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Test report

Date: October 14, 2014

Our ref.: 392-2014-001994

Sample material

Sample identification	Chemical protective material: Lab no. 392-2014-00199403: Nitril 3000 X-Long Blue Figure 1 shows a picture of the material
Test Chemical	1. Biguamed Perfekt N Monitoring breakthrough by measuring isopropanol concentration in recipient media continuously by GC/FID. 2. Perform Classic OXY (1 % solution in water) Monitoring breakthrough by continuously measuring pH in recipient media.
Receipt of samples	September 12 th 2014
Analytical period	October 6 th – October 14 th 2014

Applied methods

Method	Parameter	Break through	Uncertainty
ASTM F739-99	Permeation rate and break through	0.1 µg/cm ² /min.	10 % RSD
EN 374-3	Permeation rate and break through	1 µg/cm ² /min.	10 % RSD

Principle, Biguamed Perfekt N:

The protective glove was fixed between the two compartments of a standard permeation cell. The outer side of the material in test was covered with the challenge chemical – hence the suit was exposed continuously. The whole test area of 19.5 cm² was exposed. The cell temperature was kept at 25 °C throughout the test. Breakthrough was monitored continuously by GC/FID.

Principle, Perform Classic OXY:

The protective glove was fixed between the two compartments of a standard permeation cell. The outer side of the material in test was covered with the challenge chemical – hence the suit was exposed continuously. The whole test area of 19.5 cm² was exposed. The cell temperature was kept at 25 °C throughout the test. Breakthrough was monitored continuously by measuring pH in the recipient media (demineralized water).

Results

Test results for the permeation testing are summarised in the table below. See detailed results on the following pages.

Table 1. Test results, summary:

Average breakthrough time	ASTM F739-99	EN 374-3 (2003)	Permeation rate at steady state	Performance level
Nitril 3000 X-Long Blue	Minutes	Minutes	µg/cm²/min	EN 374-1
Biguamed Perfekt N	> 480	> 480	< 0.01	6
Perform Classic OXY	> 480	> 480	< 0.01	6

< means less than > means greater than

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Figure 1. Protective gloves



Table 2. Test Conditions

Challenge chemical	Biguamed Perfekt N	Test parameters	
Supplier	Rösner-Mautby Meditrade GmbH	Contact type	Continuous
Chemical state	Liquid	Collection media	Air
		Collection area	19.5 cm ²
		Analytical method	GC/FID
Sample		Sampling frequency	Continuous
Identification	Nitril 3000 X-Long Blue	Test temperature	25 °C
Condition	New single layer	Test duration	480 minutes
Suit area exposed	19.5 cm ²	Minimum detection rate	0.01 µg/cm ² /min.
		Calibration	Isopropanol

Table 3. Results, Biguamed Perfekt N on Nitril 3000 X-Long Blue

Sample	Nitril 3000 X-Long Blue			
Cell no.	1	2	3	Mean
Breakthrough ASTM (minutes)	> 480	> 480	> 480	> 480
Breakthrough EN (minutes)	> 480	> 480	> 480	> 480
Permeation rate steady state µg/cm ² /min.				< 0.01
Performance level EN				6
Post-test condition	No visual changes observed			

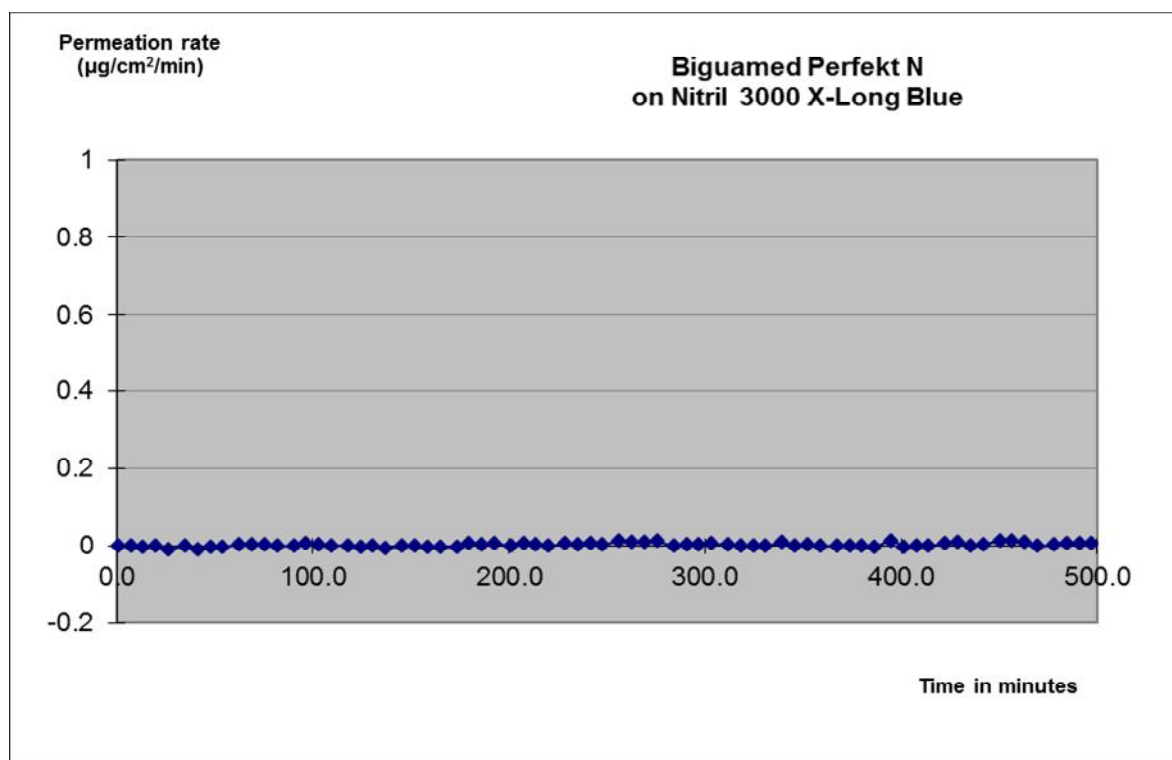
Figure 2. Permeation curve:

Table 4. Test Conditions

Challenge chemical	Perform Classic OXY	Test parameters	
Supplier	Rösner-Mautby Meditrade GmbH	Contact type	Continuous
Chemical state	Solid	Collection media	Demineralized water
Chemical solution	1 % in water (w/w)	Collection area	19.5 cm ²
		Analytical method	pH
Sample		Sampling frequency	Continuous
Identification	Nitril 3000 X-Long Blue	Test temperature	25 °C
Condition	New single layer	Test duration	480 minutes
Suit area exposed	19.5 cm ²	Minimum detection rate	0.01 µg/cm ² /min.
		Calibration	pH

Table 5. Results, Perform Classic OXY on Nitril 3000 X-Long Blue

Sample	Nitril 3000 X-Long Blue			
Cell no.	1	2	3	Mean
Breakthrough ASTM (minutes)	> 480	> 480	> 480	> 480
Breakthrough EN (minutes)	> 480	> 480	> 480	> 480
Permeation rate steady state µg/cm ² /min.				< 0.01
Performance level EN				6
Post-test condition	No visual changes observed			

Figure 2. Permeation curve: