



GLOBAL HYBRID ROOFING SOLUTIONS

***Global Hybrid Roofing Solutions (Delaware) LLC***

***Product Testing Summary***

***Innovative Elegance that Endures***



## **Global Hybrid Roofing Solutions (Delaware) LLC Product Test Summary**

### **Introduction**

The following information is a summary of the extensive Product Testing that has been carried by Global Hybrid Roofing Solutions (Delaware) LLC, in relation to their Synthetic Composite Roofing Products, manufactured from their unique patented formula RENOVAR™, which converts post consumer olefin plastic waste into the most advanced, tested and certified environmentally friendly roof product globally. The information contained in this document is a summary; all detailed test reports are retained at the company's Attorneys in Washington D.C. USA, which is available on request.

Global Hybrid Roofing Solutions (Delaware) LLC, submitted their formal application to the BBA in the UK for full certification and approval in May 2009, subsequently all required testing has been concluded and approved. Global Hybrid Roofing Solutions (Delaware) LLC received their formal executed BBA Certificates on 29 January 2010

Barclay-Phelps, the companies European Certification Attorney's in Gibraltar, forwarded the company's "Certificate & Declaration of Conformity" for CE Approval. Barclay-Phelps had received direct confirmation from the BBA that all testing had been concluded and approved and that they were in the process of issuing the formal BBA Certificates.

### **Products**

#### **APPENDIX A            International Testing Summary**

IOWSPA	GHRs Old World Spanish A4
IOWSPC	GHRs Old World Spanish
ISHA	GHRs Shake Class A
ISHC	GHRs Shake Class C
IOWSLA	GHRs Old World Slate Class A
IOWSLC	GHRs Old World Slate Class C
ISLA	GHRs Slate Class A
ISLC	GHRs Slate Class C

#### **APPENDIX B            United Kingdom & European Testing Summary**

UKOWSP	GHRs Old World Spanish
UKOWSL	GHRs Old World Slate
UKSH	GHRs Shake
UKSL	GHRs Slate



# **APPENDIX A**

## **International Testing**

### **Summary**



## GHR Old World Spanish A4 Product Testing

I.D.#	Testing Performed <i>In accordance with</i>	AC07 Section	Test Procedure	Description	Results
IOWSPA01	<b>Miami Dade Florida Code</b>			NOA # 08-0709.03	Approved Pass- Max Design Pressure 114.25 PSF
IOWSPA02	<b>Weatherometer</b> <i>ASTM G 26</i>	3.2.1	4.1	4,500 hours of light exposure, moisture and varying temperatures; no surface changes such as cracking, crazing, erosion or chalking can occur	Pass
10WSPA03	<b>Wind Resistance</b> <i>ASTM D 3161; Dade County Protocol</i>	3.2.2	4.2	Full-scale dynamic wind uplift testing with 110 mph winds causing no fluttering or breakage of tiles—110 is the maximum for this test	Pass (110 mph) Tested over 30 lb felt and ½" plywood
IOWSPA04	<b>Wind Resistance</b> <i>TAS 100-95 Wind and Wind Driven Rain</i>	3.2.2	4.2	Wind uplift testing at the maximum 110 mph winds while water is being applied. There can be no wind damage or water penetration.	Pass (110 mph) Tested over 30 lb felt and ½" plywood
IOWSPA05	<b>Wind Resistance</b> <i>TAS 125 (UL-580)</i>			Miami Dade required pressure test to measure the designed failure rating of a roof assembly.	Pass Class 30, 60, & 90 Tested over 30 lb felt and ½" plywood
IOWSPA06	<b>Wind Resistance</b> <i>TAS 125 (UL-580)</i>			Miami Dade required pressure test to measure the designed failure rating of a roof assembly. Max design pressure.	Max Pressure 183.5 PSF Tested over 30 lb felt and ½" plywood
IOWSPA07	<b>Penetration Test</b>	3.2.4	4.5	The material is exposed to a 200-lb. load to determine the surface penetration where no tearing or cracking of the protective coating or excessive permanent deformation under the applied load may occur	Pass
IOWSPA08	<b>Fire Resistance</b> <i>UBC 15-2; ASTM E 108; UL 790</i>	3.2.5.1	4.6	Fire resistance tested with burning brand, intermittent flame, & spread of flame	Class A Tested over ½" plywood and 30 lb felt and Versa Shield
IOWSPA09	<b>Self Ignition &amp; Rate of Burn</b> <i>ASTM D1929; ASTM D 635</i>	3.2.5.2	4.6	Determines the flash ignition temperature and spontaneous ignition temperature; Compares the relative rate of burning and/or the extent and time of burning	Pass
IOWSPA10	<b>Impact Resistance</b> <i>UL 2218</i>			Steel ball dropped from a distance without cracking or surface changes	Class 4
IOWSPA11	<b>Solar Reflectance Emittance</b> <i>ASTM C 1549-04; ASTM C 1371-04a; ASTM E 1980-01</i>			Determines the solar reflectance, emittance and SRI index.	Emittance .89 SRI 61
IOWSPA12	<b>BS476 Part 3</b>			British Standard for fire	Pass AB Rating over ½" plywood
IOWSPA13	<b>DD CEN/TS 15087:2005</b>			British Uplift Standard	Pass with 2 nails
IOWSPA14	<b>EN 1187:2002 test 4</b>			European Fire Standard	Pass B Roof (t4)



## GHR Old World Spanish Product Testing

I.D.#	Testing Performed <i>In accordance with</i>	AC07 Section	Test Procedure	Description	Results
IOWSPC01	<b>Miami Dade Florida Building Code</b>			NOA #09-0218.12	Approved Max Design Pressure 106.75 PSF
IOWSPC02	<b>Weatherometer</b> ASTM G 26	3.2.1	4.1	4,500 hours of light exposure, moisture and varying temperatures; no surface changes such as cracking, crazing, erosion or chalking can occur	Pass
IOWSPC03	<b>Wind Resistance</b> <i>ASTM D 3161; Dade County Protocol</i>	3.2.2	4.2	Full-scale dynamic wind uplift testing with 110 mph winds causing no fluttering or breakage of tiles—110 is the maximum for this test	Pass (110 mph) Tested over 30 lb felt and ½” plywood
IOWSPC04	<b>Wind Resistance</b> <i>TAS 100-95 Wind and Wind Driven Rain</i>	3.2.2	4.2	Wind uplift testing at the maximum 110 mph winds while water is being applied. There can be no wind damage or water penetration.	Pass (110 mph) Tested over 30 lb felt and ½” plywood
IOWSPC05	<b>Wind Resistance</b> <i>TAS 125 (UL-580)</i>			Miami Dade required pressure test to measure the designed failure rating of a roof assembly.	Pass Class 30, 60, & 90 Tested over 30 lb felt and ½” plywood
IOWSPC06	<b>Wind Resistance</b> <i>TAS 125 (UL-580)</i>			Miami Dade required pressure test to measure the designed failure rating of a roof assembly Max design pressure.	Max Pressure 198.5 PSF Tested over 30 lb felt and ½” plywood
IOWSPC07	<b>Uplift Bend Test</b>	3.2.3	4.4	Determines load required to lift the tile 1/8” where the tensile load must be twice the tile weight; when subjected to load 3 times tile weight, no cracking, breakage or falling can occur.	Pass
IOWSPC08	<b>Penetration Test</b>	3.2.4	4.5	The material is exposed to a 200-lb. load to determine the surface penetration where no tearing or cracking of the protective coating or excessive permanent deformation under the applied load may occur	Pass
IOWSPC09	<b>Fire Resistance</b> <i>UBC 15-2; ASTM E 108; UL 790</i>	3.2.5.1	4.6	Fire resistance tested with burning brand, intermittent flame, & spread of flame	Class C Tested over ½” plywood and 30 lb felt
IOWSPC10	<b>Fire Resistance</b> <i>UBC 15-2; ASTM E 108; UL 790</i>	3.2.5.1	4.6	Fire resistance tested with burning brand	Class B Tested over ½” plywood and 30 lb felt and a layer of Versa Shield
IOWSPC11	<b>Self Ignition &amp; Rate of Burn</b> <i>ASTM D1929; ASTM D 635</i>	3.2.5.2	4.6	Determines the flash ignition temperature and spontaneous ignition temperature; Compares the relative rate of burning and/or the extent and time of burning	Pass
IOWSPC12	<b>Temperature-cycling Test</b>	3.2.6	4.9	Freezing and thawing & UV exposure with no crazing, cracking or surface changes	Pass
IOWSPC13	<b>Flexural Strength Tests</b> <i>ASTM D 790</i>	3.2.8	3.3.10	Conducted for 72 hours at a temperature of 72 ± 5° F and a 50 ± 5° percent relative humidity	Pass
IOWSPC14	<b>Impact Resistance</b> <i>UL 2218</i>			Steel ball dropped from a distance without cracking or surface changes	Class 4



## GHR Shake Class A Product Testing

I.D.#	Testing Performed <i>In accordance with</i>	AC07 Section	Test Procedure	Description	Results
ISHA01	<b>Miami Dade Florida Building Code</b>			NOA # 09-0209.01	Approved Max Design Pressure 131.75 PSF
ISHA02	<b>Weatherometer</b> <i>ASTM G 26</i>	3.2.1	4.1	4,500 hours of light exposure, moisture and varying temperatures; no surface changes such as cracking, crazing, erosion or chalking can occur	Pass
ISHA03	<b>Wind Resistance</b> <i>ASTM D 3161; Dade County Protocol</i>	3.2.2	4.2	Full-scale dynamic wind uplift testing with 110 mph winds causing no fluttering or breakage of tiles; 110 is the maximum for this test	Pass (110 mph) Tested over 30 lb felt and ½" plywood
ISHA04	<b>Wind Resistance</b> <i>TAS 100-95 Wind and Wind Driven Rain</i>	3.2.2	4.2	Wind uplift testing at the maximum 110 mph winds while water is being applied. There can be no wind damage or water penetration.	Pass (110 mph) Tested over 30 lb felt and ½" plywood
ISHA05	<b>Wind Resistance</b> <i>TAS 125 (UL-580)</i>			Miami Dade required pressure test to measure the designed failure rating of a roof assembly.	Pass Class 30, 60, & 90 Tested over 30 lb felt and ½" plywood
ISHA06	<b>Wind Resistance</b> <i>TAS 125 (UL-580)</i>			Miami Dade required pressure test to measure the designed failure rating of a roof assembly Max design pressure	Max Pressure 288.5 PSF-- Tested over 30 lb felt and ½" plywood
ISHA07	<b>Uplift Bend Test</b>	3.2.3	4.4	Determines load required to lift the tile 1/8" where the tensile load must be twice the tile weight; when subjected to load 3 times tile weight, no cracking, breakage or falling can occur.	Pass
ISHA08	<b>Penetration Test</b>	3.2.4	4.5	The material is exposed to a 200-lb. load to determine the surface penetration where no tearing or cracking of the protective coating or excessive permanent deformation under the applied load may occur	Pass
ISHA09	<b>Fire Resistance</b> <i>UBC 15-2; ASTM E 108; UL 790</i>	3.2.5.1	4.6	Fire resistance tested with burning brand, intermittent flame, & spread of flame	Class A Tested over 30 lb felt and ½" plywood
ISHA10	<b>Self Ignition &amp; Rate of Burn</b> <i>ASTM D1929; ASTM D 635</i>	3.2.5.2	4.6	Determines the flash ignition temperature and spontaneous ignition temperature; Compares the relative rate of burning and/or the extent and time of burning	Pass
ISHA11	<b>Temperature-cycling Test</b>	3.2.6	4.9	Freezing and thawing & UV exposure with no crazing, cracking or surface changes	Pass
ISHA12	<b>Flexural Strength Tests</b> <i>ASTM D 790</i>	3.2.8	3.3.10	Conducted for 72 hours at a temperature of 72 ± 5° F and a 50 ± 5° percent relative humidity	Pass
ISHA13	<b>Impact Resistance</b> <i>UL 2218</i>			Steel ball dropped from a distance without cracking or surface changes	Class 4
ISHA14	<b>Penetration &amp; Water Absorption</b> <i>ASTM D 2853; ASTM D 570</i>			Determine the resistance characteristics to exposure to water and indentations; no dripping from underside or significant water absorption may occur	Pass Hardness 6.2 Absorb 0.09%
ISHA15	<b>BS476 Part 3</b>			British Standard for fire	Pass AA rating over ½" plywood
ISHA16	<b>EN 1187:2002 test 4</b>			European Fire Standard	Pass B Roof (t4)



## GHR Shake Class C Product Testing

I.D.#	Testing Performed <i>In accordance with</i>	AC07 Section	Test Procedure	Description	Results
ISHC01	<b>Miami Dade Florida Building Code</b>			NOA # 09-0226.03	Approved Max Design Pressure 129.25 PSF
ISHC02	<b>Weatherometer</b> <i>ASTM G 26</i>	3.2.1	4.1	4,500 hours of light exposure, moisture and varying temperatures; no surface changes such as cracking, crazing, erosion or chalking can occur	Pass
ISHC03	<b>Wind Resistance</b> <i>ASTM D 3161; Dade County Protocol</i>	3.2.2	4.2	Full-scale dynamic wind uplift testing with 110 mph winds causing no fluttering or breakage of tiles; 110 is the maximum for this test	Pass (110 mph) Tested over 30 lb felt and ½" plywood
ISHC04	<b>Wind Resistance</b> <i>TAS 100-95 Wind and Wind Driven Rain</i>	3.2.2	4.2	Wind uplift testing at the maximum 110 mph winds while water is being applied. There can be no wind damage or water penetration.	Pass (110 mph) Tested over 30 lb felt and ½" plywood
ISHC05	<b>Wind Resistance</b> <i>TAS 125 (UL-580)</i>			Miami Dade required pressure test to measure the designed failure rating of a roof assembly.	Pass Class 30, 60, & 90 Tested over 30 lb felt and ½" plywood
ISHC06	<b>Wind Resistance</b> <i>TAS 125 (UL-580)</i>			Miami Dade required pressure test to measure the designed failure rating of a roof assembly Max design pressure	Max Pressure 288.5 PSF Tested over 30 lb felt and ½" plywood
ISHC07	<b>Uplift Bend Test</b>	3.2.3	4.4	Determines load required to lift the tile 1/8" where the tensile load must be twice the tile weight; when subjected to load 3 times tile weight, no cracking, breakage or falling can occur.	Pass
ISHC08	<b>Penetration Test</b>	3.2.4	4.5	The material is exposed to a 200-lb. load to determine the surface penetration where no tearing or cracking of the protective coating or excessive permanent deformation under the applied load may occur	Pass
ISHC09	<b>Fire Resistance</b> <i>UBC 15-2; ASTM E 108; UL 790</i>	3.2.5.1	4.6	Fire resistance tested with burning brand, intermittent flame, & spread of flame	Class C Tested over 30 lb felt and ½" plywood
ISHC10	<b>Self Ignition &amp; Rate of Burn</b> <i>ASTM D1929; ASTM D 635</i>	3.2.5.2	4.6	Determines the flash ignition temperature and spontaneous ignition temperature; Compares the relative rate of burning and/or the extent and time of burning	Pass
ISHC11	<b>Temperature-cycling Test</b>	3.2.6	4.9	Freezing and thawing & UV exposure with no crazing, cracking or surface changes	Pass
ISHC12	<b>Flexural Strength Tests</b> <i>ASTM D 790</i>	3.2.8	3.3.10	Conducted for 72 hours at a temperature of 72 ± 5° F and a 50 ± 5° percent relative humidity	Pass
ISHC13	<b>Impact Resistance</b> <i>UL 2218</i>			Steel ball dropped from a distance without cracking or surface changes	Class 4
ISHC14	<b>Penetration &amp; Water Absorption</b> <i>ASTM D 2853; ASTM D 570</i>			Determine the resistance characteristics to exposure to water and indentations; no dripping from underside or significant water absorption may occur	Pass Hardness 6.2 Absorb 0.09%
ISHC15	<b>Chemical Leach Test</b> <i>FLDOH #E84207</i>			Determine leaching amounts of any harmful chemicals	Pass/no registered amounts to be harmful



## GHR Old World Slate Class A Product Testing

I.D.#	Testing Performed <i>In accordance with</i>	AC07 Section	Test Procedure	Description	Results
IOWSLA01	<b>Miami Dade Florida Building Code</b>			NOA # 09-0218.13	Approved Max design pressure of 161.75 PSF
IOWSLA02	<b>eatherometer ASTM G 26</b>	3.2.1	4.1	4,500 hours of light exposure, moisture and varying temperatures; no surface changes such as cracking, crazing, erosion or chalking can occur	Pass
IOWSLA03	<b>Wind Resistance ASTM D 3161; Dade County Protocol</b>	3.2.2	4.2	Full-scale dynamic wind uplift testing with 110 mph winds causing no fluttering or breakage of tiles. 110 is the maximum for this test	Pass (110 mph) Tested over 30 lb felt and ½” plywood
IOWSLA04	<b>Wind Resistance TAS 100-95 Wind and Wind Driven Rain</b>	3.2.2	4.2	Wind uplift testing at the maximum 110 mph winds while water is being applied. There can be no wind damage or water penetration.	Pass (110 mph) Tested over 30 lb felt and ½” plywood
IOWSLA05	<b>Wind Resistance TAS 125 (UL-580)</b>			Miami Dade required pressure test to measure the designed failure rating of a roof assembly.	Pass Class 30, 60, & 90 Tested over 30 lb felt and ½” plywood
IOWSLA06	<b>Wind Resistance TAS 125 (UL-580)</b>			Miami Dade required pressure test to measure the designed failure rating of a roof assembly Max design pressure	Max Pressure 228.5 PSF Tested over 30 lb felt and ½” plywood
IOWSLA07	<b>Uplift Bend Test</b>	3.2.3	4.4	Determines load required to lift the tile 1/8” where the tensile load must be twice the tile weight; when subjected to load 3 times tile weight, no cracking, breakage or falling can occur.	Pass
IOWSLA08	<b>Penetration Test</b>	3.2.4	4.5	The material is exposed to a 200-lb. load to determine the surface penetration where no tearing or cracking of the protective coating or excessive permanent deformation under the applied load may occur	Pass
IOWSLA09	<b>Fire Resistance UBC 15-2; ASTM E 108; UL 790</b>	3.2.5.1	4.6	Fire resistance tested with burning brand, intermittent flame, & spread of flame	Class A Tested over 30 lb felt and ½” plywood
IOWSLA10	<b>Self Ignition &amp; Rate of Burn ASTM D1929; ASTM D 635</b>	3.2.5.2	4.6	Determines the flash ignition temperature and spontaneous ignition temperature; Compares the relative rate of burning and/or the extent and time of burning	Pass
IOWSLA11	<b>Temperature-cycling Test</b>	3.2.6	4.9	Freezing and thawing & UV exposure with no crazing, cracking or surface changes	Pass
IOWSLA12	<b>Flexural Strength Tests ASTM D 790</b>	3.2.8	3.3.10	Conducted for 72 hours at a temperature of 72 ± 5° F and a 50 ± 5° percent relative humidity	Pass
IOWSLA13	<b>Impact Resistance UL 2218</b>			Steel ball dropped from a distance without cracking or surface changes	Class 4
IOWSLA14	<b>Penetration &amp; Water Absorption ASTM D 2853; ASTM D 570</b>			Determine the resistance characteristics to exposure to water and indentations; no dripping from underside or significant water absorption may occur	Pass Hardness 6.2 Absorb 0.09%
IOWSLA15	<b>BS476 Part 3</b>			British Standard for fire	Pass AA Rating over ½” plywood
IOWSLA16	<b>EN 1187:2002 test 4</b>			European Fire Standard	Pass B Roof (t4)



## Old World Slate Class C Product Testing

I.D.#	Testing Performed <i>In accordance with</i>	AC07 Section	Test Procedure	Description	Results
IOWSLC01	<b>Miami Dade Florida Building Code</b>			NOA # 09-0226.04	Approved Max Design Pressure 159.25 PSF
IOWSLC02	<b>Weatherometer</b> <i>ASTM G 26</i>	3.2.1	4.1	4,500 hours of light exposure, moisture and varying temperatures; no surface changes such as cracking, crazing, erosion or chalking can occur	Pass
IOWSLC03	<b>Wind Resistance</b> <i>ASTM D 3161; Dade County Protocol</i>	3.2.2	4.2	Full-scale dynamic wind uplift testing with 110 mph winds causing no fluttering or breakage of tiles. 110 is the maximum for this test	Pass (110 mph) Tested over 30 lb felt and ½" plywood
IOWSLC04	<b>Wind Resistance</b> <i>TAS 100-95 Wind and Wind Driven Rain</i>	3.2.2	4.2	Wind uplift testing at the maximum 110 mph winds while water is being applied. There can be no wind damage or water penetration.	Pass (110 mph) Tested over 30 lb felt and ½" plywood
IOWSLC05	<b>Wind Resistance</b> <i>TAS 125 (UL-580)</i>			Miami Dade required pressure test to measure the designed failure rating of a roof assembly.	Pass Class 30, 60, & 90 Tested over 30 lb felt and ½" plywood
IOWSLC06	<b>Wind Resistance</b> <i>TAS 125 (UL-580)</i>			Miami Dade required pressure test to measure the designed failure rating of a roof assembly Max design pressure	Max Pressure 198.5 PSF Tested over 30 lb. felt and ½" plywood
IOWSLC07	<b>Uplift Bend Test</b>	3.2.3	4.4	Determines load required to lift the tile 1/8" where the tensile load must be twice the tile weight; when subjected to load 3 times tile weight, no cracking, breakage or falling can occur.	Pass
IOWSLC08	<b>Penetration Test</b>	3.2.4	4.5	The material is exposed to a 200-lb. load to determine the surface penetration where no tearing or cracking of the protective coating or excessive permanent deformation under the applied load may occur	Pass
IOWSLC09	<b>Fire Resistance</b> <i>UBC 15-2; ASTM E 108; UL 790</i>	3.2.5.1	4.6	Fire resistance tested with burning brand, intermittent flame, & spread of flame	Class C Tested over 30 lb. felt and ½" plywood
IOWSLC10	<b>Self Ignition &amp; Rate of Burn</b> <i>ASTM D1929; ASTM D 635</i>	3.2.5.2	4.6	Determines the flash ignition temperature and spontaneous ignition temperature; Compares the relative rate of burning and/or the extent and time of burning	Pass
IOWSLC11	<b>Temperature-cycling Test</b>	3.2.6	4.9	Freezing and thawing & UV exposure with no crazing, cracking or surface changes	Pass
IOWSLC12	<b>Flexural Strength Tests</b> <i>ASTM D 790</i>	3.2.8	3.3.10	Conducted for 72 hours at a temperature of 72 ± 5° F and a 50 ± 5° percent relative humidity	Pass
IOWSLC13	<b>Impact Resistance</b> <i>UL 2218</i>			Steel ball dropped from a distance without cracking or surface changes	Class 4
IOWSLC14	<b>Penetration &amp; Water Absorption</b> <i>ASTM D 2853; ASTM D 570</i>			Determine the resistance characteristics to exposure to water and indentations; no dripping from underside or significant water absorption may occur	Pass Hardness 6.2 Absorb 0.09%
IOWSLC15	<b>Chemical Leach Test</b> <i>FLDOH #E84207</i>			Determine Leaching amounts of any harmful chemicals.	Pass/no registered amounts to be harmful



## GHR Slate Class A Product Testing

I.D.#	Testing Performed <i>In accordance with</i>	AC07 Section	Test Procedure	Description	Results
ISLA01	<b>Weatherometer</b> <i>ASTM G 26</i>	3.2.1	4.1	4,500 hours of light exposure, moisture and varying temperatures; no surface changes such as cracking, crazing, erosion or chalking can occur	Pass
ISLA02	<b>Wind-driven Rain Test</b> <i>Dade County Protocol PA 100-95</i>	3.2.2	4.2	Full-scale dynamic wind uplift testing with 110 mph winds causing no fluttering or breakage of tiles and tested to and beyond 150 mph Dade County requirements with standard fastener installation	Pass (90 mph)
ISLA03	<b>Uplift Bend Test</b>	3.2.3	4.4	Determines load required to lift the tile 1/8" where the tensile load must be twice the tile weight; when subjected to load 3 times tile weight, no cracking, breakage or falling can occur.	Pass
ISLA04	<b>Penetration Test</b>	3.2.4	4.5	The material is exposed to a 200-lb. load to determine the surface penetration where no tearing or cracking of the protective coating or excessive permanent deformation under the applied load may occur	Pass
ISLA05	<b>Fire Resistance</b> <i>UBC 15-2; ASTM E 108; UL 790</i>	3.2.5.1	4.6	Fire resistance tested with burning brand, intermittent flame, & spread of flame	Class A Tested over 1/2" plywood and 30 lb. felt
ISLA06	<b>Self Ignition &amp; Rate of Burn</b> <i>ASTM D1929; ASTM D 635</i>	3.2.5.2	4.6	Determines the flash ignition temperature and spontaneous ignition temperature; Compares the relative rate of burning and/or the extent and time of burning	Pass
ISLA07	<b>Temperature-cycling Test</b>	3.2.6	4.9	Freezing and thawing & UV exposure with no crazing, cracking or surface changes	Pass
ISLA08	<b>Flexural Strength Tests</b> <i>ASTM D 790</i>	3.2.8	3.3.10	Conducted for 72 hours at a temperature of 72 ± 5° F and a 50 ± 5° percent relative humidity	Pass
ISLA09	<b>Impact Resistance</b> <i>UL 2218</i>			Steel ball dropped from a distance without cracking or surface changes	Class 4
ISLA10	<b>Penetration &amp; Water Absorption</b> <i>ASTM D 2853; ASTM D 570</i>			Determine the resistance characteristics to exposure to water and indentations; no dripping from underside or significant water absorption may occur	Pass Hardness 6.2 Absorb 0.09%
ISLA11	<b>BS476 Part 3</b>			British Standard for fire	Pass AA rating over 1/2" plywood
ISLA12	<b>EN 1187:2002 test 4</b>			European Fire Standard	Pass B Roof (t4)



## GHR Slate Class C Product Testing

I.D.#	Testing Performed <i>In accordance with</i>	AC07 Section	Test Procedure	Description	Results
ISLC01	<b>Weatherometer</b> <i>ASTM G 26</i>	3.2.1	4.1	4,500 hours of light exposure, moisture and varying temperatures; no surface changes such as cracking, crazing, erosion or chalking can occur	Pass
ISLC02	<b>Fire Resistance</b> <i>UBC 15-2; ASTM E 108; UL 790</i>	3.2.5.1	4.6	Fire resistance tested with burning brand, intermittent flame, & spread of flame	Class C Tested over ½" plywood and 30 lb. felt
ISLC03	<b>Impact Resistance</b> <i>UL 2218</i>			Steel ball dropped from a distance without cracking or surface changes	Class 4
ISLC04	<b>Self Ignition &amp; Rate of Burn</b> <i>ASTM D 1929; ASTM D 635</i>	3.2.5.2	4.6	Determines the flash ignition temperature and spontaneous ignition temperature; Compares the relative rate of burning and/or the extent and time of burning	Pass
ISLC05	<b>Chemical Leach test</b> <b>FLDOH #E84207</b>			Determine leaching amounts of any harmful chemicals	Pass/ no registered amounts to be harmful
ISLC06	<b>Temperature-cycling Test</b>	3.2.6	4.9	Freezing and thawing & UV exposure with no crazing, cracking or surface changes	Pass
ISLC07	<b>Penetration Test</b>	3.2.4	4.5	The material is exposed to a 200-lb. load to determine the surface penetration where no tearing or cracking of the protective coating or excessive permanent deformation under the applied load may occur	Pass
ISLC08	<b>Wind Driven Rain</b> <i>Dade County Protocol PA 100-95</i>	3.2.2	4.2	Full-scale dynamic wind uplift testing with 110 mph winds causing no fluttering or breakage of tiles and tested to and beyond 150 mph Dade County requirements with standard fastener installation	Pass (90 mph)
ISLC09	<b>Flexural Strength Tests</b> <i>ASTM D 790</i>	3.2.8	3.3.10	Conducted for 72 hours at a temperature of 72 ± 5° F and a 50 ± 5° percent relative humidity	Pass
ISLC10	<b>Penetration &amp; Water Absorption</b> <i>ASTM D 2853; ASTM D 570</i>			Determine the resistance characteristics to exposure to water and indentations; no dripping from underside or significant water absorption may occur	Pass Hardness 6.2 Absorb 0.09%



**APPENDIX B**

**United Kingdom / European**

**Summary**



## GHR Old World Spanish UK/CE Product Testing

I.D. #	Testing Performed <i>In accordance with</i>	Tested / Reviewed By	Description	Results
UKOWSP01	BS CEN/TS 15087:2005	BRE	Wind Uplift Test	Approved
UKOWSP02	ASTM G 26	BBA	Accelerated Weathering & Colour Stability	Pass
UKOWSP03	ASTM D570	BBA	Water Absorption	Pass
UKOWSP04	BS476 Part 3: 2004	BRE	Resistance to Fire	Pass AB
UKOWSP05	IBOC	BBA	Temperature Cycle	Pass
UKOWSP06	ASTM D2853	BBA	Structure Strength	Pass
UKOWSP07	UL 2218	BBA	Impact Resistance	Pass
UKOWSP08	BS EN 492	BBA	Bending Strength, Water Immersion, Dry Heat, Wet Heat, Freeze Thaw Cycle, Density	Pass
UKOWSP09	BS EN 3451-1:1997	BRE	Ignition Test	Pass
UKOWSP10	BS ENV 13501-5:2005	BRE	Resistance to Fire	Pass
UKOWSP11	ENV 1187:2002	BRE	Resistance to Fire	Pass



## GHR Shake UK/CE Product Testing

<b>I.D. #</b>	<b>Testing Performed <i>In accordance with</i></b>	<b>Tested / Reviewed By</b>	<b>Description</b>	<b>Results</b>
<b>UKSH01</b>	<i>ASTM G 26</i>	BBA	Accelerated Weathering & Colour Stability	Pass
<b>UKSH02</b>	<i>ASTM D570</i>	BBA	Water Absorption	Pass
<b>UKSH03</b>	<b>BS476 Part 3: 2004</b>	BRE	Resistance to Fire	Pass AA
<b>UKSH04</b>	<i>IBOC</i>	BBA	Temperature Cycle	Pass
<b>UKSH05</b>	<i>ASTM D2853</i>	BBA	Structure Strength	Pass
<b>UKSH06</b>	<b>UL 2218</b>	BBA	Impact Resistance	Pass
<b>UKSH07</b>	<b>BS EN 492</b>	BBA	Bending Strength, Water Immersion, Dry Heat, Wet Heat, Freeze Thaw Cycle, Density	Pass
<b>UKSH08</b>	<b>BS EN 3451-1:1997</b>	BRE	Ignition Test	Pass
<b>UKSH09</b>	<b>BS ENV 13501-5:2005</b>	BRE	Resistance to Fire	Pass
<b>UKSH10</b>	<b>ENV 1187:2002</b>	BRE	Resistance to Fire	Pass



## GHR Old World Slate UK/CE Product Testing

I.D. #	Testing Performed <i>In accordance with</i>	Tested / Reviewed By	Description	Results
UKOWSL01	ASTM G 26	BBA	Accelerated Weathering & Colour Stability	Pass
UKOWSL02	ASTM D570	BBA	Water Absorption	Pass
UKOWSL03	BS476 Part 3: 2004	BRE	Resistance to Fire	Pass AA
UKOWSL04	IBOC	BBA	Temperature Cycle	Pass
UKOWSL05	ASTM D2853	BBA	Structure Strength	Pass
UKOWSL06	UL 2218	BBA	Impact Resistance	Pass
UKOWSL07	BS EN 492	BBA	Bending Strength, Water Immersion, Dry Heat, Wet Heat, Freeze Thaw Cycle, Density	Pass
UKOWSL08	BS EN 3451-1:1997	BRE	Ignition Test	Pass
UKOWSL09	BS ENV 13501-5:2005	BRE	Resistance to Fire	Pass
UKOWSL10	ENV 1187:2002	BRE	Resistance to Fire	Pass



## GHRS Slate UK/CE Product Testing

<b>I.D. #</b>	<b>Testing Performed <i>In accordance with</i></b>	<b>Tested / Reviewed By</b>	<b>Description</b>	<b>Results</b>
UKSL01	ASTM G 26	BBA	Accelerated Weathering & Colour Stability	Pass
UKSL02	ASTM D570	BBA	Water Absorption	Pass
UKSL03	BS476 Part 3: 2004	BRE	Resistance to Fire	Pass AA
UKSL04	IBOC	BBA	Temperature Cycle	Pass
UKSL05	ASTM D2853	BBA	Structure Strength	Pass
UKSL06	UL 2218	BBA	Impact Resistance	Pass
UKSL07	BS EN 492	BBA	Bending Strength, Water Immersion, Dry Heat, Wet Heat, Freeze Thaw Cycle, Density	Pass
UKSL08	BS EN 3451-1:1997	BRE	Ignition Test	Pass
UKSL09	BS ENV 13501-5:2005	BRE	Resistance to Fire	Pass
UKSL10	ENV 1187:2002	BRE	Resistance to Fire	Pass