

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000040331

Certified AMS: O342M for O₃

Manufacturer: Environnement S.A.
111 Boulevard Robespierre
78304 Poissy Cedex
France

Test Institute: TÜV Rheinland Energie und Umwelt GmbH

**This is to certify that the AMS has been tested
and found to comply with:**

**VDI 4202-1: 2002, VDI 4203-2: 2004, EN 14625: 2012,
EN 15267-1: 2009, EN 15267-2: 2009**

Certification is awarded in respect of the conditions stated in this certificate
(see also the following pages).



Suitability Tested
Complying with
2008/50/EC
EN 15267
Regular
Surveillance

www.tuv.com
ID 0000040331


Publication in the German Federal Gazette
(BAnz.) of 20 April 2007

German Federal Environment Agency
Dessau, 29 April 2014


i. A. Dr. Marcel Langher

This certificate will expire on:
31 March 2019

TÜV Rheinland Energie und Umwelt GmbH
Cologne, 28 April 2014


ppa. Dr. Peter Wilbring

www.umwelt-tuv.de / www.eco-tuv.com
teu@umwelt-tuv.de
Tel. +49 221 806-5200

TÜV Rheinland Energie und Umwelt GmbH
Am Grauen Stein
51105 Cologne

Accreditation according to EN ISO/IEC 17025 and certified according to ISO 9001:2008.

Certificate:
0000040331 / 29 April 2014

Test report: 936/21205818/B of 08 December 2006
Addendum 936/21221709/C of 28 September 2013

Initial certification: 01 April 2014

Date of expiry: 31 March 2019

Publication: BAnz AT 01 April 2014 B12, chapter VI, notification 21

Approved application

The certified AMS is suitable for continuous monitoring of ozone in ambient air.

The suitability of the AMS for this application was assessed on the basis of a laboratory test and a three-month field test.

The AMS is approved for a temperature range of 0 °C to +30 °C.

Any potential user should ensure, in consultation with the manufacturer, that this AMS is suitable for ambient air applications at which it will be installed.

Basis of the certification

This certification is based on:

- test report 936/21205818/B of 08 December 2006 of TÜV Rheinland Immissionsschutz und Energiesysteme GmbH and Addendum 936/21221709/C of 28 September 2013 of TÜV Rheinland Energie und Umwelt GmbH
- suitability announced by the German Federal Environment Agency (UBA) as the relevant body
- the on-going surveillance of the product and the manufacturing process
- publication in the German Federal Gazette (BAnz. 20 April 2007, No. 75, p. 4139, chapter III, No. 3.1, UBA publication from 12 April 2007)
- publication in the German Federal Gazette (BAnz AT 01 April 2014 B12, chapter VI, notification 21 UBA publication from 27 February 2014)

AMS designation:

O342M

Manufacturer:

Environnement S.A., Poissy Cedex, France and Ansyco GmbH Karlsruhe, Germany

Field of application:

For continuous monitoring of ozone in ambient air.

Measuring ranges during the performance test:

O₃ 0 - 360 µg/m³
 0 - 500 µg/m³

Software version:

V1.28

Test report:

TÜV Rheinland Immissionsschutz und Energiesysteme GmbH Cologne,
TÜV Rheinland Group
Report No.: 936/21205818/B vom 8 December 2006

Notification of announcement by the German Federal Environment Agency dated 12th April 2007 (BAnz. p. 4139, Chapter III Number 3.1)

The measuring system O342M for O₃, manufactured by Environnement, fulfils the requirements of Standard EN 14625 (December 2012). Furthermore, the manufacturing proves and the quality management system of the measuring system O342M for O₃ fulfil the requirements of EN 15267.

The test report of the performance test with report number 936/21205818/B as well as an addendum as an integral part of to the test report with report number 936/21221709/C can be viewed on the internet at www.qal1.de.

Statement by TÜV Rheinland Energie und Umwelt GmbH dated 28th September 2013

Certified product

This certificate applies to automated measurement systems conforming to the following description:

The analyser O342M measures ozone (O₃) in ambient air. It works by absorbing ozone in the UV range. The broad UV absorption spectrum of ozone has a maximum of approx. 254 nm. This wavelength precisely coincides with the strongest emission line of a mercury low-pressure lamp of 253.7 nm as well as with the maximum spectral sensitivity of the UV detector, a caesium telluride vacuum UV diode. This is an ideal requirement for photometric measurement of ozone.

The measuring principle complies with the standard reference method as stipulated in EN 14625.

General notes

This certificate is based upon the equipment tested. The manufacturer is responsible for ensuring that on-going production complies with the requirements of the EN 15267. The manufacturer is required to maintain an approved quality management system controlling the manufacture of the certified product. Both the product and the quality management systems shall be subject to regular surveillance.

If a product of the current production does not conform to the certified product, TÜV Rheinland Energie und Umwelt GmbH must be notified at the address given on page 1.

A certification mark with an ID-Number that is specific to the certified product is presented on page 1 of this certificate. This can be applied to the product or used in publicity material for the certified product is presented on page 1 of this certificate.

This document as well as the certification mark remains property of TÜV Rheinland Energie und Umwelt GmbH. With revocation of the publication the certificate loses its validity. After the expiration of the certificate and on requests of the TÜV Rheinland Energie und Umwelt GmbH this document shall be returned and the certificate mark must not be employed anymore.

The relevant version of this certificate and the validity is also accessible on the internet: qal1.de.

Certification of Model O342M for O₃ is based on the documents listed below and the regular, continuous monitoring of the Quality Management System of the manufacturer:

Initial test:

Test report: 936/21205818/B vom 08 December 2006
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Cologne

Publication: BAnz. 20 April 2007, No. 75, p. 4139, chapter III, No. 3.1
Announcement by UBA from 12 April 2007

Initial certification according to EN 15267:

Certificate No. 0000040331: 29 April 2014

Expiration date of the certificate: 31 March 2019

Test report: 936/21205818/B vom 08 December 2006
TÜV Rheinland Immissionsschutz und Energiesysteme GmbH, Cologne

Addendum 936/21221709/C of 28 September 2013
TÜV Rheinland Energie und Umwelt GmbH, Cologne

Publication: BAnz AT 01 April 2014 B12, chapter VI, notification 21
Announcement by UBA from 27 February 2014

Notification:

Publication: BAnz AT 01 April 2014 B12, chapter VI, notification 21
Announcement by UBA from 27 February 2014

Calculation of overall uncertainty lab test (Device 1)

Measuring device: Environment 0342M		Serial-No.:	Gerät 1	
Measured component: O ₃		1h-alert threshold:		120
No.	Performance characteristic	Performance criterion	Result	Square of partial uncertainty
1	Repeatability standard deviation at zero	≤ 1.0 nmol/mol	0.400	0.0025
2	Repeatability standard deviation at 1h-alert threshold	≤ 3.0 nmol/mol	1.000	0.0161
3	"lack of fit" at 1h-alert threshold	≤ 4.0% of measured value	-0.200	0.0192
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤ 2.0 nmol/mol/kPa	-0.010	0.0089
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0.023	0.0705
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0.035	0.0768
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤ 0.30 nmol/mol/V	-0.040	0.2904
8a	Interferent H ₂ O with 21 mmol/mol	≤ 10 nmol/mol (Zero) ≤ 10 nmol/mol (Span)	1.000 1.100	0.6737
8b	Interferent Toluene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero) ≤ 5.0 nmol/mol (Span)	0.100 2.600	8.6700
8c	Interferent Xylene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero) ≤ 5.0 nmol/mol (Span)	0.200 2.500	
9	Averaging effect	≤ 7.0% of measured value	3.000	4.3200
18	Difference sample/calibration port	≤ 1.0%	0.000	0.0000
21	Uncertainty of test gas	≤ 3.0%	2.000	1.4400
Combined standard uncertainty			u _c	3.9482
Expanded uncertainty			U	7.8964
Relative expanded uncertainty			W	6.58
Maximum allowed expanded uncertainty			W _{req}	15

Calculation of overall uncertainty lab test (Device 2)

Measuring device:		Serial-No.:		Gerät 2	
Measured component:		1h-alert threshold:		120	
Environment C342M		O ₃		nmol/mol	
No.	Performance characteristic	Performance criterion	Result	Partial uncertainty	Square of partial uncertainty
1	Repeatability standard deviation at zero	≤ 1.0 nmol/mol	0.400	u _{r,z}	0.0026
2	Repeatability standard deviation at 1h-alert threshold	≤ 3.0 nmol/mol	0.800	u _{r,v}	0.0108
3	"lack of fit" at 1h-alert threshold	≤ 4.0% of measured value	-1.300	u _{l,v}	0.8112
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤ 2.0 nmol/mol/kPa	0.010	u _{gp}	0.0089
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0.040	u _{gt}	0.2133
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0.065	u _{st}	0.2649
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤ 0.30 nmol/mol/V	-0.045	u _v	0.3675
8a	Interferent H ₂ O with 21 mmol/mol	≤ 10 nmol/mol (Zero) ≤ 10 nmol/mol (Span)	0.000 0.500	u _{H2O}	0.1392
8b	Interferent Toluene with 0.5 µmol/mol	≤ 5.0 nmol/mol (Zero) ≤ 5.0 nmol/mol (Span)	0.100 1.500	u _{int,pos} or	4.0633
8c	Interferent Xylene with 0.5 µmol/mol	≤ 5.0 nmol/mol (Zero) ≤ 5.0 nmol/mol (Span)	0.400 2.000	u _{int,neg}	
9	Averaging effect	≤ 7.0% of measured value	0.300	u _{av}	0.0432
18	Difference sample/calibration port	≤ 1.0%	0.000	u _{bsc}	0.0000
21	Uncertainty of test gas	≤ 3.0%	2.000	u _{cg}	1.4400
Combined standard uncertainty				u _c	2.7175
Expanded uncertainty				U	5.4351
Relative expanded uncertainty				W	4.53
Maximum allowed expanded uncertainty				W _{req}	15

Calculation of overall uncertainty lab and field test (Device 1)

Measuring device:		Serial-No.:		Gerät 1	
Environment O342M		1h-alert threshold:		120	
O ₃		Partial uncertainty		Square of partial uncertainty	
No.	Performance characteristic	Performance criterion	Result	Partial uncertainty	Square of partial uncertainty
1	Repeatability standard deviation at zero	≤ 1.0 nmol/mol	0.400	u _{r,z}	0.0025
2	Repeatability standard deviation at 1h-alert threshold	≤ 3.0 nmol/mol	1.000	u _{r,th} not considered, as u _{r,th} = 0.12 < u _{r,f}	-
3	"lack of fit" at 1h-alert threshold	≤ 4.0% of measured value	-0.200	u _{l,th}	0.0192
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤ 2.0 nmol/mol/kPa	-0.010	u _{sp}	0.0089
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0.023	u _{gt}	0.0705
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0.035	u _{st}	0.0768
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤ 0.30 nmol/mol/V	-0.040	u _v	0.2904
8a	Interferent H ₂ O with 21 mmol/mol	≤ 10 nmol/mol (Zero)	1.000	u _{H2O}	0.6737
		≤ 10 nmol/mol (Span)	1.100		
8b	Interferent Toluene with 0.5 µmol/mol	≤ 5.0 nmol/mol (Zero)	0.100	u _{tol,pos}	
		≤ 5.0 nmol/mol (Span)	2.600		
8c	Interferent Xylene with 0.5 µmol/mol	≤ 5.0 nmol/mol (Zero)	0.200	or	8.6700
		≤ 5.0 nmol/mol (Span)	2.500	u _{int,neg}	
9	Averaging effect	≤ 7.0% of measured value	3.000	u _{av}	4.3200
10	Reproducibility standard deviation under field conditions	≤ 5.0% of average over 3 months	3.240	u _{r,f}	15.1165
11	Long term drift at zero level	≤ 5.0 nmol/mol	-0.580	u _{l,z}	0.1121
12	Long term drift at span level	≤ 5.0% of max. of certification range	2.280	u _{l,th}	2.4952
18	Difference sample/calibration port	≤ 1.0%	0.000	u _{asc}	0.0000
21	Uncertainty of test gas	≤ 3.0%	2.000	u _{cg}	1.4400
Combined standard uncertainty				u _c	5.7703
Expanded uncertainty				U	11.5405
Relative expanded uncertainty				W	9.62
Maximum allowed expanded uncertainty				W _{req}	15

Calculation of overall uncertainty lab and field test (Device 2)

Measuring device:		Environment O342M		Serial-No.:		Gerät 2	
Measured component:		O ₃		1h-alert threshold:		120	
No.	Performance characteristic	Performance criterion	Result	Partial uncertainty	Square of partial uncertainty	nmol/mol	
1	Repeatability standard deviation at zero	≤ 1.0 nmol/mol	0.400	u _{r,z}	0.05	0.0026	
2	Repeatability standard deviation at 1h-alert threshold	≤ 3.0 nmol/mol	0.800	u _{r,h}	not considered, as u _{r,h} = 0.1 < u _{r,f}	-	
3	"lack of fit" at 1h-alert threshold	≤ 4.0% of measured value	-1.300	u _{l,h}	-0.90	0.8112	
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤ 2.0 nmol/mol/kPa	0.010	u _{sp}	0.09	0.0089	
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0.040	u _g	0.46	0.2133	
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0.065	u _{st}	0.51	0.2649	
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤ 0.30 nmol/mol/V	-0.045	u _y	-0.61	0.3675	
8a	Interferent H ₂ O with 21 nmol/mol	≤ 10 nmol/mol (Zero)	0.000	u _{H2O}	0.37	0.1392	
8b	Interferent Toluene with 0.5 µmol/mol	≤ 10 nmol/mol (Span)	0.500	u _{int,pos} or u _{int,neg}	2.02	4.0833	
		≤ 5.0 nmol/mol (Zero)	0.100				
		≤ 5.0 nmol/mol (Span)	1.500				
8c	Interferent Xylene with 0.5 µmol/mol	≤ 5.0 nmol/mol (Zero)	0.400				
		≤ 5.0 nmol/mol (Span)	2.000				
9	Averaging effect	≤ 7.0% of measured value	0.300	u _{av}	0.21	0.0432	
10	Reproducibility standard deviation under field conditions	≤ 5.0% of average over 3 months	3.240	u _{r,f}	3.89	15.1165	
11	Long term drift at zero level	≤ 5.0 nmol/mol	0.790	u _{d,l,z}	0.46	0.2080	
12	Long term drift at span level	≤ 5.0% of max. of certification range	3.550	u _{d,l,h}	2.46	6.0492	
18	Difference sample/calibration port	≤ 1.0%	0.000	u _{ssc}	0.00	0.0000	
21	Uncertainty of test gas	≤ 3.0%	2.000	u _{cg}	1.20	1.4400	
Combined standard uncertainty						u _c	5.3617
Expanded uncertainty						U	10.7234
Relative expanded uncertainty						W	8.94
Maximum allowed expanded uncertainty						W _{req}	15