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## IGCC – IGMA Certification Program Requirements Summary

### Testing to ASTM E 2190 (as of 2/25/09)

<b>IGCC/IGMA Certification</b>													
<b>Standard Sample Fabrication Requirements</b>	<ul style="list-style-type: none"> <li>• 12 units minimum, 14 x 20 – inches</li> <li>• 4mm (5/32-in.) glass with 12mm (1/2-in.) airspace or 5mm (3/16-in.) glass with 6mm (1/4-in.) airspace</li> <li>• Glass or airspace thickness(es), or both, may increase from these 2 standard size constructions but this may result in a more rigorous test</li> <li>• Glass thickness tolerance shall be per ASTM C1036; airspace tolerance shall be ± 0.8mm (1/32-in.)</li> <li>• When testing for gas content, all fabricated units must be fabricated with gas</li> <li>• When tested, a minimum of 14 triple pane units shall be fabricated using 4mm (5/32-in.) glass and 6mm (1/4-in.) airspace</li> </ul>												
<b>Frequency of testing</b>	After initial certification (Prototype) testing, ASTM E2190 testing shall occur annually for the first 2 years of certification. If no failures occur, then testing may occur once every 2 years, at the discretion of the participant.												
<b>Quality Assurance Requirements</b>	<p>Participating company QA systems shall comply with IGMA TM-4000 which establishes requirements for the following:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Quality System Manual</td> <td style="width: 25%;">Calibration</td> <td style="width: 25%;">Internal Quality Audits</td> </tr> <tr> <td>Designated Contact for QA</td> <td>Non-Conforming Products and Corrective Action</td> <td>Documented Training</td> </tr> <tr> <td>Process Control Procedures</td> <td>Storage and Handling</td> <td>Statistical Techniques</td> </tr> <tr> <td>Inspection and Testing for: connector/spacer, primary seal, secondary seal, desiccant, glass, gas filling, finished product</td> <td>Field Service</td> <td></td> </tr> </table>	Quality System Manual	Calibration	Internal Quality Audits	Designated Contact for QA	Non-Conforming Products and Corrective Action	Documented Training	Process Control Procedures	Storage and Handling	Statistical Techniques	Inspection and Testing for: connector/spacer, primary seal, secondary seal, desiccant, glass, gas filling, finished product	Field Service	
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<b>Finished Product Labeling Requirements</b>	<ul style="list-style-type: none"> <li>• Company Identification</li> <li>• Plant Identification (only if multiple locations)</li> <li>• IGCC®/IGMA® certification mark</li> <li>• Date code (Year of manufacture ± 3 months)</li> </ul> <p>(These are minimum label requirements, additional information such as standards reference may be added)</p> <div style="text-align: right; padding-right: 20px;"> <p><b><u>EXAMPLE</u></b></p> <p>ABC Glass plant 123 IGCC®/IGMA® 2009</p> </div>												
<b>Coated Glass Test Requirements</b>	(G.19) Test units shall include one lite of coated glass per test sample. Only the highest volume coated product need be tested. Testing of sputter coated non-edge deleted (C3) will cover sputter coated edge deleted (C2), Pyrolytic (C1) and uncoated (clear). Testing of sputter coated edge deleted (C2) will cover Pyrolytic (C1) and uncoated (clear). Testing of Pyrolytic (C1) will cover Pyrolytic and uncoated (clear). Testing uncoated (clear) will only cover uncoated (clear).												

<b>Air Space Material (Grills, Muntins, Other)</b>	(G.8) Minimum of 2 of 12 to include ASM at the time of durability fabrication (muntins in 3 X 3 configuration) Units with ASM are used for FOG testing. For Triple Pane Units...4 of 14 units shall include ASM THESE UNITS ARE NOT SUBJECT TO GAS CONTENT CERTIFICATION PROGRAM REQUIREMENTS
<b>Multiple Air Space Units (Triple Pane)</b>	(G. 15) Multiple Air Spaces - Multiple air space units may be certified with the same certification number as single air space units, provided that the construction of each space complies with the guidelines for single space units; pressure communication of spaces is permitted, but not required. For all new certified products and currently certified products after 1/1/09 testing of multiple air space units shall be performed initially and in lieu of single air space unit testing at least once each four (4) years.
<b>Aperture Plug (gas filling provisions)</b>	(G.27) Construction of annual test units shall include any provisions for gas filling of units for durability testing. At the option of the mfr, units may or may not include gas if only testing for durability. If also gas content testing, then all units must contain gas.
<b>Capillary Tubes</b>	(G.0) Initial test only
<b>Breather Tubes</b>	(G.1) Not required to test
<b>Number of test units that can be fabricated</b>	(G.6) No more than 4 additional test units (excluding production units for gas content test) shall be labeled by the auditor for testing (12 units required for double pane and 14 units required for triple pane). When gas content testing (GCIA), ship the additional auditor "labeled" units to the testing laboratory.
<b>Gas Content, Initial and After Weathering (GCIA)</b>	
<b>Requirement</b>	Voluntary if gas content units will not use "IGMA/IGCC" marked spacer. Mandatory if "IGMA/IGCC" marked spacer will be used for gas content units
<b>Listing</b>	Compliance with Gas Content requirements will result in listing in the Certified Products Directory (CPD) as "GCIA" (Gas Content Initial and After Weathering)
<b>Additional units for gas testing</b>	In addition to standard durability test units, 4 production size units between 3 and 20 square feet. All units shall include gas. Production units must be targeted for 90% fill or greater to be eligible for selection.  (When tested, triples shall have both cavities filled and tested)
<b>% Minimum gas content Passing</b>	90% or greater average initial gas content (14 units), 80% or greater average gas content (6 units) after weathering*  (Testing with Argon only **)
<b>Gas Fill Test method</b>	Testing during normal durability test with Spark Emission Spectrograph (SES)  (Test 10 test size units + 4 production size units for initial gas content, test the 6 weathered test units for after weathering gas content)
<b>Glass for Gas Fill Testing</b>	If Low-E used then must contain Low-E  (When tested, triples shall have coated glass as the center lite only)

\* It is recognized that actual production units (other than production units selected for this testing) may not necessarily be 90% or greater initial gas content but shall meet the manufacturer's stated initial content values.

\*\* Gas content certification and testing of argon will cover other gases providing the same gas filling process is used. Special arrangements need to be made if regulatory compliance is required for gas content other than argon (see certification guideline A.GC.1).