

Product Evaluation Report

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Product Manufacturer

AH Screens, Inc.
700 Atlantis Road, Suite 101
Melbourne, FL 32904

Product Name, Model and/or Description

AH Fixed Impact Screen

Code: Current Edition of the Florida Building Code including the 8th Edition (2023) Florida Building Code

Compliance Method: Product Approval Rule 61G20-3.005(1)(d) – Product Evaluation Report by a Licensed Professional Engineer

Product Name, Model and/or Designation: Products covered by this evaluation include the following.

- Series AH Fixed Impact Screen

Product Testing, Materials and Certification (as applicable):

- FTL/QAI Company Report LAB No. 10870, dated 10/25/19, Fixed Impact Screen - LMI – HVHZ tested to 6th Edition (2017) Florida Building Code Test Protocols TAS 201-94, TAS 202-94 and TAS 203-94, signed and sealed by Idalmis Ortega, FL PE No. 76905.

Product Installation Instructions:

- PTC PDG Drawing No. AHSL0001, dated 11/20/23, signed and sealed by Robert. J. Amoruso, AH Screens, Inc., Series AH Fixed Impact Screen, Installation Anchorage Details.

Engineering Analysis & Evaluation: The following evaluations, engineering and/or rational analysis/calculations have been performed.

- Anchorage to structural substrate has been verified by calculation (PTC PDG Calc. No. 2646_Calc, Rev. 0) prepared by Robert J. Amoruso, P.E. in accordance with the current edition of the Florida Building Code.

Limitations & Conditions of Use:

- This product has been evaluated for use inside the HVHZ (High Velocity Hurricane Zone).
- This product will not require an impact protective device when used in Wind Borne Debris Regions.
- See Appendix A for screen-to-fenestration evaluation and limitations of use.
- Refer to Product Installation Instructions noted above for:
 - Maximum allowable wind loads at related maximum allowable size(s).
 - Overall dimensions and material/grade of main product components, accessories, etc.
 - Illustrated diagrams of the attachment of the product to substrate structure.
 - Anchor type(s), size(s), substrate(s), embedment, edge distance, and spacing/locations.
- Site wind pressures shall be determined by a licensed professional engineer in accordance with the current edition of the Florida Building Code (and/or ASCE 7 as referenced in the current edition of the Florida Building Code) for components and cladding based on allowable stress design.
- Site conditions not covered in this product evaluation document are subject to additional engineering analysis by a licensed professional engineer or registered architect as required by the authority having jurisdiction.
- Adequacy of the existing structural substrates as a main wind force resisting system capable of withstanding and transferring applied product loads to the foundation is the responsibility of the licensed professional engineer or registered architect acting as the design professional of record for the project of installation.



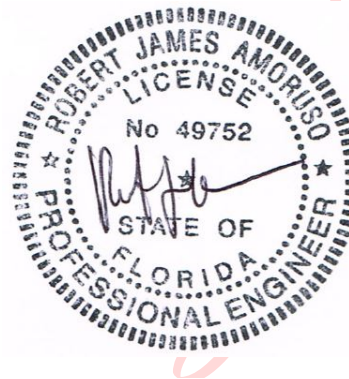
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Certificate of Independence per Product Approval Rule 61G20-3.009

PTC Product Design Group, LLC and Robert J. Amoruso, P.E. does not have, nor will acquire, any financial interest in the company manufacturing or distributing product(s) covered by this Product Evaluation Report.

PTC Product Design Group, LLC and Robert J. Amoruso, P.E. do not have, nor will acquire any financial interest in any other entity involved in the approval process or testing of the product(s) covered by this Product Evaluation Report.



Digitally signed
by Robert J
Amoruso
Date:
2023.12.08
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Evaluated By:

Robert J. Amoruso, P.E.
FL P.E. License Number 49752



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APPENDIX A, SCREEN-TO-FENESTRATION SEPARATION REQUIREMENTS

DEFLECTION LIMITATIONS

- Deflection of Shutters shall not exceed $L/30$ based on the following requirements.
 - 2017 Florida Building Code, Section 1616.3
- Deflection results from FTL/QAI Company Report LAB No. 10870 testing indicate that recorded deflections due to static loading based on TAS 202 testing and dynamic loading based on TAS 203 testing is less than $L/30$ as evaluated below.
 - $L/30$
 - Short Side = $48/30 = 1.6''$ Maximum Static Deflection Allowed
 - Long Side = $96/30 = 3.2''$ Maximum Static Deflection Allowed
 - TAS 202 testing results. Negative load test (load pressure deflecting screen towards fenestration) only considered.
 - 0.235" at DP
 - TAS 203 testing results. Negative load test (load pressure deflecting screen towards fenestration) only considered.
 - 0.182" max of 3 specimens at DP
 - Therefore $L/30$ deflection limit met.
- See following section for Fenestration-to-Shutter separation requirements.

FENESTRATION-TO-SHUTTER SEPERATION REQUIREMENTS

DEFLECTIONS (based on test results from FTL/QAI Company Report LAB No. 10870):

- Negative load direction (load pressure deflecting screen towards fenestration) only considered for static and dynamic testing.
- TAS 202 Static Load Test Results at Design Pressure (DP)
 - 0.235" Maximum, 0.001" Permanent Set
- TAS 203 Cyclic Load Test Results at Design Pressure (DP)
 - 0.182" Maximum of 3 specimens, no permanent set.
- TAS 203 Impact Load Test Results at Design Pressure (DP)
 - 3.5" deflection w/o pass-thru of missile. Specimen 1.
 - 3.25" deflection w/o pass-thru of missile. Specimen 2.
 - 3.75" deflection w/o pass-thru of missile. Maximum deflection in Specimen 3.

POROUS IMPACT PROTECTIVE SYSTEM:

- "AH Fixed Impact Screen" meets the porous definition of ASTM E1996-14A below.
 - *porous impact protective system*—an assembly whose aggregate open area exceeds ten percent of its projected surface area.



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APPENDIX A, SCREEN-TO-FENESTRATION SEPARATION REQUIREMENTS

HVHZ INSTALLATIONS

- For HVHZ installations, minimum separation shall be based on the requirements of
 - 2017 FBC, Section 1616.3.1
 - Storm shutters and fold-down awnings, which in the closed position shall provide a minimum clear separation from the glass of 1 inch (25 mm) but not to exceed 2 inches (51 mm) when the shutter or awning is at its maximum point of permissible deflection; $L/30$.
 - 2017 FBC, Section 2413.2
 - The storm shutters shall be designed and constructed to ensure a minimum of 1 inch (25 mm) at maximum deflection with components and frames of components they are to protect.
- Dynamic loading deflection due to TAS 202 and 203 testing to a maximum of 3.75".
- This equates to a separation distance of $1" + 3.75" = 4.75" = 4\text{-}3/4"$
 - This separation is shown on the installation drawing.

NON-HVHZ INSTALLATION:

- The 2017 FBC and 2017 FRC do not have specific requirements for non-HVHZ areas. ASTM E1996 separation requirements can be mandated if applicable as discussed below.
 - This product is tested and approved for procedures related to the HVHZ.
 - This product was not tested to ASTM E1996.
 - However, this product will be employed in non-HVHZ locations where ASTM E1996 is applicable. Based on the evaluation below, it is recommended that the HVHZ mandated separation distance be employed when required by ASTM E1996-14A.
- To allow for user-applied separation requirements in non-HVHZ installations, additional guidance based on ASTM E1996-14A is included below.
 - ASTM E1996-14A indicates Porous separation requirements as: (a) Section 8.3.1 Porous impact protective systems that are tested independently of the fenestration assembly shall be accepted for installations in which they are offset from the fenestration assemblies by the greater of the following:
 - The maximum dynamic deflection, as measured in Section 5.5 plus 25 %; or
 - The sum of the maximum positive deflection and the residual deflection, as measured in Section 5.5 plus 25 %.
 - Therefore, separation requirements are calculated as follows.
 - The maximum dynamic deflection (impact loading), as measured plus 25 % = $1.25 \times 3.75 = 4.6875" = 4\text{-}11/16"$
 - The sum of the maximum positive deflection and the residual deflection (pressure loading), plus 25 % = $1.25 \times (0.235 + 0.001) = 0.295" = 5/16"$
 - Thus, $4\text{-}11/16"$ shall be required.
 - It is recommended the above requirements be employed where applicable.

