



Product Evaluation Report

PER-05004

Page 1 of 3

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Initial Listing
August, 1998

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Listed Product

Miracle Foamseal F-2100 Two-Part
Polyurethane Structural Adhesive

Listed For

ITW TACC Polyurethane Center

56 Air Station Industrial Park
Rockland, ME 02370

Approved Manufacturer

ITW TACC Polyurethane Center

56 Air Station Industrial Park
Rockland, ME 02370

Progressive Engineering Inc. is an accredited Testing Laboratory and Third Party Quality Control Agency. This **Product Evaluation Report** represents a product that *Pei* has a follow-up service agreement with. This **Product Evaluation Report** in no way implies warranty for this product or relieves **ITW TACC Polyurethane Center** of their liabilities for this product. *Pei* is accredited to ISO Standard 17020 and 17025. This **PER** is an official document if it is within one year of the initial or renewal date.

Listing Details

F-2100 adhesive is used to attach gypsum board to nominal lumber framing in walls and ceilings without the use of mechanical fasteners. Also, to attach tongue & Groove Knotty Pine to nominal framing in ceilings without the use of mechanical fasteners.

Product Description

F-2100 is a two-part polyurethane structural adhesive system. It is applied by pumping two components at a 1 to 1 volumetric ratio under pressure through heating equipment to produce one continuous bead. The two components are an "A ISO" and a "B Resin". The A ISO is a purchased material and the B Resin is manufactured by **ITW TACC**.

Containers and Storage

The A & B components are shipped in 330 gallon caged totes or in 55 gallon steel drums. Storage of these containers should be in an indoor dry place between 65°F. and 95°F. Unopened containers will have a storage life of up to six months in these conditions.

General Product Use

The gypsum board being used shall meet ASTM C 1396. The nominal lumber is to be kiln dried and graded. All substrate surfaces shall be clean, dry and free of dust, wax, ice and loose particles and shall have a surface temperature between 50°F. and 105°F. F-2100 adhesive should be applied in an ambient temperature range of 50°F. to 105°F. The adhesive is applied along the intersection of the gypsum or T&G pine and the nominal lumber according to **ITW TACC's** application instructions. The adhesive temperature at the heater block should be between 100°F. and 115°F. After the last bead is applied, the structure shall not be moved for a minimum of two minutes. The structure should stay in the same ambient conditions for the first 24 hours after application.

F-2100 adhesive can be used on 24" and 16" o.c. framing. The fillet beads produced should measure a **minimum** of 1" average on the gypsum and 3/4" average on the framing. A bead should never be greater than 3" in size. The adhesive beads are applied along one side of field framing and along both sides at gypsum seams. The adhesive is applied to both sides of all framing members when applying to T&G pine. The T&G Pine is for ceiling applications only.

Listing Criteria

1. The F-2100 adhesive shall be installed according to **ITW TACC's** application instructions. A copy of these instructions must be made easily available at the assembly areas.
2. This Product Evaluation Report is for F-2100 to be applied in an indoor manufacturing facility and is not meant to be applied in an outdoor uncontrolled environment.
3. F-2100 adhesive is to be manufactured at the **ITW TACC** plant in Rockland, ME following their approved Q.C. program with unannounced inspections by Progressive Engineering Inc.

4. The use of F-2100 adhesive in a fire rated assembly is not addressed in this Product Evaluation Report.
5. A vapor barrier cannot be used between the adhesive and the substrates.
6. F2100 is to be applied to the back side of standard raw gypsum and is not intended for other gypsums such as foil backed, moisture resistant or water resistant gypsums.
7. Construction of assemblies using F-2100 and their design values should be as described in the following test reports.

Building Code Compliance

2003 International Building Code(IBC)	1997 Uniform Building Code	2006 IBC	2009 IBC
2003 International Residential Code(IRC)	1999 Standard Building Code	2006 IRC	2009 IRC
1999 BOCA National Building Code			

Tested to

<i>Pei</i> Standard No. 89-1	<i>Pei</i> Standard No. 94-9	ASTM C 557
<i>Pei</i> Standard No. 93-7	<i>Pei</i> Standard No. 94-12	UL 723
<i>Pei</i> Standard No. 93-8	ASTM E 72	UL 1715

Product Documentation

- A MSDS sheet for F-2100 - Dated 3/12/2010
- A MSDS sheet for F-2100A - Dated 11/12/2009
- F-2100 Guidelines for Use, Application & Safe Handling - Dated March 2010
- A follow-up Listing & Inspection agreement between **Progressive Engineering** & **ITW TACC Polyurethane Center**

Opinion Letters dated:	9/14/1992	8/18/1994	8/17/2000	7/16/2008	5/15/2009
	8/26/1993	1/21/1997	10/31/2000	10/21/2008	10/1/2010
	12/6/1993	2/1/1999	2/28/2006	5/15/2009	

The following is a list of test reports for F-2100 Adhesive.

<u>Ceiling Diaphragm Test</u>	<u>Ceiling Dead Load Tests</u>	<u>Wall Racking Tests</u>				
1987-1098	2000-1669	1992-0596	1991-1752A	1991-1890B	1994-1650	1999-1080F
1993-1036	2000-2193	1994-1260	1991-1752B	1991-1890C	1995-1206	1999-1080G
1993-1038		1996-1630	1991-1752C	1991-1890D	1995-1470A	1999-1080H
1993-1066		1997-0640	1991-1752D	1991-1890E	1995-1470B	2000-0764
1993-1068		1997-2296A	1991-1752E	1991-2094A	1996-1420A	2008-0300
1993-1070		1997-2296B	1991-1874A	1992-0598A	1996-1420B	
1993-1072		1999-2908	1991-1874B	1992-0598B	1996-1420C	
1999-0646		2000-0288A	1991-1874C	1992-0598C	1997-1200A	
1999-2084		2008-0288B	1991-1874D	1994-0388	1997-1200B	
		2007-1819	1991-1874E	1994-0764	1997-1200C	
<u>Ceiling Sag Test</u>	<u>Transverse Load Test</u>	<u>Creep Recovery Test</u>	<u>2x4 Header Test</u>			
1992-1090A	1995-0844A	1993-0374	1995-1122A			
1992-1090B	1995-0844B	2007-1696	1995-1122B			
1992-1090C	1995-0844C	2008-0483				
1995-1014	1995-1594					
2001-0955A						
<u>Small Scale Tests</u>	<u>Fire Test</u>	<u>Bead Yield Test</u>				
1992-1122	MH10928 - 2-22-93	2007-0714				
1993-0732						

Design Values

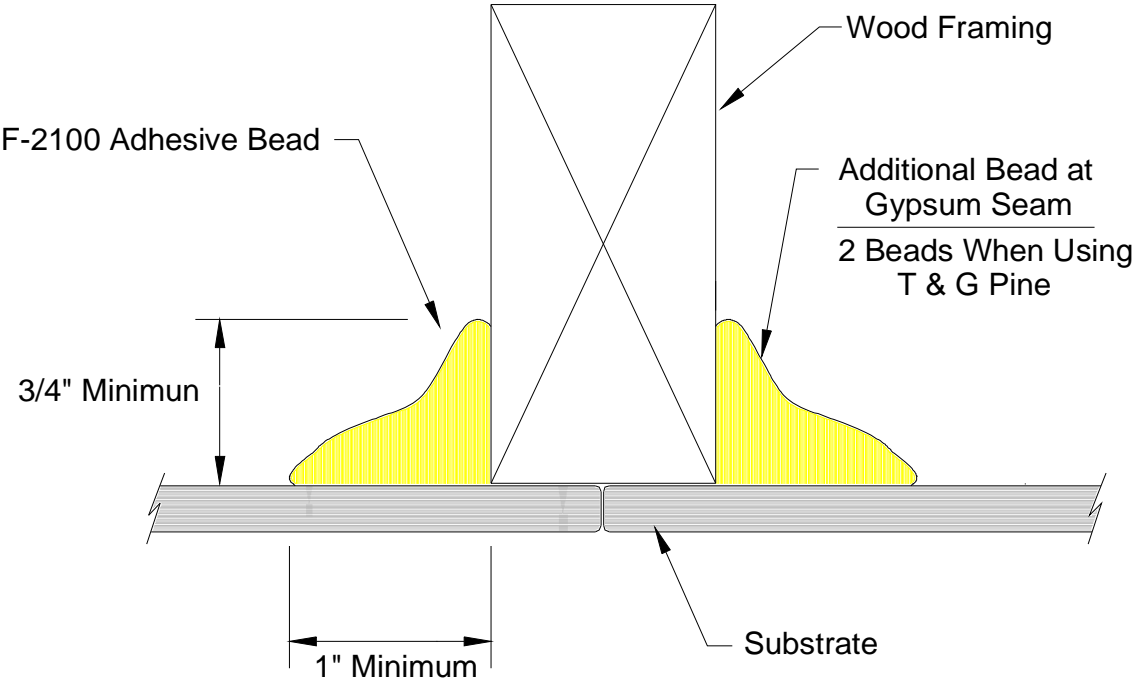
- Ceiling Diaphragm Design Load = **180 plf** (11'-9" minimum width x 48ft. Maximum diaphragm span using Gypsum only)
- Ceiling Dead Load Resistance = **12 psf** (Gypsum Board)
- Ceiling Dead Load Resistance = **20 psf** (Tongue and Groove Pine)

Product Labeling

Each container shipped of F-2100, that is covered by this Product Evaluation Report, must have a label attached with at least the following information:

1. **ITW TACC**'s name and address.
2. Date of manufacture
3. Shelf life information
4. This Product Evaluation Report number & Pei's logo
5. Smoke and Flame Spread Ratings
6. Component name

PER-05004



Two Component Urethane Adhesive



55 Gallon Steel Drums



F2100 ISO NT Black Tote



F2100 Resin NT Blue Tote