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Tecfire Fire-Rated Aluminum Framed Entrances and Storefronts

3-Part Specification

Specifier Guidance – Tecfire USA

This guide section is provided to support design professionals in developing accurate and complete project specifications. Please carefully review and adapt the content to suit your specific project requirements and ensure compliance with all applicable local codes and regulations.

Instructional notes appear in boxed text and should be removed from the final specification. Items marked with brackets and highlighted in yellow indicate options or required selections—please make the appropriate choices and delete any unused text.

Once all editing is complete, remove this page entirely by deleting its content and removing the section break above the following page.

For further assistance, please contact Tecfire USA at 1-833-TECFIRE or info.na@tecfire.com

SECTION 08 41 23
FIRE-RATED ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
Manufacturer: Tecfire

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PART 1 – GENERAL

1.1 SECTION INCLUDES
Fire rated glazing and framing systems for installation as [sidelights,] [borrowed lights,] [windows,] and [transoms] or [wall sections] in interior openings

1.2 RELATED SECTIONS
- Section 05 12 00 “Structural Steel Framing:” Steel attachment members
- Section 05 50 00 “Metal Fabrications:” Steel attachment members inserts and anchors
- Section 07 25 00 “Weather Barriers:” Perimeter air, water and vapor seal between the work of this section and adjacent construction
- Section 07 62 00 “Sheet Metal Flashing and Trim” Flashing between this work and other work
- Section 07 84 00 “Firestopping:” Firestops between work of this section and other fire resistive assemblies.
- Section 07 92 00 – “Joint Sealants” for installation of joint sealants installed with steel fire rated glazed curtain-wall systems and for sealants to the extent not specified in this Section.
- Section 01 33 23: Shop Drawings, Product Data and Samples.
- Section 08 80 00: Glazing.
- Section 08 88 00: Special Function Glazing
- Section 08 11 16: Aluminum Doors and Frames
- Section 08 12 16.13: Fire-Rated Aluminum Frames
- Section 08 41 13.13: Fire-Rated Aluminum Framed Entrances and Storefronts
- Section 08 43 13.13: Fire-Rated Aluminum Storefronts
- Section 08 88 17: Fire-Rated Glass & Framing

1.3 REFERENCES

A. American Architectural Manufacturers Association (AAMA)
   1. AAMA 2603-2002 Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

2. AAMA 2604 -2005 Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
3. AAMA 2605 -2005 Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

B. American Society for Testing and Materials (ASTM):
1. Fire safety related:
   a. ASTM E119: Methods for Fire Tests of Building Construction and Materials.

2. Material related
   a. ASTM A 1008/A 1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength, Low Alloy, and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2007.
   b. ASTM A 1011/A 1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2006b.
3. Exterior-related:
   a. ASTM E 283-04: Test Method for Determining the Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences across the Specimen
   b. ASTM E 330-02: Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference Procedure A
   c. ASTM E 331-04: Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
   d. ASTM E 783-02: Test Method for Field Measurement of Air Leakage through Installed Exterior Windows and Doors
   e. ASTM E 1105-00: Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference

C. American Welding Society (AWS)
1. AWS D1.3 - Structural Welding Code - Sheet Steel; 2007

D. Builders Hardware Manufacturers Association, Inc.
1. BHMA A156 - American National Standards for door hardware; 2006 (ANSI/BHMA A156).

B. Canadian Standards
1. CAN/ULC-S101 Standard Test of Fire Endurance Tests of Building Construction and Materials

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2. CAN/ULC-S104 Standard Method of Fire Tests of Door Assemblies
3. CAN/ULC-S106 Standard Method of Fire Tests of Window and Glass Block Assemblies

C. National Fire Protection Association (NFPA):
1. NFPA 80: Fire Doors and Windows.
2. NFPA 251: Fire Tests of Building Construction & Materials
3. NFPA 252: Fire Tests of Door Assemblies
4. NFPA 257: Fire Test of Window Assemblies

D. Underwriters Laboratories, Inc. (UL):
1. UL 9: Fire Tests of Window Assemblies.
1. UL 10 B: Fire Tests of Door Assemblies
2. UL 10 C: Positive Pressure Fire Tests of Window & Door Assemblies
3. UL 263: Fire tests of Building Construction and Materials

E. American National Standards Institute (ANSI):
1. ANSI Z97.1: Standard for Safety Glazing Materials Used in Buildings

F. Consumer Product Safety Commission (CPSC):
1. CPSC 16 CFR 1201: Safety Standard for Architectural Glazing Materials

G. American Society of Civil Engineers (ASCE)
1. ASCE 7 – Minimum Design Loads for Buildings and Other Structures; 2005

1.4 Definitions

Manufacturer: A firm that produces primary glass, fabricated glass or framing as defined in referenced glazing publications.

1.5 PERFORMANCE REQUIREMENTS

A. System Description:
1. Aluminum fire-rated glazed wall and/or window system

Adjust fire rating minutes in paragraphs below to suit Project.

a. Duration – Windows Capable of providing a fire rating for, [60], [120] minutes.
b. Duration – Walls: Capable of providing a fire rating for [60], [120] minutes.

B. Structural Performance
1. Design and size the system to withstand structural forces placed upon it without damage or permanent set when tested in accordance with ASTM

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E330 using load 1.5 times the design wind loads and of 10 seconds in duration.

2. Positive wind load: [_____lbf/sq ft.][as indicated on the drawings]
3. Negative wind Load:[_____lbf/sq ft.][as indicated on the drawings]
4. Member deflection: Limit deflection of the edge of the glass normal to the plane of the glass to [flexure limit of glass][1/175 of the glass edge length or ¾ inch, whichever is less][of any framing member
5. Accommodate movement between storefront and adjoining systems

C. Air Infiltration: ASTM E 283; Air infiltration rate shall not exceed 0.06 cfm/ft^2 at a static air pressure differential of 6.24 psf.

D. Water Resistance, (static): ASTM E 331; No leakage at a static air pressure differential of 15 psf as defined in AAMA 501.

1.6 SUBMITTALS

1. Submit per Section 01 30 00.
2. Product Data: Manufacturer's data providing product description, technical data and installation instructions for fire-rated aluminum entrance systems.
3. Shop Drawings: Include elevation views, connection details, anchorage, and interface with adjacent assemblies.
4. Structural Calculations (optional):
    a. Provide structural calculations sealed by a licensed professional engineer in the State in which the project is located; prepared in compliance with referenced documents and these specifications.
5. Samples (optional). For the following products:
    - Glass sample-as provided by manufacturer
    - Sample of frame
    - Verification of sample of selected finish
6. Glazing Schedule: Use same designations indicated on drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.
7. Warranties: Submit manufacturer's warranty.
8. Certificates of compliance from glass and glazing materials manufacturers attesting that glass and glazing materials furnished for project comply with requirements.
9. A separate certification will not be required for glazing materials bearing manufacturer's permanent label designating type and thickness of glass, provided labels represent a quality control program

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1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualifications according to

1. International Accreditation Service for a Type A Third-Party Inspection Body (Field Services ICC-ES Third-Party Inspections Standard Operating Procedures, 00-BL-S0400 and S0401)

2. International Accreditation Service for Testing Body-Building Materials and Systems

a. Fire Testing

1. ASTM Standards E 119
2. CPSC Standards 16 CFR 1201
3. NFPA Standards 251, 252, 257
4. UL Standards 9, 10B, 10C, 1784, UL Subject 63
5. BS 476; Part 22: 1987
6. EN 1634-1
7. CAN/ULC Standards S101, S104, S106

B. Fire-Rated Window Assemblies: Assemblies complying with NFPA 80 that are classified and labeled by UL, for fire ratings indicated, based on testing according to NFPA 257 and UL 9.

C. Fire-Rated Wall Assemblies: Assemblies complying with ASTM E119 that are classified and labeled by UL, for fire ratings indicated, based on testing in accordance with UL 263, ASTM E119.

D. Listings and Labels - Fire Rated Assemblies: Under current follow-up service by Intertek maintaining a current listing or certification. Label assemblies accordance with limits of manufacturer's listing.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Handle and store all products per manufacturer recommendations to prevent damage and contamination.

1.9 PROJECT CONDITIONS

A. Obtain field measurements prior to fabrication of frame units. If field measurements will not be available in a timely manner coordinate planned measurements with the work of other sections.

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1. Note whether field or planned dimensions were used in the creation of the shop drawings.

B. Coordinate the work of this section with others effected including but not limited to: other interior and/or exterior envelope components and door hardware beyond that provided by this section.

1.10 WARRANTY

Provide Tecfire's standard limited warranty covering system performance and finish.

PART 2 – PRODUCTS

2.1 MANUFACTURER

Fire-Rated Full Aluminum Frames FireGuard Pro AS85 as manufactured by Tecfire USA. 8414 Zionsville Rd. Indianapolis, IN. 46268 | info.na@tecfire.com | 833-TECFIRE | www.tecfire.com

Substitutions: Substitutions for Glazing Material and Frame System not permitted.

2.2 PERFORMANCE REQUIREMENTS

A. System Description:
   1. Aluminum fire-rated glazed wall and/or window system

      a. Duration – Windows Capable of providing a fire rating for [60], [120] minutes.
      b. Duration – Walls: Capable of providing a fire rating for [60], [120] minutes.

B. Structural Performance
   1. Design and size the system to withstand structural forces placed upon it without damage or permanent set when tested in accordance with ASTM E330 using load 1.5 times the design wind loads and of 10 seconds in duration.
   2. Positive wind load: [_____lbf/sq ft.][as indicated on the drawings]
   3. Negative wind Load:[_____lbf/sq ft.][as indicated on the drawings]
   4. Member deflection: Limit deflection of the edge of the glass normal to the plane of the glass to [flexure limit of glass][1/175 of the glass edge length or ¾ inch, whichever is less][of any framing member
   5. Accommodate movement between storefront and adjoining systems

C. Air Infiltration: ASTM E 283; Air infiltration rate shall not exceed 0.06 cfm/ft^2 at a static air pressure differential of 6.24 psf.

D. Water Resistance, (static): ASTM E 331; No leakage at a static air pressure differential of 15 psf as defined in AAMA 501.

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2.3 MATERIALS – ALUMINUM FRAMING

A. Frame construction: Integral structure and glazing stops from extruded and thermally broken aluminum profiles. Filled internally with cement composite material.

B. Aluminum Framing System [45 min. 60 min. 120 min.]

1. Provide fire, smoke, and thermal resistance from both sides by insulating the interior of the profiles with a proprietary core layer incorporating Promatect-H. Seal perimeter gaps between framing and rough openings with mineral wool firestop insulation or tested intumescent sealant.

2. Use manufacturer-supplied glazing beads designed to maintain secure engagement with approved glazing.

3. Employ manufacturer-recommended mechanical fasteners.

4. Install T-Flame glazing (by Tecfire) using appropriate calcium silicate or neoprene setting blocks.

5. Use only EPDM glazing gaskets in combination with [closed cell PVC tape] or [approved structural silicone] for T-Flame (or AGC) glazing installation.

C. Assembly: Frame corners assembled by means of crimped and bonded miter joints.

2.4 MATERIALS – FIRE RESISTANT GLAZING

A. Low-E Coated glass for use in insulated exterior units See Section 08 80 00

B. Fire Rated Glazing: Composed of T-Flame by Tecfire

C. Impact Safety Resistance: ANSI Z97.1 and CPSC 16CFR1201(Cat. I and II)

D. Exterior Grade: PVB inner layer installed toward exterior.

E. Logo: Each piece of fire-rated glazing shall be labeled with a permanent logo including name of product, manufacture, testing laboratory (Intertek), fire rating period, safety glazing standards, and date of manufacture.

F. Glazing Accessories: Manufacturer's standard compression gaskets, standoff, spacers, setting blocks and other accessories necessary for a complete installation.

2.5 FABRICATION

1. Obtain reviewed shop drawings prior to fabrication.

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2. Fabrication Dimensions: Fabricate fire-rated assembly to field dimensions.
3. Hardware: Installed or prepared at the factory.
4. Field glaze door and frame assemblies.

2.6 ALUMINUM FINISHES

- Finish: Factory-applied powder coat finish per AAMA 2603 minimum, 1.5 mils dry film thickness.

1. Color: As selected from Tecfire's standard range.
2. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

2.7 ACCESSORIES

A. Fasteners: Use fasteners fabricated from Type 304 or Type 316 stainless steel.

B. Glazing Gaskets:

1. Glazing gaskets for interior or exterior applications: ASTM C 864 (extruded EPDM rubber that provides for silicone adhesion) or ASTM C1115 Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories (extruded silicone).

C. Intumescent Tape: As supplied by frame manufacturer.

D. Setting Blocks: ¼" Calcium silicate.

E. Perimeter Anchors: Steel.

F. Flashings: As recommended by manufacturer; same material and finish as cover caps.

G. Silicone Sealant: One-Part Low Modulus, neutral cure High Movement-Capable Sealant: Type S; Grade NS; Class 25 with additional movement capability of 100 percent in extension and 50 percent in compression (total 150 percent); Use (Exposure) NT; Uses (Substrates) M, G, A, and O as applicable. (Use-O joint substrates include: Metal factory-coated with a high-performance coating; galvanized steel; ceramic tile.)
   1. Available Products:
      a. Dow Corning 790, 795 - Dow Corning Corp.
      b. Momentive
      c. Tremco

H. Intumescent Caulk: Single component, latex-based, intumescent caulk designed to stop passage of fire, smoke, and fumes through fire-rated separations; permanently flexible after cure; will not support mold growth; flame spread/smoke developed 10/10.

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1. Available Products:
   a. 3M CP 25WB+

2.8 FABRICATION

A. Obtain reviewed shop drawings prior to fabrication.

B. Fabrication Dimensions: Fabricate fire-rated assembly to field dimensions.

C. Factory prepared, fire-rated steel door assemblies by Tecfire to be prehung, prefinished with hardware preinstalled for field mounting.

D. Field glaze door and frame assemblies.

2.9 FINISHES, GENERAL

2. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
3. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.
4. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
5. Class II, Color Anodic Finish: AA-M12C22A32/A34 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, integrally colored or electrolytically deposited color coating 0.010 mm or thicker) complying with AAMA 611.
6. Class I, Color Anodic Finish: AA-M12C22A42/A44 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
7. Color: [Light bronze] [Medium bronze] [Dark bronze] [Black].
8. Color: [Match Architect's sample] [As selected by Architect from full range of industry colors and color densities].
9. High-Performance Organic Finish (2-Coat Fluoropolymer): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and

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apply coating to exposed metal surfaces to comply with AAMA [**2604**] [**2605**] and with coating and resin manufacturers' written instructions.

10. High-Performance Organic Finish (3-Coat Fluoropolymer): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard 3-coat, thermocured system consisting of specially formulated inhibitive primer, fluoropolymer color coat, and clear fluoropolymer topcoat, with both color coat and clear topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with AAMA 2605 and with coating and resin manufacturers' written instructions.

2.10 POWDERCOAT FINISHES

Powder coat finish systems offered and provided by Tecfire are manufactured by Tiger Drylac which is a hybrid powder coating for interior applications based on a blend of epoxy-polyester. If used exteriorly contact your Tecfire Representative for alternative finishes that provide an even higher standard of protection.

A. Finish after fabrication.

B. Finish: Factory-applied powder coat finish per AAMA 2603 minimum, 1.5 mils dry film thickness.

   1. Color: As selected from Tecfire’s standard range.

   2. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 – EXECUTION

3.1 EXAMINATION

1. Verify substrates are prepared and suitable for installation.

2. Notify Architect of any conditions which jeopardize the integrity of the proposed fire wall / door system.

3.2 PREPARATION

Clean and prepare surfaces per Tecfire’s recommendations.

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3.3 INSTALLATION

1. Install per Tecfire's installation instructions and approved submittals. Door installation shall be by a specialty contractor with appropriate experience qualifications, and in strict accordance with the approved shop drawings.
2. Ensure alignment, anchorage, thermal breaks, and glazing gaskets are correctly applied.
3. Apply sealants and flashings as required.

3.4 REPAIR AND TOUCH UP

A. Anodized Finishes
   1. Protect the anodized finish from harsh chemicals such as concrete/mortar or muriatic acid/brick wash. If reasonable care is taken during handling and high and low pH chemicals can be avoided, repair and/or touch-up of an anodize finish will not be needed.
   2. Some rub marks on an anodized surface can be removed with a mild abrasive pad such as a Scotch-Brite pad prior to touch up painting.
   3. Touch-up paint should be used even more sparingly over anodize. Only the visible raw aluminum in the scratch or gouge should be touched up with a matching paint.

B. Powder Coated Finishes
   1. Limited to minor repair of small scratches. Use only manufacturer's recommended products.
   2. Such repairs shall match original finish for quality or material and view.
   3. Repairs and touch-up not visible from a distance of 5 feet Owner and Architect to approve.

C. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged.

3.5 FIELD QUALITY CONTROL

- Coordinate field inspections as per Division 01.
- Tecfire field services available upon request for installation support and inspection.

3.6 CLEANING AND PROTECTION

A. Protect glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.
   1. Do not clean with astringent cleaners. Use a clean "grit free" cloth and a small amount of mild soap and water or mild detergent.
   2. Do not use any of the following:
      a. Steam jets

      b. Abrasives

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c. Strong acidic or alkaline detergents, or surface-reactive agents

d. Detergents not recommended in writing by the manufacturer

e. Do not use any detergent above 77 degrees F

f. Organic solvents including but not limited to those containing ester, ketones, alcohols, aromatic compounds, glycol ether, or halogenated hydrocarbons.

g. Metal or hard parts of cleaning equipment must not touch the glass surface

B. Safeguard glazing surfaces from exposure to construction-related contaminants, such as weld splatter or other debris. Should contamination occur despite protective measures, immediately clean affected areas in accordance with the glazing manufacturer's instructions.

C. Clean both exposed surfaces of glazing in each project area no more than four days prior to the scheduled inspections that determine Substantial Completion. Perform cleaning using methods and products approved by the glass manufacturer.

END OF SECTION

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