

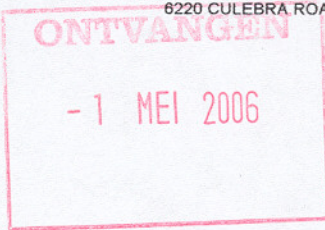


## SOUTHWEST RESEARCH INSTITUTE®

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, USA 78228-0510

(210) 684-5111 • <http://www.fctf.swri.org>

Mechanical and Materials Engineering Division  
April 21, 2006



Mr. Henry Winters  
Wouter Witzel Eurovalve  
Industrieterrein De Pol 12  
7581 CZ, Losser  
The Netherlands

**Subject:** Dynaxe High Performance Valves Fire Tested According to  
ISO 10497, Second Edition (2004) and API 607, Fifth Edition (2005)

Dear Mr. Winters:

Southwest Research Institute confirms that the four (4) butterfly valve material configurations listed below have been tested in the preferred direction of installation and meet the performance requirements of the following standards: ISO 10497, *Testing of Valves-Fire Type-Testing Requirements*, Second Edition (2004) and API 607, *Fire Test for Soft-Seated Quarter-Turn Valves*, Fifth Edition (2005).

**Manufacturer:** Wouter Witzel Eurovalve B.V.  
**Location:** Industrieterrein De Pol 12  
**Product:** Dynaxe High Performance Butterfly Valve

**Tested butterfly valve configurations:**

DN50 (2"), ferritic steel, RTFE fire safe, wafer type, Class150, manual gear operated  
DN100 (4"), ferritic steel, RTFE fire safe, wafer type, Class150, manual gear operated  
DN200 (8"), ferritic steel, RTFE fire safe, wafer type, Class150, manual gear operated  
DN200 (8"), austenitic steel, RTFE fire safe, wafer type, Class150, manual gear operated

For complete details of the tests performed and the results obtained, full copies of the following reports are available from Wouter Witzel Eurovalve B.V.:

Test report 6-1012, dated January 18, 2006  
Test report 6-1013, dated January 18, 2006  
Test report 6-995, dated February 2, 2006  
Test report 6-1024, dated April 10, 2006

Sincerely,

Robert A. Hart  
Senior Research Engineer

RAH:meb

c: FCTF File





**VALVE FIRE TEST  
PER ISO 10497, SECOND EDITION**

SwRI Test Number: <u>6-1012</u>	Test Date: <u>1/6/2006</u>
Valve Type: <u>Butterfly (soft-seated)</u>	Model Number: <u>Dynaxe WS201</u>
Rating: <u>Class 150</u> Size: <u>4.00 inch</u>	Valve Serial Number: <u>901057</u>
Valve Manufacturer: <u>Wouter Witzel Eurovalve<sup>(1)</sup></u>	
Manufacturer's Representative(s): <u>Henry Winters (not present to witness test)</u>	

The purpose of this test was to evaluate the performance of a butterfly valve by the valve fire test procedure of International Standard (ISO) 10497, Second Edition, 2004. This valve was tested in the preferred direction of flow.

**1. Through Leakage During Burn**

Average through leakage rate of 0.2 ml/min occurred during the 30.00-minute burn period. Allowable rate is 400.0 ml/min.

**2. Through Leakage During Cooldown**

Average leakage rate of 23.5 ml/min occurred during the 10.00-minute cooldown period. The standard does not have a requirement for the through leakage during cooldown.

**3. External Leakage During Burn and Cooldown**

Average external leakage rate of 0.0 ml/min occurred during the 40.00-minute burn and cooldown period. Allowable rate is 100.0 ml/min.

**4. Low Pressure Leak Test Following Cooldown**

Average through leakage rate of 18.0 ml/min occurred during the 5.00-minute test period. Allowable rate is 160.0 ml/min.

**5. Valve Operation After Fire Test**

The valve was capable of being unseated against the high-test pressure (214 psig) and moving to the full open position. The valve was operated using the manufacturer-supplied gear operator.

**6. High Pressure Leak Test Following Operation**

Average external leakage rate of 38.0 ml/min occurred during the 5.00-minute test period. Allowable rate is 100.0 ml/min.

**7. Summary**

Test valve meets the performance requirements of ISO 10497, Second Edition.

<sup>(1)</sup> Between the time that the test valve was received and tested, the manufacturer's company name was changed from PCC Eurovalve to Wouter Witzel Eurovalve.

**VALVE FIRE TEST  
PER ISO 10497, SECOND EDITION**

SwRI Test Number:	6-1013	Test Date:	1/6/2006
Valve Type:	Butterfly (soft-seated)	Model Number:	Dynaxe WS201
Rating:	Class 150	Size:	8.00 inch
Valve Manufacturer:	Wouter Witzel Eurovalve <sup>(1)</sup>		
Manufacturer's Representative(s):	Henry Winters (not present to witness test)		

The purpose of this test was to evaluate the performance of a butterfly valve by the valve fire test procedure of International Standard (ISO) 10497, Second Edition, 2004. This valve was tested in the preferred direction of flow.

**1. Through Leakage During Burn**

Average through leakage rate of 0.0 ml/min occurred during the 30.00-minute burn period. Allowable rate is 800.0 ml/min.

**2. Through Leakage During Cooldown**

Average leakage rate of 170.0 ml/min occurred during the 10.00-minute cooldown period. The standard does not have a requirement for the through leakage during cooldown.

**3. External Leakage During Burn and Cooldown**

Average external leakage rate of 0.0 ml/min occurred during the 40.00-minute burn and cooldown period. Allowable rate is 200.0 ml/min.

**4. Low Pressure Leak Test Following Cooldown**

Average through leakage rate of 15.0 ml/min occurred during the 5.00-minute test period. Allowable rate is 320.0 ml/min.

**5. Valve Operation After Fire Test**

The valve was capable of being unseated against the high-test pressure (214 psig) and moving to the full open position. The valve was operated using the manufacturer-supplied gear operator.

**6. High Pressure Leak Test Following Operation**

Average external leakage rate of 0.2 ml/min occurred during the 5.00-minute test period. Allowable rate is 200.0 ml/min.

**7. Summary**

Test valve meets the performance requirements of ISO 10497, Second Edition.

<sup>(1)</sup> Between the time that the test valve was received and tested, the manufacturer's company name was changed from PCC Eurovalve to Wouter Witzel Eurovalve.



**VALVE FIRE TEST  
PER ISO 10497, SECOND EDITION**

SwRI Test Number:	6-995	Test Date:	8/11/2005
Valve Type:	Butterfly	Model Number:	Dynaxe WS201
Rating:	Class 150	Size:	8.00 inch
		Valve Serial Number:	800909
Valve Manufacturer:	Wouter Witzel Eurovalve		
Manufacturer's Representative(s):	Tonny Pünt (not present to witness test)		

The purpose of this test was to evaluate the performance of a butterfly valve by the valve fire test procedure of International Standard (ISO) 10497, Second Edition, 2004. This valve was tested in the preferred direction of flow.

The procedures of ISO 10497, Second Edition were followed for this test with the exception of the requirement in Section 5.6.7 that the burn period be 30 minutes from burner ignition. Instead, the burn period was 30.85 minutes, which exceeds the requirements of ISO 10497. This modification was made so that this test could be performed simultaneously with an API 607, Fourth Edition fire test. All other test procedures were as stated in ISO 10497.

**1. Through Leakage During Burn**

Average through leakage rate of 145.9 ml/min occurred during the 30.85-minute burn period. Allowable rate is 800.0 ml/min.

**2. Through Leakage During Cooldown**

Average leakage rate of 4.0 ml/min occurred during the 10.00-minute cooldown period. The standard does not have a requirement for the through leakage during cooldown.

**3. External Leakage During Burn and Cooldown**

Average external leakage rate of 0.0 ml/min occurred during the 40.85-minute burn and cooldown period. Allowable rate is 200.0 ml/min.

**4. Low Pressure Leak Test Following Cooldown**

Average through leakage rate of 9.0 ml/min/NPS occurred during the 5.00-minute test period. Allowable rate is 320.0 ml/min.

**5. Valve Operation After Fire Test**

The valve was capable of being unseated against the high-test pressure (214 psig) and moving to the full open position. The valve was operated using the manufacturer-supplied gear operator.

**6. High Pressure Leak Test Following Operation**

Average external leakage rate of 12.0 ml/min occurred during the 5.00-minute test period. Allowable rate is 200.0 ml/min.

**7. Summary**

Test valve meets the performance requirements of ISO 10497, Second Edition.

**VALVE FIRE TEST  
PER ISO 10497, SECOND EDITION**

SwRI Test Number: <u>6-1024</u>	Test Date: <u>4/6/2006</u>
Valve Type: <u>Butterfly (soft-seated)</u>	Model Number: <u>Dynaxe W201</u>
Rating: <u>Class 150</u> Size: <u>2.00 inch</u>	Valve Serial Number: <u>900939</u>
Valve Manufacturer: <u>Wouter Witzel Eurovalve</u>	
Manufacturer's Representative(s): <u>Henry Winters (not present to witness test)</u>	

The purpose of this test was to evaluate the performance of a butterfly valve by the valve fire test procedure of International Standard (ISO) 10497, Second Edition, 2004. This valve was tested in the preferred direction of flow.

**1. Through Leakage During Burn**

Average through-leakage rate of 0.0 ml/min occurred during the 30.00-minute burn period. Allowable rate is 200.0 ml/min.

**2. Through Leakage During Cooldown**

Average leakage rate of 0.0 ml/min occurred during the 10.00-minute cooldown period. The standard does not have a requirement for the through leakage during cooldown.

**3. External Leakage During Burn and Cooldown**

Average external leakage rate of 0.0 ml/min occurred during the 40.00-minute burn and cooldown period. Allowable rate is 50.0 ml/min.

**4. Low Pressure Leak Test Following Cooldown**

Average through-leakage rate of 2.0 ml/min occurred during the 5.00-minute test period. Allowable rate is 80.0 ml/min.

**5. Valve Operation After Fire Test**

The valve was capable of being unseated against the high-test pressure (214 psig) and moving to the full open position. The valve was operated using the manufacturer-supplied gear operator.

**6. High Pressure Leak Test Following Operation**

Average external leakage rate of 8.0 ml/min occurred during the 5.00-minute test period. Allowable rate is 50.0 ml/min.

**7. Summary**

Test valve meets the performance requirements of ISO 10497, Second Edition.