they can legally demonstrate due-diligence that their products were produced to the current state-of-the-art and certified for code compliance thru a fully recognized independent agency.

The SGCC's success has been the result of the collaboration of the Glass Industry and Public Interest working together to achieve a viable consensus for the benefit of all.

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