

# APPROVAL REPORT

**fastorchSBS FT120GSA, FT120PSA, FT120WSA,  
FT160CSA BASE PLIES AND fireguardfastorchSBS  
FGFT160CWH, FGFT160GWH CAP SHEETS TORCHED  
OVER A GYPSUM COVER BOARD IN CLASS 1 ROOF  
DECK ASSEMBLIES**

## Prepared for:

**MBTechnology Corp  
188 South Tielman Avenue  
Fresno, CA 93706-1334**

**Project ID: 3028235**

**Class: 4470**

**Date of Approval:**

*27 April 2007*

**Authorized by:**

*[Signature]*  
George Smith, Director--AVP

**fastorchSBS FT120GSA, FT120PSA, FT120WSA, FT160CSA BASE PLIES AND  
fireguardfastorchSBS FGFT160CWH, FGFT160GWH CAP SHEETS TORCHED OVER A  
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from

**MBTECHNOLOGY CORP  
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## I INTRODUCTION

- 1.1 MBTechnology submitted their fastorchSBS FT120GSA, FT120PSA, FT120WSA, and FT160CSA base plies and fireguardfastorchSBS FGFT160CWH and FGFT160GWH cap sheets to determine if they meet the approval requirements of the **Standard** listed below for Class 1 roof covers for use over steel, wood, and concrete deck roof constructions.
- 1.2 This Report may be reproduced only in its entirety and without modification.
- 1.3 **Standard:**

| Title               | Class Number | Date        |
|---------------------|--------------|-------------|
| Class I Roof Covers | 4470         | April, 1986 |

- 1.4 Examination included 5x9 ft (1.5x2.7 m) simulated uplift pressure testing. See reports under project IDs 2X4A8.AM, 0Q4A6.AM, 0Q8A4.AM, and 3027509 for other tests as required by Standard 4470.
- 1.5 Tests show that fastorchSBS FT120GSA, FT120PSA, FT120WSA, and FT160CSA base plies and fireguardfastorchSBS FGFT160CWH and FGFT160GWH cap sheets, as tested, meet the Approval requirements of the **Standard** listed above for Class 1 roof covers.
- 1.6 **Listings:** The tested constructions meet the Approval criteria of FM Approvals when installed as specified in the **CONCLUSIONS** of this report and will be listed in RoofNav.

## II DESCRIPTION

- 2.1 fastorchSBS FT120GSA is a nominal 0.114 in. (2.9 mm) thick glass-reinforced styrene-butadiene-styrene (SBS) modified bitumen base ply. It is supplied in nominal 85 lb (378 N) rolls which are 39.8 in. (1010 mm) wide and 33 ft 4 in. (10.1 m) long. The base ply is sand surfaced and is torched to the substrate.
- 2.2 fastorchSBS FT120PSA is a nominal 0.120 in. (3.0 mm) thick polyester-reinforced SBS modified bitumen base ply. It is supplied in nominal 87 lb (387 N) rolls which are 39.6 in. (1006 mm) wide and 33 ft 4 in. (10.1 m) long. The base ply is sand surfaced and is torched to the substrate.
- 2.3 fastorchSBS FT120WSA is a nominal 0.114 in. (2.9 mm) thick scrim-reinforced SBS modified bitumen base ply. It is supplied in nominal 90 lb (400 N) rolls which are 39.5 in. (1003 mm) wide

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- and 33 ft 4 in. (10.1 m) long. The base ply is sand surfaced and is torched to the substrate.
- 2.4 fastorchSBS FT160CSA is a nominal 0.143 in. (3.6 mm) thick glass/polyester-reinforced SBS modified bitumen base ply. It is supplied in nominal 110 lb (489 N) rolls which are 39.8 in. (1010 mm) wide and 33 ft 4 in. (10.1 m) long. The base ply is sand surfaced and is torched to the substrate.
- 2.5 fireguardfastorchSBS FGFT160CWH is a nominal 0.159 in. (4.0 mm) thick glass/polyester-reinforced SBS modified bitumen cap sheet. It is supplied in nominal 116 lb (516 N) rolls which are 39.8 in. (1010 mm) wide and 33 ft 4 in. (10.1 m) long. The cap sheet is granule surfaced and is torched to the base ply.
- 2.6 fireguardfastorchSBS FGFT160GWH is a nominal 0.151 in. (3.8 mm) thick glass-reinforced SBS modified bitumen cap sheet. It is supplied in nominal 114 lb (507 N) rolls which are 39.8 in. (1010 mm) wide and 33 ft 4 in. (10.1 m) long. The cap sheet is granule surfaced and is torched to the base ply.
- 2.7 All other products used in this project are described in RoofNav. Proprietary formulations, specifications and drawings are on file at FM Approvals.

### III EXAMINATIONS AND TESTS

- 3.1 Samples were submitted for examination and testing as follows:
- 3.1.1 Tests conducted were as required by the **Standard** referenced in paragraph 1.3. FM Approvals corrosion resistance testing was waived due to previous satisfactory performance of the fasteners in prior Approval programs sponsored by the fastener manufacturers. FM Approvals calorimeter, ASTM E108, susceptibility to hail damage, and susceptibility to leakage testing were waived because of previous satisfactory performance in prior Approval projects.
- 3.1.2 All components, except the roof covers described in Section II, were produced under the FM Approvals Facilities and Procedures Audit program at the time of testing. All samples were considered to be representative of standard production and were examined and tested as indicated below.
- 3.1.3 All components incorporated into test samples were selected by FM Approvals personnel. Test samples were prepared by, or under the supervision of, FM Approvals personnel.
- 3.1.4 All data is on file at FM Approvals under project ID 3028235 along with other documents and correspondence applicable to this program.
- 3.2 FM Approvals 5x9 ft (1.5x2.7 m) Simulated Wind Uplift Pressure Test
- 3.2.1 One test was conducted using the FM Approvals Uplift Pressure Test Apparatus to evaluate the ability of the above deck components of the roofing systems to resist a minimum simulated wind uplift pressure of 60 psf (2.9 kPa) without failure of the assembly.
- 3.2.1.1 The simulated wind uplift pressure test utilizes a 9 ft. (2.7 m) long by 5 ft. (1.5 m) wide by 2 in. (51 mm) deep steel pressure vessel arranged to apply air pressure at pre-established standard rates to the underside of the test sample which forms the top of the pressure vessel. The vessel was pressurized with compressed air.

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3.2.1.2 A net pressure of 30 psf (1.4 kPa) was applied to the test sample and maintained for 1 minute. The pressure was increased to 45 psf (2.2 kPa), then 60 psf (2.9 kPa) and held for 1 minute at each increment. The pressure was increased in increments of 15 psf (0.7 kPa) every minute until failure occurred.

3.2.2 One 5 by 9 ft. (1.5 by 2.7 m) sample was prepared. The components, sequence of installation, and test result were as follows:

Sample:

- FM Approved 22 ga steel deck
- 1.5 in. (38 mm) thick RMax Multi Max FA-3 roof insulation fastened to the deck with OMG 3” Ribbed Galvalume Plates and OMG #12 Standard fasteners at 1 fastener per 2 ft<sup>2</sup> (0.19 m<sup>2</sup>)
- 4 x 8 ft (1.2 x 2.4 m) by ¼ in. (6 mm) thick G-P Gypsum Dens Deck Prime adhered to the insulation with OlyBond 500 Adhesive Fastener applied in ¾ in. (19 mm) wide ribbons 12 in. (305 mm) on center
- fastorchSBS FT120PSA torched to the Dens Deck Prime
- fireguardfastorchSBS FGFT160CWH torched to the base ply

Result: Met the test requirement for Class 1-90. The assembly failed during the transfer to 105 psf (5.0 kPa). Dens Deck Prime facer delamination was the failure mode.

#### **IV MARKING**

- 4.1 The manufacturer shall mark each roll or packing container with the manufacturer's name and product trade name. In addition, the roll or packing container must be marked with the Approval Mark of FM Approvals.
- 4.2 Markings denoting Approval by FM Approvals shall be applied by the manufacturer only within and on the premises of manufacturing location that is under the FM Approvals Facilities and Procedures Audit (F&PA) program.
- 4.3 The manufacturer agrees that use of the FM Approvals name or Approval Mark is subject to the conditions and limitations of the Approval by FM Approvals. Such conditions and limitations must be included in all references to Approval by FM Approvals.

#### **V REMARKS**

- 5.1 The securement of the roof system must be enhanced at the building corners and perimeter as outlined in FM Global Property Loss Prevention Data Sheet 1-29.
- 5.2 The roof cover must be installed using a roof perimeter flashing system Approved by FM Approvals—see RoofNav.

#### **VI FACILITIES AND PROCEDURES AUDITS**

The facilities and quality control procedures in place at MBTechnology have been found to be satisfactory to manufacture products identical to that examined and tested as described in this report. No new audit sites were created during this project.

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**VII MANUFACTURER'S RESPONSIBILITIES**

- 7.1 To ensure compliance with his procedures in the field, the manufacturer shall supply to the roofer such necessary instruction or assistance required to produce the desired performance achieved in the tests.
- 7.2 The manufacturer shall notify FM Approvals of any planned change in the Approved products, prior to general sale or distribution, using Form 797, Approved Product Revision Report.

**VIII DOCUMENTATION**

| Document                                                   | Issue or Revision   | Description |
|------------------------------------------------------------|---------------------|-------------|
| Facilities & Procedures Audit Manual for MBTechnology Corp | Revised April, 2007 | F&PA Manual |

**IX CONCLUSIONS**

- 9.1 The test results show that fastorchSBS FT120GSA, FT120PSA, FT120WSA, and FT160CSA base plies and fireguardfastorchSBS FGFT160CWH and FGFT160GWH cap sheets meet the requirements of FM Approvals Standard 4470 (April 1986) when installed as follows.
  - 9.1.1 Minimum 1.5 in. (25 mm) thick Multi Max FA-3 insulation is mechanically attached with fasteners and plates currently Approved for use with Multi Max FA-3 in MBTechnology assemblies applied at a rate of 1 fastener/plate per 2 ft<sup>2</sup> (0.19 m<sup>2</sup>) to the steel, wood, or concrete deck. Minimum ¼ in. (6 mm) thick Dens Deck Prime is adhered to the insulation with OMG OlyBond 500 Adhesive Fastener applied in ¾ in. (19 mm) wide ribbons 12 in. (305 mm) on center. One of the following fastorchSBS base ply/fireguardfastorchSBS cap sheet combinations is then torched to the Dens Deck Prime: FT120PSA/FGFT160CWH, FT120PSA/FGFT160GWH, FT120GSA/FGFT160CWH, FT120GSA/FGFT160GWH, FT120WSA/FGFT160CWH, FT120WSA/FGFT160GWH, FT160CSA/FGFT160CWH, or FT160CSA/FGFT160GWH.
  - 9.1.2 The assemblies described in 9.1.1 meet ASTM E108 Class A non-combustible deck requirements with a maximum roof slope of 1 in 12 over steel and concrete decks and Class C combustible deck requirements with a maximum roof slope 1.5 in 12 over wood decks. The assemblies described in 9.1.1 meet the severe hail rating and 1-90 wind classification.
- 9.2 See RoofNav for the fasteners and plates referenced in 9.1.1.
- 9.3 Tests show that the tested roof constructions in and of themselves would not create a need for automatic sprinklers.
- 9.4 Since a duly signed Master Agreement is on file for this customer, Approval is effective as of the date of this report.
- 9.5 Continued Approval will depend upon satisfactory field experience and periodic Facilities and Procedures Audits.


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**TESTING SUPERVISED BY:** Michael Slocumb

**PROJECT DATA RECORD:** 3028235

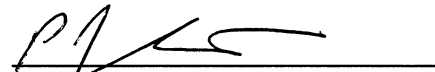
**ORIGINAL TEST DATA:** none

**ATTACHMENTS:** none

**REPORT BY:** 

**Michael S. Slocumb**  
Engineer - Materials Section

**REPORT REVIEWED BY:**



**P. J. Smith, P.E.**  
Technical Team Manager - Materials Section