FM Approvals℠

Member of the FM Global Group

APPROVAL REPORT

APPROVAL OF FIRE DOORS AND FRAMES UP TO 3 HOUR RATED

Prepared for:

DALIAN GOLDENHOUSE DOOR & WINDOWS MANUFACTURE CO., LTD.
NO. 121 SHENGLI ROAD, BUILDING 2-301
DALIAN, LIAONING, CHINA 116021

Project ID: 3028827
Class: 4100
Date of Approval: March 9, 2007
Authorized by:

G. A. Smith, P.E.
Assistant Vice President, Director

FM Approvals
1151 Boston-Providence Turnpike
P.O. Box 9102
Norwood, MA 02062

FM APPROVALS
Project ID 3028827

APPROVAL OF FIRE DOORS AND FRAMES
UP TO 3 HOUR RATED

from

DALIAN GOLDENHOUSE DOOR & WINDOWS MANUFACTURE CO., LTD.
NO. 121 SHENGLI ROAD, BUILDING 2-301
DALIAN LIAONING CHINA 116021

I INTRODUCTION

1.1 Dalian Goldenhouse Door & Windows Manufacture Co., Ltd. submitted their double swinging type fire doors and frame, rated up to and including three (3) hours, to determine if they meet the requirements of the **Standards** listed below as a means of protecting openings in fire rated walls.

1.2 Items that were examined for conformance to the referenced Standards include:

1.2.1 A design drawing review.

1.2.2 Fire endurance and hose stream testing conducted in accordance with the standards referenced below.

1.3 The unit was examined to ensure that they would provide protection for wall openings where fire resistance requirements do not exceed three (3) hours or as otherwise noted in this report.

1.4 This Report may be reproduced only in its entirety and without modification.

1.5 **Standards:**

Title	Class / Document Name	Date of Issue
Fire Door and Frame Assemblies	4100	1988
Standard Methods of Fire Tests of Door Assemblies	NFPA 252	2003
Fire Tests of Door Assemblies	UBC 7-2, Part 1	1997
Standard Test Method for Fire Tests of Door Assemblies, Including Positive Pressure Testing of Side-Hinged and Pivoted Swinging Door Assemblies	ASTM E2074	2000

1.6 **Products:** This company's product is as follows:

1.6.1 **Building Materials/Fire Doors – Swinging, Hollow Metal and Composite**

The door shown below meets the requirements of NFPA 252 (2003), UBC 7-2, Part 1 (1997), and ASTM E2075 (2000).

Model GFM 2125

Max Hourly Rating	Single Swing Max Size
3	7'2" x 8'0" (2.2 m x 2.4 m)

1.6.2 **Building Materials/Fire Door Frames**

The frame shown below meets the requirements of NFPA 252 (2003), UBC 7-2, Part 1 (1997), and ASTM E2075 (2000).

Max Size: Double swing, 7'2" x 8'0" (2.2 m x 2.4 m); Supplied welded or knock down for masonry walls a min of 8 in. (200 mm) thick. The frames are rated up to 3 hours when installed in masonry walls.

II PRODUCT DESCRIPTION

2.1 The fire door and frame was fabricated as described in this report and other documents referenced in this report.

2.1.1 Details such as basic size limitations, hourly ratings, applications, hardware requirements or other limitations are to be determined based on the products shown above in Paragraph 1.6 and the Conclusions section of this report.

2.1.2 Details such as general construction details common to all models, such as cutouts and reinforcements, vision panel frames, astragals and other miscellaneous components are available from the manufacturer.

2.2 General descriptions of the Approved fire door and frame products are shown below:

2.2.1 Doors – are provided as double swing hollow metal type fire doors. The doors are 45 mm (1¾ in.) thick. Face sheet thickness is 1.1 mm (0.043 in.). The interior of the door incorporates Z shaped stiffeners welded to the back face sheet pan and the top and bottom channels. The Z shape sections are fabricated from 1.1 mm (0.043 in.) thick steel. The voids within the door are filled with interlocking strips of magnesia-based fireproof board that is glued to both faces. The top, bottom and side closures are fabricated from 1.1 mm (0.043 in.) thick channel shaped steel sections welded to the front and back door skins. Hinge, closer and strike plate reinforcements shall be provided. The doors are designed to be provided with either a fire rated single point latch having a minimum throw of 12.7 mm (1/2 in.) or with fire exit hardware.

2.2.2 Fire doors frames are fabricated from minimum 1.5 mm (0.06 in.) thick steel with minimum 16 mm (5/8 in.) stops. An intumescent seal is provided at the interface of the door and frame stop. Cutouts, reinforcements for hardware and anchors are available from the manufacturer. The frames are designed to be installed in concrete or masonry walls that are at least 200 mm (8 in.) thick. They may be provided knock down or welded.

2.3 Vision panels may be installed in each door panel within a vision panel frame secured to the door subject to the following restrictions. The manufacturer may provide the vision panel or the door can be shipped without the glazing but with the vision panel opening fabricated at their facility.

2.3.1 Only fire rated glass shall be utilized. Each individual light shall bear the marking of an independent certification/testing agency. The certification mark shall be visible after the individual light is installed. (The individual marking is not required when 1/4 in. (6 mm.) thick wire glass is used in accordance with NFPA 80 requirements.)

2.3.2 Unless shown otherwise in this report or the manufacturing procedures referenced above, the maximum exposed glass light area for each door leaf shall conform to the following:

Hourly Rating	Max. Exposed Area in.^{2} (m^2)	Max. Dimension in. (m)	Min. Dimension in. (m)
3	None		
1½	100 (.064)	33 (0.84)	3 (0.076)
¾ or less	1296 (.836)	54 (1.37)	3 (0.076)

2.3.3 Vision panel frames shall be fabricated in accordance with the details contained in the manufacturing procedures referenced above.

2.4 All cutouts and modifications to the door panels and frames shall be made at the manufacturer's facilities or at authorized modifying distributors' facilities that are under the FM Approvals Facilities and Procedures Audit program.

2.5 Louvers are not permitted in FM Approved fire doors.

2.6 The door panels and frames may be painted with corrosion resistant primer prior to shipping. Prior to painting, all surfaces must be prepared to ensure that they are clean and free from oil, grease, dust, dirt, and other contaminants.

III INSTALLATION

3.1 Fire doors are designed to close automatically in the event of fire to protect wall openings against the passage of flame and hot gases. Automatic closing is accomplished by means of a mechanical door closer attached to the door or by means of spring hinges.

3.2 Doors and frames shall be installed in accordance with the requirements of the National Fire Protection Association, Standard 80, "Fire Doors and Fire Windows."

3.3 All hardware such as, but not limited to, latches, hinges, door closers, spring hinges, and fire exit hardware devices, used in conjunction with these door panels, shall bear a certification marking of an independent certification/testing agency for the desired hourly rating.

3.3.1 All single point builders' hardware latches shall have a latch throw equal to or greater than the latch throw shown on the label which indicates Approval.

3.3.2 All fire exit hardware devices shall have minimum latch throws of ½ in. (12.7 mm).

3.3.3 Doors up to 1.5 m (60 in.) in height shall be attached to the frames with two (2) full mortise hinges, with an additional hinge required for each 0.76 m (30 in) of door height or fraction thereof.

3.4 Fire door frames bearing a label with a specific rating which are used with labeled fire doors, or hardware having a lesser or greater rating, will provide the degree of fire protection afforded the lesser rating of either frame, door or hardware.

3.5 Frames shall be secured to the opening using the anchoring devices shown in the manufacturing procedures referenced above.

3.5.1 Each jamb of each frame shall be secured to the wall using a floor or sill anchor.

3.5.2 Frames up to 1.5 m (60 in.) in height shall be secured to the wall with two anchors in each jamb. One additional anchor is required in each jamb for each additional 0.76 m (30 in.) of height, or fraction thereof. The anchor shall be located immediately above or below each hinge.

IV EXAMINATIONS AND TESTS

4.1 The fire door and frame examined in this report have satisfactorily withstood a fire endurance test followed by a hose stream test while mounted in a test assembly.

4.2 The fire and hose stream tests were conducted in accordance with the standards referenced in paragraph 1.5 at the Tianjin Fire Research institute (TFRI), Tianjin, China. A representative of FM Approvals witnessed the tests. The fire test requirements meet or exceed the test requirements contained in Approval Standard 4100 "Fire Door and Frame Assemblies" (10/88).

4.2.1 The test program was also run in accordance with "Standard for Fire Tests of Door Assemblies" UL 10B (1997); "Positive Pressure Fire Tests of Door Assemblies", UL 10B (1997); "Test Method for Fire Tests of Door Assemblies, Including Positive Pressure Testing of Side Hinged and Riveted Swinging Door Assemblies", ASTM E2074 (2000); "Standard Methods of Fire Tests of Door Assemblies", NFPA 252 (2003); and "Fire Tests of Door Assemblies", UBC 7-2, Part 1 (1997).

V MARKING

5.1 Doors specifically covered by this report shall be equipped with a permanent serialized label showing the manufacturer's name and address, hourly rating, test designation, the Approval Mark of FM Approvals, the words "Fire Door", and the minimum latch throw.

5.1.1 Doors that have been reinforced for the attachment of fire exit hardware shall also show the words "For Use With Fire Exit Hardware."

5.1.2 The labels shall be attached to the hinge side of the door panel at eye level.

5.2 When the closer or fire exit reinforcement is not provided, a pressure sensitive sticker or other means acceptable to FM Approvals shall be applied stating that the reinforcement has not been provided and that through bolts shall be used to mount the door closer.

5.3 Frames specifically covered by this report shall be equipped with a permanent serialized label showing the manufacturer's name and address, hourly rating if less than three (3) hours, the Approval Mark of FM Approvals and the words "Fire Door Frame".

5.3.1 As an alternate, frames may contain an embossment showing the manufacturer's name and address (optional), the hourly rating if less than three (3) hours, the Approval Mark of FM Approvals, the words "Fire Door Frame", and a die authorization number.

5.4 Labels denoting Approval shall be attached only to products fabricated in accordance with this report and its attached Appendices.

5.5 Labels denoting Approval shall be applied by the manufacturer only within, and on the premises of, manufacturing locations that are under the FM Approvals Facilities and Procedures Audit Program.

5.6 A facsimile of each label shall be kept on file at FM Approvals.

VI MANUFACTURER'S RESPONSIBILITIES

6.1 FM Approval is based upon the fabrication of fire doors and frames in accordance with this Approval Report, satisfactory field experience and continued use of acceptable quality control procedures as determined by Facilities and Procedures Audits.

6.2 The manufacturer shall be responsible for the continuous high quality of all fire door and frame assemblies and components and shall notify FM Approvals of intended changes in any component listed in this report.

6.2.1 All requests for changes shall be made and agreed to in writing utilizing FM Approvals Form 797, "Approved Product-Revision Report", prior to fabrication and/or distribution for sale.

6.3 The manufacturer shall supply all the necessary instructions and other assistance to the installer to ensure proper installation and maintenance.

6.4 The manufacturer shall establish and adhere to sufficient quality controls to ensure that labels denoting Approval shall only be applied to products conforming to the requirements set forth in this report.

VII FACILITIES AND PROCEDURES AUDITS

7.1 A Facilities and Procedures Audit of the manufacturing facility in WaFangDian, LiaoNing Province, China has indicated that Dalian Golden House Door & Windows Manufacture Co., Ltd. Company has the necessary equipment, facilities, personnel and quality controls to fabricate the fire doors and frames listed in this report.

7.2 Periodic, unannounced Facilities and Procedures Audits will be conducted to determine that the quality and uniformity of the component parts being used in the fabrication of Approved fire door and frame assemblies are being maintained and that they are providing a level of quality equivalent to that originally Approved.

7.3 Approval recognition is contingent upon satisfactory results of the follow-up Facilities and Procedures Audits.

7.3.1 Unsatisfactory results of Facilities and Procedures Audits may result in additional Facilities and Procedures Audits as deemed necessary by FM Approvals or forfeiture of Approval recognition.

VIII DOCUMENTATION

The following document describes the fire door and frame assemblies referenced in this report. A copy is kept on file at FM Approvals and at the manufacturing facility.

Document	Issue or Revision	Description
FM Approvals Facilities and Procedures Audit Manual	March 2007	Provides instructions to follow-up auditors for conducting audits.

IX CONCLUSIONS

9.1 Dalian Golden House Door & Windows Manufacture Co., Ltd.'s swinging fire door and frame as described in this report, meets the Approval requirements of FM Approvals for the protection of openings in walls.

9.2 The doors and frames have satisfactorily withstood a fire endurance and hose stream test. The tests were conducted in accordance with the standards shown in Paragraph 1.5. These fire test requirements meet or exceed the test requirements contained in Approval Standard 4100 "Fire Door and Frame Assemblies" (10/88).

9.2.1 The test program was also run in accordance with "Standard for Fire Tests of Door Assemblies" UL 10B (1997); "Positive Pressure Fire Tests of Door Assemblies", UL 10B (1997); "Test Method for Fire Tests of Door Assemblies, Including Positive Pressure Testing of Side Hinged and Riveted Swinging Door Assemblies", ASTM E2074 (2000); "Standard Methods of Fire Tests of Door Assemblies", NFPA 252 (2003); and "Fire Tests of Door Assemblies", UBC 7-2, Part 1 (1997).

9.3 For maximum allowable opening size, hourly rating, hardware requirements or limitations, see Section II. For general construction features such as cutouts, reinforcements, vision panel frames, astragals, and other miscellaneous components, see the follow-up Facilities and Procedures Audit Manual referenced in Section VIII of this report.

9.3.1 The test assembly withstood the fire endurance and hose stream tests without developing any through openings. No flaming occurred on the unexposed side of the door assemblies. All conditions of acceptance of the applicable test methods were met.

9.4 A Facilities and Procedures Audit of the Dalian Golden House Door & Windows Manufacture Co., Ltd. facility located in WaFangDian, LiaoNing Province, China indicates that this location has the necessary equipment, facilities, personnel and quality controls to fabricate the fire doors and frames examined in this report.

9.5 Continued Approval is dependent upon fabrication of fire doors and frames in accordance with this report, satisfactory field experience, and acceptable quality control procedures as determined by follow-up Facilities and Procedures Audits.

9.6 The fire door and frame examined in this report meets Approval requirements and, as such, is eligible to bear a permanent, serialized label signifying Approval by FM Approvals.

9.7 Since a duly signed Master Agreement is on file for this customer, Approval is effective as of the date of this report.

PROJECT DATA RECORD: **3028827**

ATTACHMENTS: **None**

EXAMINATION AND REPORT BY:

M. D. Tyrol

M. D. Tyrol, P.E.
Senior Engineer

REPORT REVIEWED BY:

L. N. D'Angelo

L. N .D'Angelo
Technical Team Manager - Materials Group