

## PERFORMANCE TEST REPORT

Hilti Entwicklungsgesellschaft mbH

SERIES/MODEL: CF 812

PRODUCT TYPE: AEROSOL FOAM SEALANT

<b>Title</b>	<b>Summary of Results</b>
HTC 1250	<b>Specimen #1</b>
Joint Movement Capability	+/-12.5%

*Reference should be made to Architectural Testing Inc. Report No. 58938.02-104-44 and 66502.01-201-44 for complete test specimen description and data on air infiltration and water infiltration testing before and after joint movement. HTC 1250 only addresses the movement portion of the testing sequence.*

## PERFORMANCE TEST REPORT

**Hilti Entwicklungsgesellschaft mbH**  
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**Germany**

Report No: 812.01  
Sample Prep: Jan 10<sup>th</sup>, 2006  
Test Date: Jan 13<sup>th</sup>, 2006  
Report Date: August 30<sup>th</sup>, 2006

**Test Method(s):** The test specimen was evaluated in accordance with the following:

ASTM E 283-91(99), *“Standard Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.”*

ASTM E 331-00 *“Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.”*

ASTM C 1620-05 *“Standard Specification for Aerosol Polyurethane and Latex Foam Sealants.”*

Hilti HTC 1250, *“Movement capability of One Component PU Foams”*

### **Test Specimen Description:**

**Series/Model:** CF 812

**Product Type:** 24 Ounce Aerosol Foam Sealant (Gun Grade)

**Joint Overall Size:** 20 mm wide by 460 mm long (¾" x 18")

**General Description:** The test material was identified as aerosol foam sealant. The foam sealant was installed in a 20mm wide by 76mm deep by 460mm long PVC window extrusion. The tested material and assembly were conditioned 24 hours prior to testing in an environment of 23C and 50% RH. Two passes were made when installing the foam sealant into the cavity. The foam passes were applied in a manner from both sides of the joint. The foam sealant was trimmed with a knife on both sides of the PVC extrusion in a manner flush to the PVC joint flank. One specimen was tested in this evaluation.

## 1. Scope

The scope of this test is to verify if 1C polyurethane foams (PU-foam) are able to follow joint movement which could be caused by the movement of a window frame or caused by temperature change or differences in thermal expansion of the substrates when installed in field applications.

The following test shall demonstrate if after 1000 movement cycles the joint filled with PU-foam will provide an airtight and watertight seal after cyclic movement. The ability of the foam to maintain a seal will be verified by administering methods ASTM E283 and ASTM E331. This test report will also indicate a visual examination after cycling and a determination shall be made by the technician if there is any visual adhesive or cohesive failure at the joint flanks. The criteria for the allowable air flow is defined in ASTM C-1620.

## 2. Test set up

The test set up is done as described in HTC 1250. The test set up was as follows – see picture:



PVC window extrusion with CF 812 between wood and PVC mounted in the tensile strength machine simulating joint movement.

**Rate of movement:** One cycle consisted of +/- 2.5mm over a 60 second period from peak to peak or trough to trough.

**Total mm of travel:** The total travel was +/- 2.5mm or in total 5mm. This means +/- 12.5% movement based on a 20mm joint design or 25% in total.

**3. Test results**

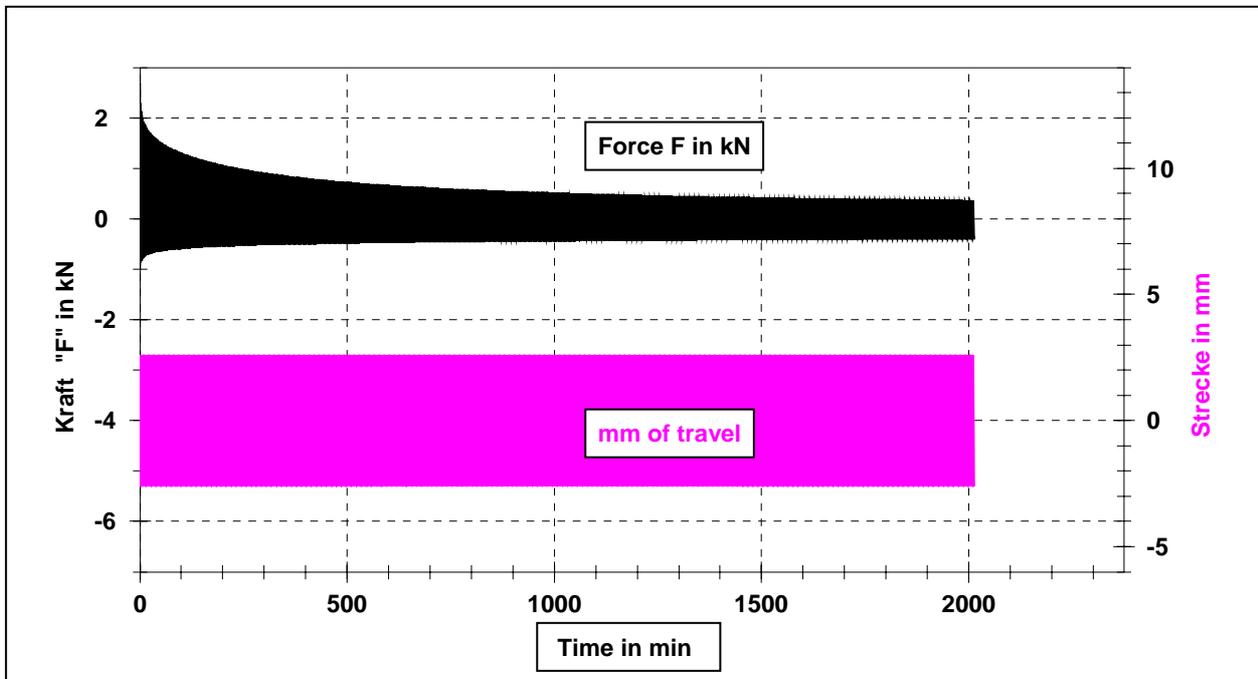
Title	Summary of Results
Adhesive Failure	<b>None</b>
Joint Movement Capability	+/-12.5%

The movement was +/-12.5%.

**Number of cycles:** 1000 cycles

a) Results from Zwick

The following results were received from the Zwick machine:



b) Visual

The CF 812 showed neither adhesive nor cohesive failure. After the movement cycles the foam was still elastic. There was no damage visible.

c) Air tightness – ASTM E 283

The tested module was brought to ATI-Testing for the evaluation of the air infiltration according to ASTM E 283.

According to ATI report No 58938.02-104-44 the CF 812 confirms to the air infiltration requirements in ASTM E 1620-05.

d) Water Infiltration ASTM E 331

After the test on air infiltration the module was tested on water infiltration according ASTM E 331. The test specimen showed no leakage.

#### 4. Conclusion

CF 812 could be used as a material for joints with low movement and as a material to air seal the joint between a window and wall often referred to as the "rough opening gap". The CF 812 has demonstrated that it is able to follow a movement of +/-12.5% for 1000 cycles on the tested joint design and substrate used.

Hilti can recommend the CF 812 for applications with low movement (less than +/-12.5%) and as a secondary air and water seal in window and door perimeters.

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