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APPROVAL REPORT

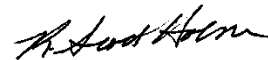
Project I.D. No: 3052654
Class: 4471
Product Name: METALIC HEX DRILL - PB 12-14 Fastener for Use in Metal Panel Roof Assemblies in accordance with FM 4471
Name of Listing Company: Hard Comercio de Fixadores e Resinas Ltda
Address of Listing Company: Rua Humberto Pinheiro Vieira 150 Lote 1B
Distrito Industrial
Joinville, Santa Catarina CEP89219-570
Brazil
Customer ID: 144787-1
Customer website: <http://www.hard.com.br>

Prepared by

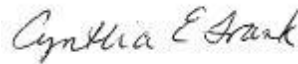


Michael P. DeSousa
Engineer, Material

Reviewed by



R. Scott Holmes
Technical Team Manager, Materials



Cynthia E. Frank
AVP, Manager, Materials

11/20/2014

Date of Approval

1 INTRODUCTION

1.1 Hard Comercio De Fixadores e Resinas Ltda requested Approval of their METALIC HEX DRILL - PB 12-14 Fastener to determine if they meet the Approval requirements of the standard listed in Section 1.4.

1.2 All testing was completed under Project I.D. 3047976 and released by the test sponsor for the purpose of this Approval.

1.3 This report may be freely reproduced only in its entirety and without modification.

1.4 Standard

Title	Number	Issue Date
Approval Standard for Class I Panel Roofs	4471	3/2010

1.5 Listing

The products will be listed in RoofNav, an on-line resource of FM Approvals. Drawings and specifications are on file at FM Approvals.

2 DESCRIPTION

METALIC HEX DRILL - PB 12-14 Fastener is described as follows:

2.1 METALIC HEX DRILL - PB 12-14 are Size No. 12 screws Approved in lengths ranging from minimum 19.05mm (3/4 in.) to maximum 25.4mm (1.0 in.) long containing 14 threads per 25.4mm (1 in.) of a coarse-thread series, a 7.9mm (5/16 in.) hexagon drive head with an EPDM washer and a pilot drilling tip. The threads have a 5.5mm (0.186 in.) maximum major diameter and 4.6 mm (0.181 in.) minimum minor diameter. The screws are Carbon Steel, Zinc coated.

2.3 All products are as described in RoofNav. Formulations, drawings and specifications are on file at FM Approvals.

3 EXAMINATIONS AND TESTS

3.1 All components including those in Section 2 are referenced in Project 3047976. All samples were considered to be representative of standard production and were examined and tested as indicated below. Components incorporated into test samples were selected by FM Approvals personnel. Test samples were prepared by, or under the supervision of, FM Approvals personnel. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.

3.2 Several performance requirements and tests required by the Standard have been waived due to previous successful testing. See Table 1 below for details.

Table 1	
FM Standard 4471 Performance Requirement	Original Project ID Number(s)
Combustibility From Above the Roof Deck	Waived, See 3047976
Combustibility From Below the Roof Deck	Waived ¹
Wind Uplift Resistance Test	Waived, See 3047976
Foot Traffic Resistance Test	Waived, See 3047976
Hail Damage Resistance Test	Waived, See 3047976
¹ All insulations are Approved by the OEM, no new insulations included.	

4 MARKING

- 4.1 The manufacturer shall mark each packaging with the manufacturer's name and product trade name. In addition, packaging 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 locations under the FM Approvals Surveillance Audit 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.

5 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.

6 SURVEILLANCE AUDIT

The manufacturing facility at the following location shall be visited on a routine basis. The facility processes and quality control procedures in place have been determined to be satisfactory to manufacture products identical to that tested and Approved. A Form 797 shall be submitted to FM Approvals for requesting to manufacture products at any additional or alternate manufacturing facilities which are not listed below.

Audit Location:

Hard Comercio de Fixadores e Resinas Ltda
 Rua Humberto Pinheiro Vieira 150 Lote 1B
 Distrito Industrial
 Joinville, Santa Catarina CEP89219-570
 Brazil

7 MANUFACTURER'S RESPONSIBILITIES

- 7.1 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. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained from FM Approvals.
- 7.2 To ensure compliance with his procedures in the field, the manufacturer shall supply to the installer such necessary instruction or assistance required to produce the desired performance achieved in the tests.
- 7.3 In accordance with the Master Agreement, the manufacturer shall make full and immediate disclosure to FM Approvals of all information concerning any defect in, or potential hazard of, the product or service manufactured or provided by the Customer which is Approved by, or being examined by, FM Approvals. The manufacturer shall make all necessary arrangements for the investigation of complaints / anomalies applicable to this approval and shall keep records of all complaints / anomalies including actions taken.

8 DOCUMENTATION

The following document describes the METALIC HEX DRILL - PB 12-14 Fastener and is on file at FM Approvals.

Document Title	Revised Date	Description
Surveillance Audit Manual for Hard Comercio De Fixadores	November 19, 2014	Drawings, Raw Materials, Specifications, Quality Control and Production Procedures

9 CONCLUSIONS

- 9.1 Test results from this and previous test programs indicate that the METALIC HEX DRILL - PB 12-14 Fastener as evaluated, meet the requirements of FM Approvals Standard listed in section 1.4.
- 9.2 Tests show that the tested roof constructions in and of themselves would not create a need for automatic sprinklers.
- 9.3 Since a duly signed Master Agreement is on file for this customer, Approval is effective as of the date of this report.
- 9.4 Continued Approval will depend upon satisfactory field experience and periodic Facilities and Procedures Audits.

FM APPROVALS PROJECT NO: 3052654

PROJECT DATA RECORD: 3052654

ATTACHMENTS: None

ORIGINAL TEST DATA: See Project Data Records (PDRs) for Project I.D.
3047976