> YVS 410 TUH

Thermally Broken Side Loading Impact Resistant Blast Mitigating Hung Window

ProTek®
YKK AP Hurricane & Blast Solutions

Impact and Style

The YVS 410 TUH ProTek® Hung Window is designed to capture the side rails of the sash, providing a high level of security and dependability for both new construction and renovation projects. The use of YKK AP's ThermaBond Plus® poured and de-bridged system provides superior thermal qualities. The windows have successfully passed the impact and cycle requirements of ASTM E-1886, ASTM E 1996, and the test requirements for the Florida High Velocity Hurricane Zone (TAS 201, TAS 202, & TAS 203). A full selection of quality block and tackle, spiral, and Class 5 Ultra-Lift® balances are available. Optional SecurSweep sweep locks are available that incorporate a special security latch to prevent tampering from the outside.

Product Benefits

- AAMA/NAFS 101/I.S.2/NAFS-02
  - AW-65
- Florida state-wide approval +80/-120 PSF
- 4" frame depth
- Integrates with YFW 400 TUH Fixed Window
- Accepts 1" Large & Small Missile glazing
- Factory glazing and screens
- Blast Mitigation Testing
- YVS Window Systems - A complete line of high performance, thermally broken Single Hung & Double Hung windows

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1.01 SUMMARY

A. Section Includes: Operable and Fixed Aluminum Window Systems:
   1. YKK AP Series YVS 410 TUH ThermaBond Plus® Side-Loading Impact Resistant Blast Mitigating Single Hung Aluminum Windows.

B. Related Sections:
   1. Sealants: Refer to Division 7 Joint Treatment Section for sealant requirements.
   2. Glass and Glazing: Refer to Division 8 Glass and Glazing Section for glass and glazing requirements.

1.02 TEST AND PERFORMANCE REQUIREMENTS

A. Performance Requirements: Windows shall conform to all AAMA/NAFS 101/I.S.2/NAFS-02 requirements for the window type, meet all requirements of South Florida Building Code Protocols TAS 201, TAS 202, and TAS 203 and comply with the following specific performance requirements indicated.
   1. Air Infiltration: Completed window systems shall have 0.30 (operable) CFM/FT² (5.5m³/h·m²) maximum allowable infiltration when tested in accordance with ASTM E 283 and TAS 202 at a differential static pressure of 1.57 psf (75 Pa).
   2. Water Infiltration: With the sashes closed and locked there shall be no uncontrolled water leakage when tested in accordance with ASTM E 331 and TAS 202 at a static pressure of 12 PSF (575 Pa).
   3. Static Load: There shall be no damage to fasteners, hardware, accessories, or any other damage that would render the window inoperable when tested in accordance with ASTM E 330 and TAS 202 at a differential static pressure of 80.0 psf positive and 120.0 psf negative.
   4. Large & Small Missile Impact: There shall be no signs of penetration, rupture, or opening after the impact test when tested in accordance with ASTM E 1886/1996 and TAS 201.
   5. Cyclic Load: Test to be done upon completion of missile impact test. There shall be no damage to fasteners, hardware, accessories, or any other that would render the window inoperable when tested in accordance with ASTM E 1886/1996 and TAS 203.
   6. Forced Entry Resistance: Windows shall be tested in accordance with ASTM F 588, TAS 202 and meet the requirements of performance level 10.
   7. Thermal Performance: When tested in accordance with AAMA 1503 and NFRC 102:
      a. Condensation Resistance Factor (CRF): A minimum of 54.
      b. Thermal Transmittance U Value: 0.49 BTU/HR/FT²/ºF or less.
   8. Acoustical Performance: Acoustical Performance: When tested in accordance with ASTM E 90 and ASTM E 1332, the Sound Transmission Class (STC), and Outdoor–Indoor Transmission Class (OITC) shall not be less than 36 STC, and 22 OITC.
   9. Life Cycle Testing: When tested in accordance with AAMA 910, there shall be no damage to fasteners, hardware parts, or any other damage that would cause the specimen to be inoperable. Resistance to air leakage and water penetration resistance test results shall not exceed the gateway performance.

Note: Performance based on lab testing and will vary by configuration and glass type; contact YKK AP engineering for job specific analysis at higher performance levels.

2.01 MANUFACTURERS

A. Acceptable Manufacturers: YKK AP America Inc.
   1. Operable Windows: YKK AP YVS 410 TUH ThermaBond Plus® Side-Loading Impact Resistant Single Hung Aluminum Windows.

B. Windows:
   1. AAMA Designation: AW-65.
   2. Description: The windows shall be extruded aluminum; 4" frame depth; Horizontal frame members run through notched vertical members, butted and mechanically fastened with two stainless steel screws per joint; Factory assembled.
   3. Configuration: The windows shall be Single Hung or Fixed.
   4. Glazing (Contact YKK AP for approved glass types):
      a. Large Missile Impact: Exterior closed cell EPDM sponge glazing tape with silicone cap bead; 1-1/16" (overall) insulating units; Interior EPDM (silicone compatible) spacer with structural silicone sealant; Removable, extruded aluminum interior glazing bead; Factory glazed.
      b. Small Missile Impact: Exterior closed cell EPDM sponge glazing tape with silicone cap bead; 1-1/16" (overall) insulating units; Interior EPDM glazing gasket; Removable, extruded aluminum interior glazing bead; Factory glazed.
   5. Thermal Barrier: Provide continuous thermal barrier by means of a poured and debridged pocket consisting of a two-part, chemically curing high density polyurethane which is bonded to the aluminum by YKK ThermaBond Plus®. Systems employing non structural type thermal barriers are not acceptable.

2.02 MATERIALS

A. Extrusions: ASTM B 221 (ASTM B 221M), 6063-T5 Aluminum Alloy.

2.03 ACCESSORIES

A. Manufacturer's Standard Accessories:
   1. Hardware: Extruded aluminum spring catch head and/or sill locks. Optional stainless steel sweep lock and keeper.
   2. Fasteners: All fasteners shall be AISI 300 series (except for self-drilling, which are to be series 400) stainless steel.
   3. Sealant: non-skinning type, AAMA 803.3
   4. Glazing Materials: Setting blocks, edge blocks, and spacers in accordance with ASTM C 864, shore durometer hardness as recommended by manufacturer; glazing gaskets in accordance with ASTM C 864.
   5. Glazing Adhesive: Structural silicone sealant.

2.06 FINISHES

A. Anodic Coating: Electrolytic color coating followed by an organic seal applied in accordance with the requirements of AAMA 612.

B. High Performance Organic Coating Finish: Type Factory applied two-coat 70% Kynar resin by Arkema or 70% Hylar resin by Solvay Solexis, fluoropolymer based coating system, Polyvinylidene Fluoride (PVF-2), applied in accordance with YKK AP procedures and meeting AAMA 2605 specifications.

For additional information on architectural aluminum products offered by YKK AP America Inc. visit our web site at www.ykkap.com.