

Calculation of overall uncertainty for QAL1 in EN 14181 and EN 15267-3

Manufacturer data

Manufacturer
Name of measuring system
Serial Number
Measuring Principle

Sick Maihak GmbH
MCS 100 FT
TUEV 1, TUEV 2, TUEV 3, TUEV 4
FTIR

TÜV Data

Approval Report

936/21206925A / 2008-10-20

Editor

Date

C. Ländgraf
2009-10-26

Measurement Component

Certificated range

HCl
15 mg/m³

Evaluation of the cross sensitivity (CS)

Sum of positive CS at zero point
Sum of negative CS at zero point
Sum of positive CS at reference point
Sum of negative CS at reference point
Maximum sum of cross sensitivities
Uncertainty of cross sensitivity

0.59 mg/m³
0.08 mg/m³
0.50 mg/m³
0.08 mg/m³
0.59 mg/m³
0.34 mg/m³

Calculation of the combined standard uncertainty

Test Value

Standard deviation from paired measurements under field conditions *
Lack of fit
Zero drift from field test
Span drift from field test
Influence of ambient temperature at span
Influence of supply voltage
Cross sensitivity (interference)
Influence of sample gas flow
Uncertainty of reference material at 70% of certification range

	u	u²
u _D	0.170 mg/m³	0.029 (mg/m³)²
u _{lof}	0.170 mg/m³	0.029 (mg/m³)²
u _{d,z}	-0.210 mg/m³	0.044 (mg/m³)²
u _{d,s}	-0.250 mg/m³	0.063 (mg/m³)²
u _t	-0.300 mg/m³	0.090 (mg/m³)²
u _v	0.060 mg/m³	0.004 (mg/m³)²
u _i	0.341 mg/m³	0.116 (mg/m³)²
u _p	0.000 mg/m³	0.000 (mg/m³)²
u _m	0.121 mg/m³	0.015 (mg/m³)²

* The bigger value of: "Repeatability standard deviation at span" or
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_c)

Total expanded uncertainty

$u_c = \sqrt{\sum (u_{max,j})^2}$ 0.62 mg/m³
 $U = u_c \cdot k = u_c \cdot 1.96$ 1.22 mg/m³

Relative total expanded uncertainty

Requirement of 2000/76/EC and 2001/80/EC
Requirement of EN 15267-3

U in % of the ELV 10 mg/m³ 12.2
U in % of the ELV 10 mg/m³ 40.0
U in % of the ELV 10 mg/m³ 30.0

Calculation of overall uncertainty for QAL1 in EN 14181 and EN 15267-3

Manufacturer data

Manufacturer
Name of measuring system
Serial Number
Measuring Principle

Sick Maihak GmbH
MCS 100 FT
TUEV 1, TUEV 2, TUEV 3, TUEV 4
FTIR

TÜV Data

Approval Report

936/21206925A / 2008-10-20

Editor

Date

C. Landgraf
2009-10-26

Measurement Component

Certificated range

HF
3 mg/m³

Evaluation of the cross sensitivity (CS)

Sum of positive CS at zero point
Sum of negative CS at zero point
Sum of positive CS at reference point
Sum of negative CS at reference point
Maximum sum of cross sensitivities
Uncertainty of cross sensitivity

0.12 mg/m³
-0.08 mg/m³
0.05 mg/m³
-0.11 mg/m³
0.12 mg/m³
0.07 mg/m³

Calculation of the combined standard uncertainty

Test Value

Repeatability standard deviation at set point *
Lack of fit
Zero drift from field test
Span drift from field test
Influence of ambient temperature at span
Influence of supply voltage
Cross sensitivity (interference)
Influence of sample gas flow
Uncertainty of reference material at 70% of certification range

	u	u²
u _r	0.050 mg/m³	0.003 (mg/m³)²
u _{lof}	-0.029 mg/m³	0.001 (mg/m³)²
u _{d,z}	-0.059 mg/m³	0.003 (mg/m³)²
u _{d,s}	-0.068 mg/m³	0.005 (mg/m³)²
u _t	0.081 mg/m³	0.007 (mg/m³)²
u _v	0.023 mg/m³	0.001 (mg/m³)²
u _i	0.069 mg/m³	0.005 (mg/m³)²
u _p	0.000 mg/m³	0.000 (mg/m³)²
u _{rm}	0.024 mg/m³	0.001 (mg/m³)²

* The bigger value of: "Repeatability standard deviation at span" or
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_c)

Total expanded uncertainty

$u_c = \sqrt{\sum (u_{max,j})^2}$ 0.15 mg/m³
 $U = u_c \cdot k = u_c \cdot 1.96$ 0.30 mg/m³

Relative total expanded uncertainty

Requirement of 2000/76/EC and 2001/80/EC

Requirement of EN 15267-3

U in % of the ELV 1 mg/m³ 30.3
U in % of the ELV 1 mg/m³ 40.0
U in % of the ELV 1 mg/m³ 30.0

Calculation of overall uncertainty for QAL1 in EN 14181 and EN 15267-3

Manufacturer data

Manufacturer
Name of measuring system
Serial Number
Measuring Principle

Sick Maihak GmbH.
MCS 100 FT
TUEV 1, TUEV 2, TUEV 3, TUEV 4
FTIR

TÜV Data

Approval Report

936/21206925A / 2008-10-20

Editor

Date

C. Landgraf
2009-10-26

Measurement Component

Certificated range

CH₄
50 mg/m³

Evaluation of the cross sensitivity (CS)

Sum of positive CS at zero point
Sum of negative CS at zero point
Sum of positive CS at reference point
Sum of negative CS at reference point
Maximum sum of cross sensitivities
Uncertainty of cross sensitivity

0.55 mg/m³
0.25 mg/m³
1.35 mg/m³
-0.60 mg/m³
1.35 mg/m³
0.78 mg/m³

Calculation of the combined standard uncertainty

Test Value

Standard deviation from paired measurements under field conditions *
Lack of fit
Zero drift from field test
Span drift from field test
Influence of ambient temperature at span
Influence of supply voltage
Cross sensitivity (interference)
Influence of sample gas flow
Uncertainty of reference material at 70% of certification range

	u	u ²
u _D	0.540 mg/m ³	0.292 (mg/m ³) ²
u _{lof}	-0.200 mg/m ³	0.040 (mg/m ³) ²
u _{d,z}	-0.720 mg/m ³	0.518 (mg/m ³) ²
u _{d,s}	-0.870 mg/m ³	0.757 (mg/m ³) ²
u _t	0.400 mg/m ³	0.160 (mg/m ³) ²
u _v	0.060 mg/m ³	0.004 (mg/m ³) ²
u _i	0.779 mg/m ³	0.608 (mg/m ³) ²
u _p	0.000 mg/m ³	0.000 (mg/m ³) ²
u _m	0.404 mg/m ³	0.163 (mg/m ³) ²

* The bigger value of: "Repeatability standard deviation at span" or
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_c)

Total expanded uncertainty

$$u_c = \sqrt{\sum (u_{max,j})^2} \quad 1.59 \text{ mg/m}^3$$

$$U = u_c \cdot k = u_c \cdot 1.96 \quad 3.12 \text{ mg/m}^3$$

Relative total expanded uncertainty

Requirement of 2000/76/EC and 2001/80/EC**

Requirement of EN 15267-3

U in % of the ELV 20 mg/m³ 15.6
U in % of the ELV 20 mg/m³ 30.0
U in % of the ELV 20 mg/m³ 22.5

** For this component no requirements in the EC-directives 2001/80/EC und 2000/76/EC are given.
The chosen value is recommended by the certification body.

Calculation of overall uncertainty for QAL1 in EN 14181 and EN 15267-3

Manufacturer data

Manufacturer
Name of measuring system
Serial Number
Measuring Principle

Sick Mahak GmbH
MCS 100 FT
TUEV 1, TUEV 2, TUEV 3, TUEV 4
FTIR

TÜV Data

Approval Report

936/21206925A / 2008-10-20

Editor
Date

C. Landgraf
2009-10-26

Measurement Component
Certificated range

CO₂
25 Vol.-%

Evaluation of the cross sensitivity (CS)

Sum of positive CS at zero point	0.23 Vol.-%
Sum of negative CS at zero point	-0.73 Vol.-%
Sum of positive CS at reference point	0.80 Vol.-%
Sum of negative CS at reference point	-0.78 Vol.-%
Maximum sum of cross sensitivities	0.80 Vol.-%
Uncertainty of cross sensitivity	0.46 Vol.-%

Calculation of the combined standard uncertainty

Test Value

Standard deviation from paired measurements under field conditions *
Lack of fit
Zero drift from field test
Span drift from field test
Influence of ambient temperature at span
Influence of supply voltage
Cross sensitivity (interference)
Influence of sample gas flow
Uncertainty of reference material at 70% of certification range

	u	u^2
u_D	0.360 Vol.-%	0.130 (Vol.-%) ²
u_{lof}	0.100 Vol.-%	0.010 (Vol.-%) ²
$u_{d,z}$	0.300 Vol.-%	0.090 (Vol.-%) ²
$u_{d,s}$	0.390 Vol.-%	0.152 (Vol.-%) ²
u_t	0.300 Vol.-%	0.090 (Vol.-%) ²
u_v	0.060 Vol.-%	0.004 (Vol.-%) ²
u_i	0.462 Vol.-%	0.213 (Vol.-%) ²
u_p	0.000 Vol.-%	0.000 (Vol.-%) ²
u_m	0.202 Vol.-%	0.041 (Vol.-%) ²

* The bigger value of: "Repeatability standard deviation at span" or
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_c)
Total expanded uncertainty

$u_c = \sqrt{\sum (u_{max,j})^2}$ 0.85 Vol.-%
 $U = u_c \cdot k = u_c \cdot 1,96$ 1.67 Vol.-%

Relative total expanded uncertainty
Requirement of 2000/76/EC and 2001/80/EC**
Requirement of EN 15267-3

U in % of the range 25 Vol.-%	6.7
U in % of the range 25 Vol.-%	10.0
U in % of the range 25 Vol.-%	7.5

** For this component no requirements in the EC-directives 2001/80/EC und 2000/76/EC are given.
The chosen value is recommended by the certification body.

Calculation of overall uncertainty for QAL1 in EN 14181 and EN 15267-3

Manufacturer data

Manufacturer
Name of measuring system
Serial Number
Measuring Principle

Sick Maihak GmbH
MCS 100 FT
TUEV 1, TUEV 2, TUEV 3, TUEV 4
FTIR

TÜV Data

Approval Report

936/21206925A / 2008-10-20

Editor

Date

C. Landgraf
2009-10-26

Measurement Component

Certificated range

H₂O
40 Vol.-%

Evaluation of the cross sensitivity (CS)

Sum of positive CS at zero point
Sum of negative CS at zero point
Sum of positive CS at reference point
Sum of negative CS at reference point
Maximum sum of cross sensitivities
Uncertainty of cross sensitivity

0.80 Vol.-%
-0.20 Vol.-%
0.76 Vol.-%
-0.76 Vol.-%
0.80 Vol.-%
0.46 Vol.-%

Calculation of the combined standard uncertainty

Test Value

Standard deviation from paired measurements under field conditions *

Lack of fit

Zero drift from field test

Span drift from field test

Influence of ambient temperature at span

Influence of supply voltage

Cross sensitivity (interference)

Influence of sample gas flow

Uncertainty of reference material at 70% of certification range

* The bigger value of: "Repeatability standard deviation at span" or
"Standard deviation from paired measurements under field conditions"

	u	u ²
u _D	0.160 Vol.-%	0.026 (Vol.-%) ²
u _{lor}	0.370 Vol.-%	0.137 (Vol.-%) ²
u _{d,z}	-0.600 Vol.-%	0.360 (Vol.-%) ²
u _{d,s}	0.670 Vol.-%	0.449 (Vol.-%) ²
u _t	0.280 Vol.-%	0.078 (Vol.-%) ²
u _v	0.050 Vol.-%	0.003 (Vol.-%) ²
u _i	0.462 Vol.-%	0.213 (Vol.-%) ²
u _p	0.000 Vol.-%	0.000 (Vol.-%) ²
u _m	0.323 Vol.-%	0.105 (Vol.-%) ²

Combined standard uncertainty (u_c)

Total expanded uncertainty

$$u_c = \sqrt{\sum (u_{max,i})^2} \quad 1.17 \text{ Vol.-%}$$

$$U = u_c \cdot k = u_c \cdot 1.96 \quad 2.29 \text{ Vol.-%}$$

Relative total expanded uncertainty

Requirement of 2000/76/EC and 2001/80/EC**

Requirement of EN 15267-3

U in % of the range 40 Vol.-% **5.7**
U in % of the range 40 Vol.-% **10.0**
U in % of the range 40 Vol.-% **7.5**

** For this component no requirements in the EC-directives 2001/80/EC und 2000/76/EC are given.
The chosen value is recommended by the certification body.

Calculation of overall uncertainty for QAL1 in EN 14181 and EN 15267-3

Manufacturer data

Manufacturer
Name of measuring system
Serial Number
Measuring Principle

Sick Maihak GmbH.
MCS 100 FT
TUEV 1, TUEV 2, TUEV 3, TUEV 4
FTIR

TÜV Data

Approval Report

936/21206925A / 2008-10-20

Editor

Date

C. Landgraf
2009-10-26

Measurement Component

Certificated range

N₂O
50 mg/m³

Evaluation of the cross sensitivity (CS)

Sum of positive CS at zero point
Sum of negative CS at zero point
Sum of positive CS at reference point
Sum of negative CS at reference point
Maximum sum of cross sensitivities
Uncertainty of cross sensitivity

1.95 mg/m³
-0.70 mg/m³
1.75 mg/m³
-0.80 mg/m³
1.95 mg/m³
1.13 mg/m³

Calculation of the combined standard uncertainty

Test Value

Repeatability standard deviation at set point *
Lack of fit
Zero drift from field test
Span drift from field test
Influence of ambient temperature at span
Influence of supply voltage
Cross sensitivity (interference)
Influence of sample gas flow
Uncertainty of reference material at 70% of certification range

	u	u ²
u _r	0.250 mg/m ³	0.063 (mg/m ³) ²
u _{lof}	0.140 mg/m ³	0.020 (mg/m ³) ²
u _{d,z}	-0.120 mg/m ³	0.014 (mg/m ³) ²
u _{d,s}	-0.520 mg/m ³	0.270 (mg/m ³) ²
u _t	-0.320 mg/m ³	0.102 (mg/m ³) ²
u _v	0.120 mg/m ³	0.014 (mg/m ³) ²
u _i	1.126 mg/m ³	1.268 (mg/m ³) ²
u _p	0.000 mg/m ³	0.000 (mg/m ³) ²
u _m	0.404 mg/m ³	0.163 (mg/m ³) ²

* The bigger value of: "Repeatability standard deviation at span" or
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_c)

Total expanded uncertainty

$$u_c = \sqrt{\sum (u_{max,j})^2} \quad 1.38 \text{ mg/m}^3$$

$$U = u_c \cdot k = u_c \cdot 1.96 \quad 2.71 \text{ mg/m}^3$$

Relative total expanded uncertainty

Requirement of 2000/76/EC and 2001/80/EC**

Requirement of EN 15267-3

U in % of the ELV 20 mg/m³ 13.6
U in % of the ELV 20 mg/m³ 20.0
U in % of the ELV 20 mg/m³ 15.0

** For this component no requirements in the EC-directives 2001/80/EC und 2000/76/EC are given.
The chosen value is recommended by the certification body.

Calculation of overall uncertainty for QAL1 in EN 14181 and EN 15267-3

Manufacturer data

Manufacturer
Name of measuring system
Serial Number
Measuring Principle

SICK MAIHAK GmbH
MCS 100 FT
TUEV 1, TUEV 2, TUEV 3, TUEV 4
FTIR

TÜV Data

Approval Report

936/21210511/A / 2010-03-22

Editor

Date

Steinhagen
2010-03-01

Measurement Component

Certificated range

NH₃
10 mg/m³

Evaluation of the cross sensitivity (CS)

Sum of positive CS at zero point
Sum of negative CS at zero point
Sum of positive CS at reference point
Sum of negative CS at reference point
Maximum sum of cross sensitivities
Uncertainty of cross sensitivity

0.40 mg/m³
0.00 mg/m³
0.00 mg/m³
-0.29 mg/m³
0.40 mg/m³
0.23 mg/m³

Calculation of the combined standard uncertainty

Test Value

Standard deviation from paired measurements under field conditions *
Lack of fit
Zero drift from field test
Span drift from field test
Influence of ambient temperature at span
Influence of supply voltage
Cross sensitivity (interference)
Influence of sample gas flow
Uncertainty of reference material at 70% of certification range

	u	u^2
u_D	0.076 mg/m ³	0.006 (mg/m ³) ²
u_{lof}	-0.035 mg/m ³	0.001 (mg/m ³) ²
$u_{d,z}$	0.030 mg/m ³	0.001 (mg/m ³) ²
$u_{d,s}$	0.170 mg/m ³	0.029 (mg/m ³) ²
u_t	0.072 mg/m ³	0.005 (mg/m ³) ²
u_v	0.072 mg/m ³	0.005 (mg/m ³) ²
u_i	0.231 mg/m ³	0.053 (mg/m ³) ²
u_p	0.000 mg/m ³	0.000 (mg/m ³) ²
u_{rm}	0.081 mg/m ³	0.007 (mg/m ³) ²

* The bigger value of: "Repeatability standard deviation at span" or
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_c)

Total expanded uncertainty

$$u_c = \sqrt{\sum (u_{max,j})^2} = 0.33 \text{ mg/m}^3$$

$$U = u_c \cdot k = u_c \cdot 1.96 = 0.64 \text{ mg/m}^3$$

Relative total expanded uncertainty

Requirement of 2000/76/EC and 2001/80/EC**

Requirement of EN 15267-3

U in % of the range mg/m³ 6.4
 U in % of the range mg/m³ 40.0
 U in % of the range mg/m³ 30.0

** For this component no requirements in the EC-directives 2001/80/EG und 2000/76/EG are given.
The chosen value is recommended by the certification body.

Calculation of overall uncertainty for QAL1 in EN 14181 and EN 15267-3

Manufacturer data

Manufacturer
Name of measuring system
Serial Number
Measuring Principle

SICK MAIHAK GmbH
MCS 100 FT
TUEV 3, TUEV 4
FID

TÜV Data

Approval Report

936/21210511/A / 2010-03-22

Editor

Date

Steinhagen
2010-03-01

Measurement Component

Certificated range

TOC

15 mg/m³

Evaluation of the cross sensitivity (CS)

Sum of positive CS at zero point
Sum of negative CS at zero point
Sum of positive CS at reference point
Sum of negative CS at reference point
Maximum sum of cross sensitivities
Uncertainty of cross sensitivity

0.46 mg/m³
0.00 mg/m³
0.26 mg/m³
0.00 mg/m³
0.46 mg/m³
0.27 mg/m³

Calculation of the combined standard uncertainty

Test Value

Standard deviation from paired measurements under field conditions *
Lack of fit
Zero drift from field test
Span drift from field test
Influence of ambient temperature at span
Influence of supply voltage
Cross sensitivity (Interference)
Influence of sample gas flow
Uncertainty of reference material at 70% of certification range
Variation of response factors (TOC)

	u	u²
u _D	0.046 mg/m³	0.002 (mg/m³)²
u _{lof}	0.058 mg/m³	0.003 (mg/m³)²
u _{d,z}	0.152 mg/m³	0.023 (mg/m³)²
u _{d,s}	-0.244 mg/m³	0.060 (mg/m³)²
u _t	0.100 mg/m³	0.010 (mg/m³)²
u _v	0.053 mg/m³	0.003 (mg/m³)²
u _i	0.270 mg/m³	0.073 (mg/m³)²
u _p	-0.063 mg/m³	0.004 (mg/m³)²
u _{rm}	0.121 mg/m³	0.015 (mg/m³)²
u _{rf}	0.980 mg/m³	0.960 (mg/m³)²

* The bigger value of: "Repeatability standard deviation at span" or
"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u_c)

Total expanded uncertainty

$$u_c = \sqrt{\sum (u_{mx, j})^2} \quad 1.07 \text{ mg/m}^3$$

$$U = u_c \cdot k = u_c \cdot 1.96 \quad 2.10 \text{ mg/m}^3$$

Relative total expanded uncertainty

Requirement of 2000/76/EC and 2001/80/EC
Requirement of EN 15267-3

U in % of the ELV mg/m³ 21.0
U in % of the ELV mg/m³ 30.0
U in % of the ELV mg/m³ 22.5

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS		
Identification	c/o Implants Di Combustione "Termica Colleferro"		
Serial number	11220143	Date	2012-05-02
Measuring system	MCS100FT		

Input values

Component	Certification range		Emissions limit value		Confidence interval
CO	75,00	mg/m ³	75,00	mg/m ³	10 %
CO ₂	25,00	Vol%	25,00	Vol%	20 %
NO	200,00	mg/m ³	200,00**	mg/m ³	20 %
NO ₂	100,00	mg/m ³	100,00	mg/m ³	20 %
N ₂ O	50,00	mg/m ³	20,00	mg/m ³	20 %
SO ₂	75,00	mg/m ³	50,00	mg/m ³	20 %
HCl	15,00	mg/m ³	10,00	mg/m ³	40 %
HF	3,00	mg/m ³	1,00	mg/m ³	40 %
NH ₃	10,00	mg/m ³	10,00	mg/m ³	40 %
H ₂ O	40,00	Vol%	40,00	Vol%	40 %
CH ₄	50,00	mg/m ³	20,00	mg/m ³	20 %
Corg	15,00	mg/m ³	10,00	mg/m ³	30 %
O ₂	21,00	Vol%	21,00	Vol%	20 %

* For this measuring component no emission limit values and confidence intervals are defined. Therefore full scale values and exemplary confidence intervals are used here.

** The emissions limit value for NO_x is given as NO₂-concentration, therefore the value as NO-concentration is decreased by the factor 1.63.

Interferent	Concentration		Interferent	Concentration	
Oxygen (O ₂)	3,00	Vol%	Ammonia (NH ₃)	20,00	mg/m ³
Oxygen (O ₂)	21,00	Vol%	Sulfur dioxide (SO ₂)	200,00	mg/m ³
Water (H ₂ O)	30,00	Vol%	Sulfur dioxide (SO ₂)	1.000,00	mg/m ³
Carbon monoxide (CO)	300,00	mg/m ³	Hydrogen chloride (HCl)	50,00	mg/m ³
Carbon dioxide (CO ₂)	15,00	Vol%	Hydrogen chloride (HCl)	200,00	mg/m ³
Methane (CH ₄)	50,00	mg/m ³			
Dinitrogen oxide (N ₂ O)	20,00	mg/m ³			
Dinitrogen oxide (N ₂ O)	100,00	mg/m ³			
Nitrogen monoxide (NO)	300,00	mg/m ³			
Nitrogen dioxide (NO ₂)	30,00	mg/m ³			

Required quality of the measurement

Requirement to response time	25	%	Requirement of the legislation, the customer or authority
Averaging time of measured values	60	min	

** Possible values are 25% for dynamic (standard) or 10 % for highly dynamic processes (EN ISO 14956, 7.2)

Summary of the results

Component	Response time	s(AMS) values		Quality of the measurement
		Zero point	Span point	
CO	Requirements fulfilled	1,6054	2,2209	Requirements fulfilled
CO ₂	Requirements fulfilled	0,6642	0,8039	Requirements fulfilled
NO	Requirements fulfilled	4,8824	6,8904	Requirements fulfilled
NO ₂	Requirements fulfilled	3,5867	3,7303	Requirements fulfilled
N ₂ O	Requirements fulfilled	1,0101	1,3420	Requirements fulfilled
SO ₂	Requirements fulfilled	1,8490	2,8310	Requirements fulfilled
HCl	Requirements fulfilled	0,5535	0,6030	Requirements fulfilled
HF	Requirements fulfilled	0,1481	0,1281	Requirements fulfilled
NH ₃	Requirements fulfilled	0,3362	0,3091	Requirements fulfilled
H ₂ O	Requirements fulfilled	0,9910	1,0581	Requirements fulfilled
CH ₄	Requirements fulfilled	1,2035	1,5330	Requirements fulfilled
Corg	Requirements fulfilled	0,7145	0,6893	Requirements fulfilled
O ₂	Requirements fulfilled	0,2851	0,3257	Requirements fulfilled

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS		
Identification	c/o Implanto Di Combustione "Termica Colleferro"	Date	2012-05-02
Serial number	11220143	Component	CO
Measuring system	MCS100FT		

Input values

Certification range	75 mg/m ³	Requirement to response time	25 %
Emissions limit value	75 mg/m ³	Averaging time of measured values	60 min
Confidence interval	10 %		

General information

Maintenance interval	6 months	Detection limit	0,32 mg/m ³
----------------------	----------	-----------------	------------------------

Required performance regarding dynamic operating conditions

Measured response time	2,27 min	
Requirement to response time	15,00 min	25% of the averaging time of 60 min

Result

Requirements fulfilled

Calculation of the expanded uncertainty

Interferent	Zero point	Span point
3 Vol% Oxygen (O ₂)	0,00 mg/m ³	0,00 mg/m ³
21 Vol% Oxygen (O ₂)	0,00 mg/m ³	0,00 mg/m ³
30 Vol% Water (H ₂ O)	0,00 mg/m ³	0,75 mg/m ³
300 mg/m ³ Carbon monoxide (CO)		
15 Vol% Carbon dioxide (CO ₂)	1,20 mg/m ³	0,00 mg/m ³
50 mg/m ³ Methane (CH ₄)	0,00 mg/m ³	0,00 mg/m ³
20 mg/m ³ Dinitrogen oxide (N ₂ O)	0,00 mg/m ³	0,00 mg/m ³
100 mg/m ³ Dinitrogen oxide (N ₂ O)	-1,35 mg/m ³	-2,63 mg/m ³
300 mg/m ³ Nitrogen monoxide (NO)	0,00 mg/m ³	0,00 mg/m ³
30 mg/m ³ Nitrogen dioxide (NO ₂)	0,00 mg/m ³	0,00 mg/m ³
20 mg/m ³ Ammonia (NH ₃)	0,00 mg/m ³	0,53 mg/m ³
200 mg/m ³ Sulfur dioxide (SO ₂)	0,00 mg/m ³	0,00 mg/m ³
1000 mg/m ³ Sulfur dioxide (SO ₂)	0,00 mg/m ³	0,00 mg/m ³
50 mg/m ³ Hydrogen chloride (HCl)	0,00 mg/m ³	0,00 mg/m ³
200 mg/m ³ Hydrogen chloride (HCl)	0,00 mg/m ³	0,00 mg/m ³

Sum of the positive cross-sensitivities
Sum of the negative cross-sensitivities

1,20 mg/m ³
-1,35 mg/m ³

1,28 mg/m ³
-2,63 mg/m ³

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS	Date	2012-05-02
Identification	c/o Impianto DI Combustione "Termica Colleferro"	Component	CO
Serial number	11220143		
Measuring system	MCS100FT		

Influences of the process characteristics

Process characteristics

Largest difference according to type approval

	Zero point	Span point
Lack-of-fit (Linearity)	1,28 mg/m ³	1,28 mg/m ³
Zero drift from the field test	1,13 mg/m ³	0,00 mg/m ³
Span drift from the field test	0,00 mg/m ³	-1,28 mg/m ³
Influence of ambient temperature at span point	0,15 mg/m ³	-1,28 mg/m ³
Influence of sample gas pressure	0,00 mg/m ³	0,00 mg/m ³
Influence of sample gas flow	0,00 mg/m ³	-0,08 mg/m ³
Influence of voltage	0,15 mg/m ³	0,23 mg/m ³
Cross-sensitivity	-1,35 mg/m ³	-2,63 mg/m ³
Repeatability at span point	0,16 mg/m ³	0,22 mg/m ³
Standard deviation from paired measurements under field conditions	0,85 mg/m ³	0,85 mg/m ³
Uncertainty of provided reference material	1,50 mg/m ³	1,50 mg/m ³
Misalignment	0,00 mg/m ³	0,00 mg/m ³
Conversion rate of AMS for measurement of NOx	0,00 mg/m ³	0,00 mg/m ³
Changes of response factors	0,00 mg/m ³	0,00 mg/m ³

Process characteristics

Standard uncertainty

	Zero point	Span point
Lack-of-fit (Linearity)	0,7361 mg/m ³	0,7361 mg/m ³
Zero drift from the field test	0,6495 mg/m ³	0,0000 mg/m ³
Span drift from the field test	0,0000 mg/m ³	-0,7361 mg/m ³
Influence of ambient temperature at span point	0,0866 mg/m ³	-0,7361 mg/m ³
Influence of sample gas pressure	0,0000 mg/m ³	0,0000 mg/m ³
Influence of sample gas flow	0,0000 mg/m ³	-0,0433 mg/m ³
Influence of voltage	0,0866 mg/m ³	0,1299 mg/m ³
Cross-sensitivity	-0,7794 mg/m ³	-1,5155 mg/m ³
Repeatability at span point	0,0924 mg/m ³	0,1270 mg/m ³
Standard deviation from paired measurements under field conditions	0,4909 mg/m ³	0,4909 mg/m ³
Uncertainty of provided reference material	0,8660 mg/m ³	0,8660 mg/m ³
Misalignment	0,0000 mg/m ³	0,0000 mg/m ³
Conversion rate of AMS for measurement of NOx	0,0000 mg/m ³	0,0000 mg/m ³
Changes of response factors	0,0000 mg/m ³	0,0000 mg/m ³

Calculation of the combined standard uncertainties

	Zero point	Span point
Combined standard uncertainty	1,6054 mg/m ³	2,2209 mg/m ³

Verification of compliance with the requirements

Combined standard uncertainty	2,31 mg/m ³	according to EN 15267-3
Expanded uncertainty	4,54 mg/m ³	according to EN 15267-3
Relative expanded uncertainty	6,05 %	of the emissions limit value of 75 mg/m ³
Allowed expanded uncertainty	10,00 %	of the emissions limit value of 75 mg/m ³
Allowed expanded uncertainty	7,50 mg/m ³	

Result

Requirements fulfilled

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 6.1

Device data

Customer	SIEMENS	Date	2012-05-02
Identification	c/o Implanto DI Combustione "Termica Colleferro"		
Serial number	11220143	Component	CO
Measuring system	MCS100FT		

Influences of the process characteristics

Process characteristics	Largest difference according to type approval	
	Zero point	Span point
Lack-of-fit (Linearity)	1,28 mg/m ³	1,28 mg/m ³
Zero drift from the field test	1,13 mg/m ³	0,00 mg/m ³
Span drift from the field test	0,00 mg/m ³	-1,28 mg/m ³
Influence of ambient temperature at span point	0,15 mg/m ³	-1,28 mg/m ³
Influence of sample gas pressure	0,00 mg/m ³	0,00 mg/m ³
Influence of sample gas flow	0,00 mg/m ³	-0,08 mg/m ³
Influence of voltage	0,15 mg/m ³	0,23 mg/m ³
Cross-sensitivity	-1,35 mg/m ³	-2,63 mg/m ³
Repeatability at span point	0,16 mg/m ³	0,22 mg/m ³
Standard deviation from paired measurements under field conditions	0,85 mg/m ³	0,85 mg/m ³
Uncertainty of provided reference material	1,50 mg/m ³	1,50 mg/m ³
Misalignment	0,00 mg/m ³	0,00 mg/m ³
Conversion rate of AMS for measurement of NOx	0,00 mg/m ³	0,00 mg/m ³
Changes of response factors	0,00 mg/m ³	0,00 mg/m ³

Process characteristics		Standard uncertainty	
		Zero point	Span point
Lack-of-fit (Linearity)	$u_{lof} =$	0,7361 mg/m ³	0,7361 mg/m ³
Zero drift from the field test	$u_{d,z} =$	0,6495 mg/m ³	0,0000 mg/m ³
Span drift from the field test	$u_{d,s} =$	0,0000 mg/m ³	-0,7361 mg/m ³
Influence of ambient temperature at span point	$u_t =$	0,0866 mg/m ³	-0,7361 mg/m ³
Influence of sample gas pressure	$u_p =$	0,0000 mg/m ³	0,0000 mg/m ³
Influence of sample gas flow	$u_f =$	0,0000 mg/m ³	-0,0433 mg/m ³
Influence of voltage	$u_v =$	0,0866 mg/m ³	0,1299 mg/m ³
Cross-sensitivity	$u_i =$	-0,7794 mg/m ³	-1,5155 mg/m ³
Repeatability at span point	$u_r =$	0,0924 mg/m ³	0,1270 mg/m ³
Standard deviation from paired measurements under field conditions	$u_D =$	0,4909 mg/m ³	0,4909 mg/m ³
Uncertainty of provided reference material	$u_m =$	0,8660 mg/m ³	0,8660 mg/m ³
Misalignment	$u_{mb} =$	0,0000 mg/m ³	0,0000 mg/m ³
Conversion rate of AMS for measurement of NOx	$u_{co} =$	0,0000 mg/m ³	0,0000 mg/m ³
Changes of response factors	$u_{rf} =$	0,0000 mg/m ³	0,0000 mg/m ³

Calculation of the combined standard uncertainties

Combined standard uncertainty	s(AMS) values	Zero point	Span point
		1,6054 mg/m ³	2,2209 mg/m ³

Verification of compliance with the requirements

Combined standard uncertainty	2,31 mg/m ³	according to EN 15267-3
Expanded uncertainty	4,54 mg/m ³	according to EN 15267-3
Relative expanded uncertainty	6,05 %	of the emissions limit value of 75 mg/m ³
Allowed expanded uncertainty	10,00 %	of the emissions limit value of 75 mg/m ³
Allowed expanded uncertainty	7,50 mg/m ³	

Result

Requirements fulfilled

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS		
Identification	c/o Implants DI Combustione "Termica Colleferro"		
Serial number	11220143	Date	2012-05-02
Measuring system	MCS100FT	Component	CO2

Input values

Certification range	25 Vol%	Requirement to response time	25 %
Measuring range	25 Vol%	Averaging time of measured values	60 min
Confidence interval	20 %		

Attention: The 2001/80/EC and 2000/76/EC gives no requirements for these components.

General information

Maintenance interval	3 months	Detection limit	0,06 Vol%
----------------------	----------	-----------------	-----------

Required performance regarding dynamic operating conditions

Measured response time	2,87 min		
Requirement to response time	15,00 min	25% of the averaging time of 60 min	

Result

Requirements fulfilled

Calculation of the expanded uncertainty

Interferent	Zero point	Span point
3 Vol% Oxygen (O2)	0,00 Vol%	0,00 Vol%
21 Vol% Oxygen (O2)	0,00 Vol%	0,00 Vol%
30 Vol% Water (H2O)	-0,33 Vol%	0,48 Vol%
300 mg/m ³ Carbon monoxide (CO)	0,00 Vol%	0,00 Vol%
15 Vol% Carbon dioxide (CO2)		
50 mg/m ³ Methane (CH4)	0,00 Vol%	0,00 Vol%
20 mg/m ³ Dinitrogen oxide (N2O)	0,00 Vol%	0,00 Vol%
100 mg/m ³ Dinitrogen oxide (N2O)	-0,40 Vol%	-0,35 Vol%
300 mg/m ³ Nitrogen monoxide (NO)	0,00 Vol%	0,00 Vol%
30 mg/m ³ Nitrogen dioxide (NO2)	0,00 Vol%	0,00 Vol%
20 mg/m ³ Ammonia (NH3)	0,00 Vol%	-0,35 Vol%
200 mg/m ³ Sulfur dioxide (SO2)	0,00 Vol%	0,00 Vol%
1000 mg/m ³ Sulfur dioxide (SO2)	0,00 Vol%	0,33 Vol%
50 mg/m ³ Hydrogen chloride (HCl)	0,00 Vol%	0,00 Vol%
200 mg/m ³ Hydrogen chloride (HCl)	0,00 Vol%	-0,13 Vol%

Sum of the positive cross-sensitivities
Sum of the negative cross-sensitivities

0,00 Vol%
-0,73 Vol%

0,80 Vol%
-0,83 Vol%

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS	Date	2012-05-02
Identification	c/o Implants DI Combustione "Termica Colleferro"		
Serial number	11220143	Component	CO2
Measuring system	MCS100FT		

Influences of the process characteristics

Process characteristics

Largest difference according to type approval

	Zero point	Span point
Lack-of-fit (Linearity)	0,38 Vol%	0,38 Vol%
Zero drift from the field test	0,53 Vol%	0,00 Vol%
Span drift from the field test	0,00 Vol%	0,68 Vol%
Influence of ambient temperature at span point	0,08 Vol%	0,53 Vol%
Influence of sample gas pressure	0,00 Vol%	0,00 Vol%
Influence of sample gas flow	0,00 Vol%	-0,03 Vol%
Influence of voltage	-0,03 Vol%	0,10 Vol%
Cross-sensitivity	-0,73 Vol%	-0,83 Vol%
Repeatability at span point	0,03 Vol%	0,05 Vol%
Standard deviation from paired measurements under field conditions	0,35 Vol%	0,35 Vol%
Uncertainty of provided reference material	0,50 Vol%	0,50 Vol%
Misalignment	0,00 Vol%	0,00 Vol%
Conversion rate of AMS for measurement of NOx	0,00 Vol%	0,00 Vol%
Changes of response factors	0,00 Vol%	0,00 Vol%

Process characteristics

Standard uncertainty

	Zero point	Span point
Lack-of-fit (Linearity)	0,2165 Vol%	0,2165 Vol%
Zero drift from the field test	0,3031 Vol%	0,0000 Vol%
Span drift from the field test	0,0000 Vol%	0,3897 Vol%
Influence of ambient temperature at span point	0,0433 Vol%	0,3031 Vol%
Influence of sample gas pressure	0,0000 Vol%	0,0000 Vol%
Influence of sample gas flow	0,0000 Vol%	-0,0144 Vol%
Influence of voltage	-0,0144 Vol%	0,0577 Vol%
Cross-sensitivity	-0,4186 Vol%	-0,4763 Vol%
Repeatability at span point	0,0173 Vol%	0,0289 Vol%
Standard deviation from paired measurements under field conditions	0,2046 Vol%	0,2046 Vol%
Uncertainty of provided reference material	0,2887 Vol%	0,2887 Vol%
Misalignment	0,0000 Vol%	0,0000 Vol%
Conversion rate of AMS for measurement of NOx	0,0000 Vol%	0,0000 Vol%
Changes of response factors	0,0000 Vol%	0,0000 Vol%

Calculation of the combined standard uncertainties

Combined standard uncertainty

s(AMS) values

Zero point

0,6642 Vol%

Span point

0,8039 Vol%

Verification of compliance with the requirements

Combined standard uncertainty	0,86 Vol%	according to EN 15267-3
Expanded uncertainty	1,68 Vol%	according to EN 15267-3
Relative expanded uncertainty	6,74 %	of the measuring range of 25 Vol%
Allowed expanded uncertainty	20,00 %	of the measuring range of 25 Vol%
Allowed expanded uncertainty	5,00 Vol%	

Result

Requirements fulfilled

Attention: The 2001/80/EC and 2000/76/EC gives no requirements for these components.

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS	Date	2012-05-02
Identification	c/o Implanto DI Combustione "Termica Colleferro"		
Serial number	11220143	Component	NO
Measuring system	MCS100FT		

Input values

Certification range	200	mg/m ³	Requirement to response time	25	%
Emissions limit value	200	mg/m ³	Averaging time of measured values	60	min
Confidence interval	20	%			

General information

Maintenance interval	6	months	Detection limit	0,76	mg/m ³
----------------------	---	--------	-----------------	------	-------------------

Required performance regarding dynamic operating conditions

Measured response time	2,87	min		
Requirement to response time	15,00	min	25% of the averaging time of 60 min	

Result

Requirements fulfilled

Calculation of the expanded uncertainty

Interferent	Zero point	Span point
3 Vol% Oxygen (O ₂)	0,00 mg/m ³	0,00 mg/m ³
21 Vol% Oxygen (O ₂)	0,00 mg/m ³	0,00 mg/m ³
30 Vol% Water (H ₂ O)	-5,20 mg/m ³	3,20 mg/m ³
300 mg/m ³ Carbon monoxide (CO)	0,00 mg/m ³	0,00 mg/m ³
15 Vol% Carbon dioxide (CO ₂)	0,00 mg/m ³	-4,80 mg/m ³
50 mg/m ³ Methane (CH ₄)	0,00 mg/m ³	0,00 mg/m ³
20 mg/m ³ Dinitrogen oxide (N ₂ O)	0,00 mg/m ³	0,00 mg/m ³
100 mg/m ³ Dinitrogen oxide (N ₂ O)	0,00 mg/m ³	2,00 mg/m ³
300 mg/m ³ Nitrogen monoxide (NO)		
30 mg/m ³ Nitrogen dioxide (NO ₂)	0,00 mg/m ³	0,00 mg/m ³
20 mg/m ³ Ammonia (NH ₃)	1,40 mg/m ³	0,00 mg/m ³
200 mg/m ³ Sulfur dioxide (SO ₂)	0,00 mg/m ³	0,00 mg/m ³
1000 mg/m ³ Sulfur dioxide (SO ₂)	0,00 mg/m ³	1,20 mg/m ³
50 mg/m ³ Hydrogen chloride (HCl)	0,00 mg/m ³	0,00 mg/m ³
200 mg/m ³ Hydrogen chloride (HCl)	0,00 mg/m ³	1,60 mg/m ³

Sum of the positive cross-sensitivities
Sum of the negative cross-sensitivities

1,40	mg/m ³
-5,20	mg/m ³

8,00	mg/m ³
-4,80	mg/m ³

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS	Date	2012-05-02
Identification	c/o Implanto DI Combustione "Termica Colleferro"		
Serial number	11220143	Component	NO
Measuring system	MCS100FT		

Influences of the process characteristics

Process characteristics	Largest difference according to type approval	
	Zero point	Span point
Lack-of-fit (Linearity)	-2,00 mg/m ³	-2,00 mg/m ³
Zero drift from the field test	3,60 mg/m ³	0,00 mg/m ³
Span drift from the field test	0,00 mg/m ³	-6,00 mg/m ³
Influence of ambient temperature at span point	-0,80 mg/m ³	-3,00 mg/m ³
Influence of sample gas pressure	0,00 mg/m ³	0,00 mg/m ³
Influence of sample gas flow	0,00 mg/m ³	-0,20 mg/m ³
Influence of voltage	0,20 mg/m ³	-1,60 mg/m ³
Cross-sensitivity	-5,20 mg/m ³	8,00 mg/m ³
Repeatability at span point	0,38 mg/m ³	0,78 mg/m ³
Standard deviation from paired measurements under field conditions	3,29 mg/m ³	3,29 mg/m ³
Uncertainty of provided reference material	4,00 mg/m ³	4,00 mg/m ³
Misalignment	0,00 mg/m ³	0,00 mg/m ³
Conversion rate of AMS for measurement of NOx	0,00 mg/m ³	0,00 mg/m ³
Changes of response factors	0,00 mg/m ³	0,00 mg/m ³

Process characteristics		Standard uncertainty	
		Zero point	Span point
Lack-of-fit (Linearity)	$u_{of} =$	-1,1547 mg/m ³	-1,1547 mg/m ³
Zero drift from the field test	$u_{d,z} =$	2,0785 mg/m ³	0,0000 mg/m ³
Span drift from the field test	$u_{d,s} =$	0,0000 mg/m ³	-3,4641 mg/m ³
Influence of ambient temperature at span point	$u_t =$	-0,4619 mg/m ³	-1,7321 mg/m ³
Influence of sample gas pressure	$u_p =$	0,0000 mg/m ³	0,0000 mg/m ³
Influence of sample gas flow	$u_f =$	0,0000 mg/m ³	-0,1155 mg/m ³
Influence of voltage	$u_v =$	0,1155 mg/m ³	-0,9238 mg/m ³
Cross-sensitivity	$u_l =$	-3,0022 mg/m ³	4,6188 mg/m ³
Repeatability at span point	$u_r =$	0,2194 mg/m ³	0,4503 mg/m ³
Standard deviation from paired measurements under field conditions	$u_D =$	1,9004 mg/m ³	1,9004 mg/m ³
Uncertainty of provided reference material	$u_m =$	2,3094 mg/m ³	2,3094 mg/m ³
Misalignment	$u_{mb} =$	0,0000 mg/m ³	0,0000 mg/m ³
Conversion rate of AMS for measurement of NOx	$u_{ca} =$	0,0000 mg/m ³	0,0000 mg/m ³
Changes of response factors	$u_{if} =$	0,0000 mg/m ³	0,0000 mg/m ³

Calculation of the combined standard uncertainties

Combined standard uncertainty	s(AMS) values	Zero point	Span point
		4,8824 mg/m ³	6,8904 mg/m ³

Verification of compliance with the requirements

Combined standard uncertainty	7,20	mg/m ³	according to EN 15267-3
Expanded uncertainty	14,11	mg/m ³	according to EN 15267-3
Relative expanded uncertainty	7,05	%	of the emissions limit value of 200 mg/m ³
Allowed expanded uncertainty	20,00	%	of the emissions limit value of 200 mg/m ³
Allowed expanded uncertainty	40,00	mg/m ³	

Result

Requirements fulfilled

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS		
Identification	c/o Implanto DI Combustione "Termica Colleferro"		
Serial number	11220143	Date	2012-05-02
Measuring system	MCS100FT	Component	NO2

Input values

Certification range	100	mg/m ³	Requirement to response time	25	%
Emissions limit value	100	mg/m ³	Averaging time of measured values	60	min
Confidence interval	20	%			

General information

Maintenance interval	6	months	Detection limit	0,38	mg/m ³
----------------------	---	--------	-----------------	------	-------------------

Required performance regarding dynamic operating conditions

Measured response time	2,92	min		
Requirement to response time	15,00	min	25% of the averaging time of 60 min	

Result

Requirements fulfilled

Calculation of the expanded uncertainty

Interferent	Zero point	Span point
3 Vol% Oxygen (O2)	0,00 mg/m ³	0,00 mg/m ³
21 Vol% Oxygen (O2)	0,00 mg/m ³	0,00 mg/m ³
30 Vol% Water (H2O)	-1,50 mg/m ³	1,00 mg/m ³
300 mg/m ³ Carbon monoxide (CO)	0,00 mg/m ³	0,00 mg/m ³
15 Vol% Carbon dioxide (CO2)	0,50 mg/m ³	-1,10 mg/m ³
50 mg/m ³ Methane (CH4)	-0,90 mg/m ³	0,00 mg/m ³
20 mg/m ³ Dinitrogen oxide (N2O)	0,00 mg/m ³	0,00 mg/m ³
100 mg/m ³ Dinitrogen oxide (N2O)	1,00 mg/m ³	0,00 mg/m ³
300 mg/m ³ Nitrogen monoxide (NO)	3,20 mg/m ³	3,00 mg/m ³
30 mg/m ³ Nitrogen dioxide (NO2)		
20 mg/m ³ Ammonia (NH3)	0,00 mg/m ³	-1,00 mg/m ³
200 mg/m ³ Sulfur dioxide (SO2)	0,00 mg/m ³	0,00 mg/m ³
1000 mg/m ³ Sulfur dioxide (SO2)	0,00 mg/m ³	0,00 mg/m ³
50 mg/m ³ Hydrogen chloride (HCl)	0,00 mg/m ³	0,00 mg/m ³
200 mg/m ³ Hydrogen chloride (HCl)	0,00 mg/m ³	-2,60 mg/m ³

Sum of the positive cross-sensitivities
Sum of the negative cross-sensitivities

4,70	mg/m ³
-2,40	mg/m ³

4,00	mg/m ³
-4,70	mg/m ³

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS		
Identification	c/o Impianto Di Combustione "Termica Colleferro"		
Serial number	11220143	Date	2012-05-02
Measuring system	MCS100FT	Component	NO2

Influences of the process characteristics

Process characteristics	Largest difference according to type approval	
	Zero point	Span point
Lack-of-fit (Linearity)	2,00 mg/m ³	2,00 mg/m ³
Zero drift from the field test	-2,30 mg/m ³	0,00 mg/m ³
Span drift from the field test	0,00 mg/m ³	3,00 mg/m ³
Influence of ambient temperature at span point	1,30 mg/m ³	0,90 mg/m ³
Influence of sample gas pressure	0,00 mg/m ³	0,00 mg/m ³
Influence of sample gas flow	0,00 mg/m ³	-0,10 mg/m ³
Influence of voltage	0,30 mg/m ³	-0,60 mg/m ³
Cross-sensitivity	4,70 mg/m ³	-4,70 mg/m ³
Repeatability at span point	0,19 mg/m ³	0,47 mg/m ³
Standard deviation from paired measurements under field conditions	1,21 mg/m ³	1,21 mg/m ³
Uncertainty of provided reference material	2,00 mg/m ³	2,00 mg/m ³
Misalignment	0,00 mg/m ³	0,00 mg/m ³
Conversion rate of AMS for measurement of NOx	0,00 mg/m ³	0,00 mg/m ³
Changes of response factors	0,00 mg/m ³	0,00 mg/m ³

Process characteristics

		Standard uncertainty	
		Zero point	Span point
Lack-of-fit (Linearity)	$u_{\text{lot}} =$	1,1547 mg/m ³	1,1547 mg/m ³
Zero drift from the field test	$u_{\text{d,z}} =$	-1,3279 mg/m ³	0,0000 mg/m ³
Span drift from the field test	$u_{\text{d,s}} =$	0,0000 mg/m ³	1,7321 mg/m ³
Influence of ambient temperature at span point	$u_t =$	0,7506 mg/m ³	0,5196 mg/m ³
Influence of sample gas pressure	$u_p =$	0,0000 mg/m ³	0,0000 mg/m ³
Influence of sample gas flow	$u_f =$	0,0000 mg/m ³	-0,0577 mg/m ³
Influence of voltage	$u_v =$	0,1732 mg/m ³	-0,3464 mg/m ³
Cross-sensitivity	$u_l =$	2,7135 mg/m ³	-2,7135 mg/m ³
Repeatability at span point	$u_r =$	0,1097 mg/m ³	0,2714 mg/m ³
Standard deviation from paired measurements under field conditions	$u_D =$	0,7013 mg/m ³	0,7013 mg/m ³
Uncertainty of provided reference material	$u_m =$	1,1547 mg/m ³	1,1547 mg/m ³
Misalignment	$u_{\text{mb}} =$	0,0000 mg/m ³	0,0000 mg/m ³
Conversion rate of AMS for measurement of NOx	$u_{\text{co}} =$	0,0000 mg/m ³	0,0000 mg/m ³
Changes of response factors	$u_{\text{ft}} =$	0,0000 mg/m ³	0,0000 mg/m ³

Calculation of the combined standard uncertainties

Combined standard uncertainty	s(AMS) values	Zero point	Span point
		3,5887 mg/m ³	3,7303 mg/m ³

Verification of compliance with the requirements

Combined standard uncertainty	3,96 mg/m ³	according to EN 15267-3
Expanded uncertainty	7,76 mg/m ³	according to EN 15267-3
Relative expanded uncertainty	7,76 %	of the emissions limit value of 100 mg/m ³
Allowed expanded uncertainty	20,00 %	of the emissions limit value of 100 mg/m ³
Allowed expanded uncertainty	20,00 mg/m ³	

Result

Requirements fulfilled

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS		
Identification	c/o Implanto Di Combustione "Termica Colleferro"		
Serial number	11220143	Date	2012-05-02
Measuring system	MCS100FT	Component	NH3

Input values

Certification range	10	mg/m ³	Requirement to response time	25	%
Measuring range	10	mg/m ³	Averaging time of measured values	60	min
Confidence interval	40	%			

Attention: The 2001/80/EC and 2000/76/EC gives no requirements for these components.

General information

Maintenance interval	4	weeks	Detection limit	0,05	mg/m ³
----------------------	---	-------	-----------------	------	-------------------

Required performance regarding dynamic operating conditions

Measured response time	3,18	min		
Requirement to response time	15,00	min	25% of the averaging time of 60 min	

Result

Requirements fulfilled

Calculation of the expanded uncertainty

Interferent	Zero point	Span point
3 Vol% Oxygen (O ₂)	0,00 mg/m ³	0,00 mg/m ³
21 Vol% Oxygen (O ₂)	0,00 mg/m ³	0,00 mg/m ³
30 Vol% Water (H ₂ O)	0,08 mg/m ³	0,00 mg/m ³
300 mg/m ³ Carbon monoxide (CO)	0,07 mg/m ³	0,00 mg/m ³
15 Vol% Carbon dioxide (CO ₂)	0,09 mg/m ³	-0,10 mg/m ³
50 mg/m ³ Methane (CH ₄)	0,12 mg/m ³	-0,04 mg/m ³
20 mg/m ³ Dinitrogen oxide (N ₂ O)	0,00 mg/m ³	0,00 mg/m ³
100 mg/m ³ Dinitrogen oxide (N ₂ O)	0,00 mg/m ³	0,04 mg/m ³
300 mg/m ³ Nitrogen monoxide (NO)	0,13 mg/m ³	-0,10 mg/m ³
30 mg/m ³ Nitrogen dioxide (NO ₂)	0,00 mg/m ³	-0,05 mg/m ³
20 mg/m ³ Ammonia (NH ₃)		
200 mg/m ³ Sulfur dioxide (SO ₂)	0,00 mg/m ³	0,00 mg/m ³
1000 mg/m ³ Sulfur dioxide (SO ₂)	0,00 mg/m ³	0,00 mg/m ³
50 mg/m ³ Hydrogen chloride (HCl)	0,00 mg/m ³	0,00 mg/m ³
200 mg/m ³ Hydrogen chloride (HCl)	0,00 mg/m ³	0,00 mg/m ³

Sum of the positive cross-sensitivities
Sum of the negative cross-sensitivities

0,49 mg/m³

0,00 mg/m³

0,04 mg/m³

-0,29 mg/m³

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS	Date	2012-05-02
Identification	c/o Implanto DI Combustione "Termica Colleferro"		
Serial number	11220143	Component	NH3
Measuring system	MCS100FT		

Influences of the process characteristics

Process characteristics	Largest difference according to type approval	
	Zero point	Span point
Lack-of-fit (Linearity)	0,18 mg/m ³	0,18 mg/m ³
Zero drift from the field test	0,05 mg/m ³	0,00 mg/m ³
Span drift from the field test	0,00 mg/m ³	0,29 mg/m ³
Influence of ambient temperature at span point	-0,05 mg/m ³	-0,14 mg/m ³
Influence of sample gas pressure	0,00 mg/m ³	0,00 mg/m ³
Influence of sample gas flow	0,00 mg/m ³	-0,01 mg/m ³
Influence of voltage	-0,05 mg/m ³	0,07 mg/m ³
Cross-sensitivity	0,49 mg/m ³	-0,29 mg/m ³
Repeatability at span point	0,02 mg/m ³	0,07 mg/m ³
Standard deviation from paired measurements under field conditions	0,14 mg/m ³	0,14 mg/m ³
Uncertainty of provided reference material	0,20 mg/m ³	0,20 mg/m ³
Misalignment	0,00 mg/m ³	0,00 mg/m ³
Conversion rate of AMS for measurement of NOx	0,00 mg/m ³	0,00 mg/m ³
Changes of response factors	0,00 mg/m ³	0,00 mg/m ³

Process characteristics		Standard uncertainty	
		Zero point	Span point
Lack-of-fit (Linearity)	u_{inf} =	0,1039 mg/m ³	0,1039 mg/m ³
Zero drift from the field test	$u_{\text{d,z}}$ =	0,0289 mg/m ³	0,0000 mg/m ³
Span drift from the field test	$u_{\text{d,s}}$ =	0,0000 mg/m ³	0,1697 mg/m ³
Influence of ambient temperature at span point	u_t =	-0,0289 mg/m ³	-0,0808 mg/m ³
Influence of sample gas pressure	u_p =	0,0000 mg/m ³	0,0000 mg/m ³
Influence of sample gas flow	u_f =	0,0000 mg/m ³	-0,0058 mg/m ³
Influence of voltage	u_v =	-0,0289 mg/m ³	0,0404 mg/m ³
Cross-sensitivity	u_i =	0,2829 mg/m ³	-0,1674 mg/m ³
Repeatability at span point	u_r =	0,0115 mg/m ³	0,0404 mg/m ³
Standard deviation from paired measurements under field conditions	u_D =	0,0796 mg/m ³	0,0796 mg/m ³
Uncertainty of provided reference material	u_m =	0,1155 mg/m ³	0,1155 mg/m ³
Misalignment	u_{mb} =	0,0000 mg/m ³	0,0000 mg/m ³
Conversion rate of AMS for measurement of NOx	u_{co} =	0,0000 mg/m ³	0,0000 mg/m ³
Changes of response factors	u_{rf} =	0,0000 mg/m ³	0,0000 mg/m ³

Calculation of the combined standard uncertainties

Combined standard uncertainty	s(AMS) values	Zero point	Span point
		0,3362 mg/m ³	0,3091 mg/m ³

Verification of compliance with the requirements

Combined standard uncertainty	0,39	mg/m ³	according to EN 15267-3
Expanded uncertainty	0,75	mg/m ³	according to EN 15267-3
Relative expanded uncertainty	7,55	%	of the measuring range of 10 mg/m ³
Allowed expanded uncertainty	40,00	%	of the measuring range of 10 mg/m ³
Allowed expanded uncertainty	4,00	mg/m ³	

Result

Requirements fulfilled

Attention: The 2001/80/EC and 2000/76/EC gives no requirements for these components.

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS		
Identification	c/o Implanto DI Combustione "Termica Colleferro"		
Serial number	11220143	Date	2012-05-02
Measuring system	MCS100FT	Component	H2O

Input values

Certification range	40	Vol%	Requirement to response time	25	%
Measuring range	40	Vol%	Averaging time of measured values	60	min
Confidence interval	40	%			

Attention: The 2001/80/EC and 2000/76/EC gives no requirements for these components.

General information

Maintenance interval	6	months	Detection limit	0,04	Vol%
----------------------	---	--------	-----------------	------	------

Required performance regarding dynamic operating conditions

Measured response time	3,00	min			
Requirement to response time	15,00	min	25% of the averaging time of 60 min		

Result

Requirements fulfilled

Calculation of the expanded uncertainty

Interferent	Zero point	Span point
3 Vol% Oxygen (O2)	0,00 Vol%	0,00 Vol%
21 Vol% Oxygen (O2)	0,00 Vol%	0,00 Vol%
30 Vol% Water (H2O)		
300 mg/m³ Carbon monoxide (CO)	0,80 Vol%	0,76 Vol%
15 Vol% Carbon dioxide (CO2)	0,00 Vol%	0,00 Vol%
50 mg/m³ Methane (CH4)	-0,20 Vol%	-0,36 Vol%
20 mg/m³ Dinitrogen oxide (N2O)	0,00 Vol%	0,00 Vol%
100 mg/m³ Dinitrogen oxide (N2O)	0,00 Vol%	0,00 Vol%
300 mg/m³ Nitrogen monoxide (NO)	0,00 Vol%	0,00 Vol%
30 mg/m³ Nitrogen dioxide (NO2)	0,00 Vol%	0,00 Vol%
20 mg/m³ Ammonia (NH3)	0,00 Vol%	-0,20 Vol%
200 mg/m³ Sulfur dioxide (SO2)	0,00 Vol%	0,00 Vol%
1000 mg/m³ Sulfur dioxide (SO2)	0,00 Vol%	0,00 Vol%
50 mg/m³ Hydrogen chloride (HCl)	0,00 Vol%	0,00 Vol%
200 mg/m³ Hydrogen chloride (HCl)	0,00 Vol%	-0,20 Vol%

Sum of the positive cross-sensitivities
Sum of the negative cross-sensitivities

0,80	Vol%
-0,20	Vol%

0,76	Vol%
-0,76	Vol%

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS	Date	2012-05-02
Identification	c/o Implanto Di Combustione "Termica Colleferro"		
Serial number	11220143	Component	H2O
Measuring system	MCS100FT		

Influences of the process characteristics

Process characteristics	Largest difference according to type approval	
	Zero point	Span point
Lack-of-fit (Linearity)	0,64 Vol%	0,64 Vol%
Zero drift from the field test	-1,04 Vol%	0,00 Vol%
Span drift from the field test	0,00 Vol%	1,16 Vol%
Influence of ambient temperature at span point	0,12 Vol%	0,48 Vol%
Influence of sample gas pressure	0,00 Vol%	0,00 Vol%
Influence of sample gas flow	0,00 Vol%	-0,04 Vol%
Influence of voltage	0,08 Vol%	0,00 Vol%
Cross-sensitivity	0,80 Vol%	0,76 Vol%
Repeatability at span point	0,02 Vol%	0,06 Vol%
Standard deviation from paired measurements under field conditions	0,39 Vol%	0,39 Vol%
Uncertainty of provided reference material	0,80 Vol%	0,80 Vol%
Misalignment	0,00 Vol%	0,00 Vol%
Conversion rate of AMS for measurement of NOx	0,00 Vol%	0,00 Vol%
Changes of response factors	0,00 Vol%	0,00 Vol%

Process characteristics

Process characteristics		Standard uncertainty	
		Zero point	Span point
Lack-of-fit (Linearity)	u_{lof} =	0,3695 Vol%	0,3695 Vol%
Zero drift from the field test	u_{dz} =	-0,6004 Vol%	0,0000 Vol%
Span drift from the field test	u_{ds} =	0,0000 Vol%	0,6697 Vol%
Influence of ambient temperature at span point	u_t =	0,0693 Vol%	0,2771 Vol%
Influence of sample gas pressure	u_p =	0,0000 Vol%	0,0000 Vol%
Influence of sample gas flow	u_f =	0,0000 Vol%	-0,0231 Vol%
Influence of voltage	u_v =	0,0462 Vol%	0,0000 Vol%
Cross-sensitivity	u_i =	0,4619 Vol%	0,4388 Vol%
Repeatability at span point	u_r =	0,0115 Vol%	0,0346 Vol%
Standard deviation from paired measurements under field conditions	u_o =	0,2266 Vol%	0,2266 Vol%
Uncertainty of provided reference material	u_m =	0,4619 Vol%	0,4619 Vol%
Misalignment	u_{mb} =	0,0000 Vol%	0,0000 Vol%
Conversion rate of AMS for measurement of NOx	u_{co} =	0,0000 Vol%	0,0000 Vol%
Changes of response factors	u_{rf} =	0,0000 Vol%	0,0000 Vol%

Calculation of the combined standard uncertainties

Combined standard uncertainty	s(AMS) values	Zero point	Span point
		0,9910 Vol%	1,0581 Vol%

Verification of compliance with the requirements

Combined standard uncertainty	1,23 Vol%	according to EN 15267-3 according to EN 15267-3 of the measuring range of 40 Vol% of the measuring range of 40 Vol%
Expanded uncertainty	2,40 Vol%	
Relative expanded uncertainty	6,01 %	
Allowed expanded uncertainty	40,00 %	
Allowed expanded uncertainty	16,00 Vol%	

Result

Requirements fulfilled

Attention: The 2001/80/EC and 2000/76/EC gives no requirements for these components.

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS		
Identification	c/o Implanto DI Combustione "Termica Colleferro"	Date	2012-05-02
Serial number	11220143	Component	O2
Measuring system	MCS100FT		

Input values

Certification range	21	Vol%	Requirement to response time	25	%
Measuring range	21	Vol%	Averaging time of measured values	60	min
Confidence interval	20	%			

Attention: The 2001/80/EC and 2000/76/EC gives no requirements for these components.

General information

Maintenance interval	4	weeks	Detection limit	0,03	Vol%
----------------------	---	-------	-----------------	------	------

Required performance regarding dynamic operating conditions

Measured response time	2,27	min		
Requirement to response time	15,00	min	25% of the averaging time of 60 min	

Result

Requirements fulfilled

Calculation of the expanded uncertainty

Interferent	Zero point	Span point
3 Vol% Oxygen (O2)		
21 Vol% Oxygen (O2)	0,00 Vol%	0,00 Vol%
30 Vol% Water (H2O)	0,00 Vol%	0,00 Vol%
300 mg/m³ Carbon monoxide (CO)	0,00 Vol%	0,00 Vol%
15 Vol% Carbon dioxide (CO2)	0,00 Vol%	0,00 Vol%
50 mg/m³ Methane (CH4)	0,00 Vol%	0,00 Vol%
20 mg/m³ Dinitrogen oxide (N2O)	0,00 Vol%	0,00 Vol%
100 mg/m³ Dinitrogen oxide (N2O)	0,00 Vol%	0,00 Vol%
300 mg/m³ Nitrogen monoxide (NO)	0,00 Vol%	0,00 Vol%
30 mg/m³ Nitrogen dioxide (NO2)	0,00 Vol%	0,00 Vol%
20 mg/m³ Ammonia (NH3)	0,00 Vol%	0,00 Vol%
200 mg/m³ Sulfur dioxide (SO2)	0,00 Vol%	0,00 Vol%
1000 mg/m³ Sulfur dioxide (SO2)	0,00 Vol%	0,00 Vol%
50 mg/m³ Hydrogen chloride (HCl)	0,00 Vol%	0,00 Vol%
200 mg/m³ Hydrogen chloride (HCl)	0,00 Vol%	0,00 Vol%

Sum of the positive cross-sensitivities
Sum of the negative cross-sensitivities

0,00	Vol%
0,00	Vol%

0,00	Vol%
0,00	Vol%

Calculation of measurement uncertainty

according to EN ISO 14956, EN 14181 and EN 15267-3

Version 5.1

Device data

Customer	SIEMENS	Date	2012-05-02
Identification	c/o Implants DI Combustione "Termica Colleferro"		
Serial number	11220143	Component	O2
Measuring system	MCS100FT		

Influences of the process characteristics

Process characteristics

Largest difference according to type approval

	Zero point	Span point
Lack-of-fit (Linearity)	0,16 Vol%	0,16 Vol%
Zero drift from the field test	0,18 Vol%	0,00 Vol%
Span drift from the field test	0,00 Vol%	-0,20 Vol%
Influence of ambient temperature at span point	0,02 Vol%	0,24 Vol%
Influence of sample gas pressure	0,00 Vol%	0,00 Vol%
Influence of sample gas flow	-0,02 Vol%	0,01 Vol%
Influence of voltage	0,01 Vol%	-0,10 Vol%
Cross-sensitivity	0,00 Vol%	0,00 Vol%
Repeatability at span point	0,01 Vol%	0,01 Vol%
Standard deviation from paired measurements under field conditions	0,09 Vol%	0,09 Vol%
Uncertainty of provided reference material	0,42 Vol%	0,42 Vol%
Misalignment	0,00 Vol%	0,00 Vol%
Conversion rate of AMS for measurement of NOx	0,00 Vol%	0,00 Vol%
Changes of response factors	0,00 Vol%	0,00 Vol%

Process characteristics

Standard uncertainty

	Zero point	Span point
Lack-of-fit (Linearity)	0,0924 Vol%	0,0924 Vol%
Zero drift from the field test	0,1039 Vol%	0,0000 Vol%
Span drift from the field test	0,0000 Vol%	-0,1155 Vol%
Influence of ambient temperature at span point	0,0115 Vol%	0,1386 Vol%
Influence of sample gas pressure	0,0000 Vol%	0,0000 Vol%
Influence of sample gas flow	-0,0115 Vol%	0,0058 Vol%
Influence of voltage	0,0058 Vol%	-0,0577 Vol%
Cross-sensitivity	0,0000 Vol%	0,0000 Vol%
Repeatability at span point	0,0058 Vol%	0,0058 Vol%
Standard deviation from paired measurements under field conditions	0,0533 Vol%	0,0533 Vol%
Uncertainty of provided reference material	0,2425 Vol%	0,2425 Vol%
Misalignment	0,0000 Vol%	0,0000 Vol%
Conversion rate of AMS for measurement of NOx	0,0000 Vol%	0,0000 Vol%
Changes of response factors	0,0000 Vol%	0,0000 Vol%

Calculation of the combined standard uncertainties

	Zero point	Span point
Combined standard uncertainty	0,2851 Vol%	0,3257 Vol%

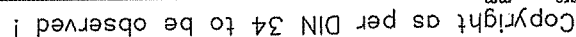
Verification of compliance with the requirements

Combined standard uncertainty	0,34 Vol%	according to EN 15267-3
Expanded uncertainty	0,67 Vol%	according to EN 15267-3
Relative expanded uncertainty	3,19 %	of the measuring range of 21 Vol%
Allowed expanded uncertainty	20,00 %	of the measuring range of 21 Vol%
Allowed expanded uncertainty	4,20 Vol%	

Result

Requirements fulfilled

Attention: The 2001/80/EC and 2000/76/EC gives no requirements for these components.



~~All leads without cross-section specification are mm~~

0.01	Sheet	1	Sh



Industrie Service

Certificate

TÜV Süd Industrie Service GmbH

Laboratory for Environmental Services
(Laboratorium Umwelt Service)

accredited according DIN EN ISO/IEC 17025 DAP-PL-2885.99

Oxymat 6E,F 7MB20

Gas Analyser for O₂

Report Nr. 24019084 (February 1999)

Manufacturer:

Siemens AG, Karlsruhe, Germany

TÜV Süd Industrie Service GmbH is herewith certifying that the analyser Oxymat 6E,F 7MB20 for O₂ has the following expanded uncertainty (calculated according DIN EN ISO 14956, Jan. 2003 and prEN 15267-3, August 2005):

Component	C _{test} Vol.-%	Range of measurement Vol.-%	Expanded Uncertainty according EN ISO 14956
Oxygen, O ₂	11	0-25	0,49 Vol.-% (2 % of range of measurement)

The analyser can be used in combination with other tested measuring systems which fulfil QAL 1 of EN 14181.

The calculation according DIN EN ISO 14956 was performed on the basis of the results of the investigations of report 24019084 (February 1999) for the German suitability test.

The following performance characteristics were regarded: Response time; lower detection limit; lack of fit; instability/ drift; repeatability; sensitivity to ambient temperature, ambient pressure, voltage supply and gas flow; sample losses, selectivity/ interfering components; uncertainty of calibration gas

Munich, January 2006

Dr. D. Fiederer

Dr. A. Brandl

Laboratorium Umwelt Service, TÜV Süd Industrie Service GmbH, IS-US3-MUC,
Westendstrasse 199, D-80686 München

TÜV Süddeutschland
TÜV Ecoplan Umwelt GmbH
Prozeß-Gasanalysator
ULTRAMAT 6 und OXYMAT 6

Bericht-Nr. 24019084

Hersteller:

SIEMENS AG, Karlsruhe, Deutschland

Die TÜV Ecoplan Umwelt GmbH, Unternehmensgruppe TÜV Süddeutschland bescheinigt hiermit für die Prozeßgasanalysatoren ULTRAMAT 6 und OXYMAT 6, daß folgende Meßergebnisse bei der Emissionsüberwachung einer Müllverbrennungsanlage erreicht wurden und die Anforderungen gemäß 13. BImSchV, 17. BImSchV und TA-Luft erfüllt werden.

Kleinste geprüfte Meßbereiche:

CO	0...50 mg/m ³	NO	0...100 mg/m ³
SO ₂	0...75 mg/m ³	O ₂	0...5 / 25 Vol.-%

Verfügbarkeit:

> 99% über einen Zeitraum von 3 Monaten für zwei unabhängige Systeme mit Meßgasaufbereitung.

Drift:

Mit automatischer Kalibrierung des Nullpunkts und des Endpunkts mit Kalibriergas (Intervall wöchentlich):

Nullpunkt-Drift	< 2% der Meßspanne pro Jahr
Endpunkt-Drift	< 2% vom Sollwert pro Jahr

Querempfindlichkeit:

Die Summe aller Querempfindlichkeiten der genannten Komponenten beträgt gegenüber SO₂, NO, O₂, NH₃, NO₂, CH₄, N₂O, CO, und H₂O mit typischen Rauchgaskonzentrationen < 4% des Meßbereichs.

Nachweisgrenze:

CO	≤ 1% des MBE	NO	≤ 0,8% des MBE
SO ₂	≤ 0,7% des MBE	O ₂	≤ 0,02 Vol.-% O ₂

TÜV Ecoplan Umwelt GmbH
Unternehmensgruppe TÜV Süddeutschland
Westendstraße 199 · D-80686 München
Tel. (089) 57 91-28 21 · Fax (089) 57 91-28 22

Dr. A. Brandl

Dr. A. Witthuhn

Dr. A. Brandl, München, September 1999, Dr. A. Witthuhn
TÜV Ecoplan Umwelt GmbH, Westendstrasse 199, D-80686 München

Manufacturer's Declaration of Conformity

for Automated Measuring Systems (AMS)

according to the requirements of EN 14956 and
QAL 1 according to EN 14181

SIEMENS AG A&D PI 2
76181 Karlsruhe, Germany

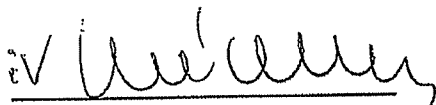
declares that the product

ULTRAMAT 23

7 MB 2335, 7 MB 2337

CO 0-150 mg/m³

complies with the requirements of QAL 1 according to the international
standards EN 14956 and EN 14181 for the following specified
operating conditions:



Dr. Frank Diedrich
General Manager
A&D PI 2
Siemens AG
Datum: 15.06.2005



Peter Berghäuser
R&D Manager
A&D PI 2 RD
Siemens AG
Datum: 15.06.2005

Manufacturer's Declaration of Conformity for Automated Measuring Systems (AMS)
according to the requirements of EN 14956 and QAL 1 according to EN 14181

Specification of the Automated Measuring System

Gas analyzer
Order information
Measured component
Smallest TÜV certified measuring range

ULTRAMAT 23
7 MB 2335 7 MB 2337
CO
0-150 mg/m³

Range of Applications

Test gas concentration /	50	mg/m³
Emission limit value (daily average)	990 ... 1010	hPa
Ambient pressure range	20 ... 35	°C
Ambient temperature range	30 ... 90	l/h
Flow range	190 ... 250	V
Voltage range		

Determined Standard Uncertainties referred to Daily Average Limit Value

Non-linearity	0,147	mg/m³
Drift	0,361	mg/m³
Pressure dependence	0,000	mg/m³
Ambient temperature dependence	-0,268	mg/m³
Flow dependence	0,000	mg/m³
Voltage dependence	0,000	mg/m³
Uncertainty of test gas	0,577	mg/m³
Leakage during sampling and sample transport	0,000	mg/m³
Reference measuring method	0,323	mg/m³
Reproducibility standard deviation	0,188	mg/m³
Selectivity (cross interference):		
O2	0,520	mg/m³
CO	0,000	mg/m³
CO2	2,078	mg/m³
CH4	0,000	mg/m³
N2O	0,058	mg/m³
NO	0,000	mg/m³
NO2	0,297	mg/m³
NH3	0,000	mg/m³
SO2 (coal firing without desulfurization)	0,000	mg/m³
HCl (coal firing)	0,000	mg/m³
H2O (sample conditioning with cooler)	0,000	mg/m³

Result

Target value	< 5	mg/m³	according to 13. BImSchV
Result 95% confidence intervall	4,64	mg/m³	equivalent to s _{AMS} acc. to EN 14181
<i>equals the extended measurement uncertainty</i>			
Combined standard uncertainty	2,32	mg/m³	95% confidence interval met

Response Time

Target response time	< 200	s	
Measured response time	67	s	requirement fulfilled

Data base on: suitability test Ultramat 23 7MB2337, December 2004
Report-No: 427899, TÜV Industrie Service GmbH, TÜV Süd Gruppe

Manufacturer's Declaration of Conformity

for Automated Measuring Systems (AMS)

according to the requirements of EN 14956 and
QAL 1 according to EN 14181

SIEMENS AG A&D PI 2
76181 Karlsruhe, Germany

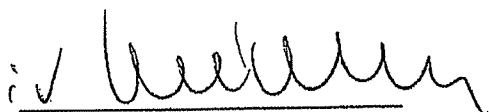
declares that the product

ULTRAMAT 23

7 MB 2335, 7 MB 2337

NO 0-100 mg/m³

complies with the requirements of QAL 1 according to the international
standards EN 14956 and EN 14181 for the following specified
operating conditions:



Dr. Frank Diedrich
General Manager
A&D PI 2
Siemens AG
Datum: 15.06.2005



Peter Berghäuser
R&D Manager
A&D PI 2 RD
Siemens AG
Datum: 15.06.2005

Manufacturer's Declaration of Conformity for Automated Measuring Systems (AMS)
according to the requirements of EN 14956 and QAL 1 according to EN 14181

Specification of the Automated Measuring System

Gas analyzer
Order information
Measured component
Smallest TÜV certified measuring range

ULTRAMAT 23
7 MB 2335-7 MB 2337
NO
0-100 mg/m³

Range of Applications

Test gas concentration /		
Emission limit value (daily average)	33	mg/m ³
Ambient pressure range	990 ... 1010	hPa
Ambient temperature range	20 ... 35	°C
Flow range	30 ... 90	l/h
Voltage range	190 ... 250	V

Determined Standard Uncertainties referred to Daily Average Limit Value

Non-linearity	0,110	mg/m ³
Drift	0,324	mg/m ³
Pressure dependence	0,000	mg/m ³
Ambient temperature dependence	0,650	mg/m ³
Flow dependence	0,000	mg/m ³
Voltage dependence	0,000	mg/m ³
Uncertainty of test gas	0,381	mg/m ³
Leakage during sampling and sample transport	0,000	mg/m ³
Reference measuring method	0,426	mg/m ³
Reproducibility standard deviation	0,375	mg/m ³
Selectivity (cross interference):		
O ₂	0,000	mg/m ³
CO	0,000	mg/m ³
CO ₂	1,501	mg/m ³
CH ₄	0,000	mg/m ³
N ₂ O	0,038	mg/m ³
NO	0,000	mg/m ³
NO ₂	0,000	mg/m ³
NH ₃	0,000	mg/m ³
SO ₂ (coal firing without desulfurization)	0,055	mg/m ³
HCl (coal firing)	0,000	mg/m ³
H ₂ O (sample conditioning with cooler)	0,208	mg/m ³

Result

Target value	< 6,6	mg/m ³	according to 13. BImSchV
Result 95% confidence intervall	3,64	mg/m ³	equivalent to s _{AMS} acc. to EN 14181
<i>equals the extended measurement uncertainty</i>			
Combined standard uncertainty	1,82	mg/m ³	95% confidence interval met

Response Time

Target response time	< 200	s	requirement fulfilled
Measured response time	67	s	

Data base on: suitability test Ultramat 23 7MB2337, December 2004
Report-No: 427899, TÜV Industrie Service GmbH, TÜV Süd Gruppe

Manufacturer's Declaration of Conformity

for Automated Measuring Systems (AMS)

according to the requirements of EN 14956 and
QAL 1 according to EN 14181

SIEMENS AG A&D PI 2
76181 Karlsruhe, Germany

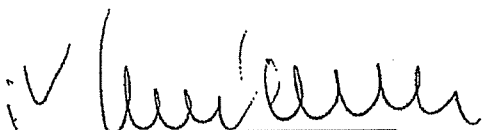
declares that the product

ULTRAMAT 23

7 MB 2338

CO 0-250 mg/m³

complies with the requirements of QAL 1 according to the international
standards EN 14956 and EN 14181 for the following specified
operating conditions:



Dr. Frank Diedrich
General Manager
A&D PI 2
Siemens AG
Datum: 15.06.2005



Peter Berghäuser
R&D Manager
A&D PI 2 RD
Siemens AG
Datum: 15.06.2005

Manufacturer's Declaration of Conformity for Automated Measuring Systems (AMS)
according to the requirements of EN 14956 and QAL 1 according to EN 14181

Specification of the Automated Measuring System

Gas analyzer
Order information
Measured component
Smallest TÜV certified measuring range

ULTRAMAT 23
7MB2338
CO
0-250 mg/m³

Range of Applications

Test gas concentration /	80	mg/m ³
Emission limit value (daily average)	990 ... 1010	hPa
Ambient pressure range	20 ... 35	°C
Ambient temperature range	30 ... 90	l/h
Flow range	190 ... 250	V
Voltage range		

Determined Standard Uncertainties referred to Daily Average Limit Value

Non-linearity	0,289	mg/m ³
Drift	0,600	mg/m ³
Pressure dependence	0,000	mg/m ³
Ambient temperature dependence	-1,269	mg/m ³
Flow dependence	0,000	mg/m ³
Voltage dependence	0,000	mg/m ³
Uncertainty of test gas	0,924	mg/m ³
Leakage during sampling and sample transport	0,000	mg/m ³
Reference measuring method	0,516	mg/m ³
Reproducibility standard deviation	0,922	mg/m ³
Selectivity (cross interference):		
O ₂	0,000	mg/m ³
CO	0,000	mg/m ³
CO ₂	3,031	mg/m ³
CH ₄	0,142	mg/m ³
N ₂ O	0,000	mg/m ³
NO	0,000	mg/m ³
NO ₂	0,124	mg/m ³
NH ₃	0,000	mg/m ³
SO ₂ (coal firing without desulfurization)	0,137	mg/m ³
HCl (coal firing)	0,000	mg/m ³
H ₂ O (sample conditioning with cooler)	0,000	mg/m ³

Result

Target value	< 8	mg/m ³	according to 13. BImSchV
Result 95% confidence intervall	7,28	mg/m ³	equivalent to s _{AMS} acc. to EN 14181
<i>equals the extended measurement uncertainty</i>			
Combined standard uncertainty	3,64	mg/m ³	95% confidence interval met

Response Time

Target response time	< 200	s	requirement fulfilled
Measured response time	67	s	

Data base on: suitability test Ultramat 23 7MB233, August 1997
Report-No: 24012833, TÜV Umwelttechnik GmbH, TÜV Süddeutschland AG

Manufacturer's Declaration of Conformity

for Automated Measuring Systems (AMS)

according to the requirements of EN 14956 and
QAL 1 according to EN 14181

SIEMENS AG A&D PI 2
76181 Karlsruhe, Germany

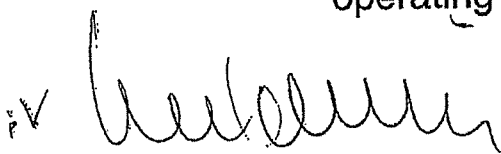
declares that the product

ULTRAMAT 23

7 MB 2338

NO 0-400 mg/m³

complies with the requirements of QAL 1 according to the international
standards EN 14956 and EN 14181 for the following specified
operating conditions:



Dr. Frank Diedrich
General Manager
A&D PI 2
Siemens AG
Datum: 15.06.2005



Peter Berghäuser
R&D Manager
A&D PI 2 RD
Siemens AG
Datum: 15.06.2005

Manufacturer's Declaration of Conformity for Automated Measuring Systems (AMS)
according to the requirements of EN 14956 and QAL 1 according to EN 14181

Specification of the Automated Measuring System

Gas analyzer
Order information
Measured component
Smallest TÜV certified measuring range

ULTRAMAT 23
7MB2338
NO
0-400 mg/m³

Range of Applications

Test gas concentration /	131	mg/m ³
Emission limit value (daily average)	990 ... 1010	hPa
Ambient pressure range	20 ... 35	°C
Ambient temperature range	30 ... 90	l/h
Flow range	190 ... 250	V
Voltage range		

Determined Standard Uncertainties referred to Daily Average Limit Value

Non-linearity	-0,462	mg/m ³
Drift	1,134	mg/m ³
Pressure dependence	0,000	mg/m ³
Ambient temperature dependence	4,681	mg/m ³
Flow dependence	0,000	mg/m ³
Voltage dependence	0,000	mg/m ³
Uncertainty of test gas	1,513	mg/m ³
Leakage during sampling and sample transport	0,000	mg/m ³
Reference measuring method	1,691	mg/m ³
Reproducibility standard deviation	1,325	mg/m ³
Selectivity (cross interference):		
O ₂	0,000	mg/m ³
CO	0,231	mg/m ³
CO ₂	3,695	mg/m ³
CH ₄	0,000	mg/m ³
N ₂ O	0,000	mg/m ³
NO	0,000	mg/m ³
NO ₂	0,000	mg/m ³
NH ₃	0,000	mg/m ³
SO ₂ (coal firing without desulfurization)	0,880	mg/m ³
HCl (coal firing)	0,000	mg/m ³
H ₂ O (sample conditioning with cooler)	0,000	mg/m ³

Result

Target value	< 26,2	mg/m ³	according to 13. BImSchV
Result 95% confidence intervall	13,39	mg/m ³	equivalent to s _{AMS} acc. to EN 14181
equals the extended measurement uncertainty			
Combined standard uncertainty	6,69	mg/m ³	95% confidence interval met

Response Time

Target response time	< 200	s	
Measured response time	67	s	requirement fulfilled

Data base on: suitability test Ultramat 23 7MB233, August 1997
Report-No: 24012833, TÜV Umwelttechnik GmbH, TÜV Süddeutschland AG

Manufacturer's Declaration of Conformity for Automated Measuring Systems (AMS)

according to the requirements of EN 14956 and
QAL 1 according to EN 14181

SIEMENS AG A&D PI 2
76181 Karlsruhe, Germany

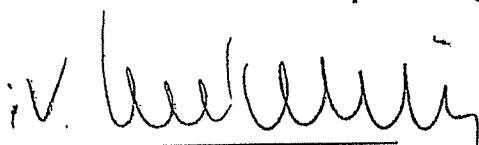
declares that the product

ULTRAMAT 23

7 MB 2335, 7 MB 2337, 7 MB 2338

SO₂ 0-400 mg/m³

complies with the requirements of QAL 1 according to the international
standards EN 14956 and EN 14181 for the specified
operating conditions.



Dr. Frank Diedrich
General Manager
A&D PI 2
Siemens AG
Datum: 15.06.2005



Peter Berghäuser
R&D Manager
A&D PI 2 RD
Siemens AG
Datum: 15.06.2005

Manufacturer's Declaration of Conformity for Automated Measuring Systems (AMS)
according to the requirements of EN 14956 and QAL 1 according to EN 14181

Specification of the Automated Measuring System

Gas analyzer
Order information
Measured component
Smallest TÜV certified measuring range

ULTRAMAT 23
7 MB 2335 7 MB 2337 7 MB 2338
SO₂
0-400 mg/m³

Range of Applications

Test gas concentration /		
Emission limit value (daily average)	130	mg/m ³
Ambient pressure range	990 ... 1010	hPa
Ambient temperature range	20 ... 35	°C
Flow range	30 ... 90	l/h
Voltage range	190 ... 250	V

Determined Standard Uncertainties referred to Daily Average Limit Value

Non-linearity	-0,462	mg/m ³
Drift	1,651	mg/m ³
Pressure dependence	0,000	mg/m ³
Ambient temperature dependence	-4,393	mg/m ³
Flow dependence	0,000	mg/m ³
Voltage dependence	0,000	mg/m ³
Uncertainty of test gas	1,501	mg/m ³
Leakage during sampling and sample transport	0,000	mg/m ³
Reference measuring method	1,678	mg/m ³
Reproducibility standard deviation	1,150	mg/m ³
Selectivity (cross interference):		
O ₂	0,000	mg/m ³
CO	0,000	mg/m ³
CO ₂	0,924	mg/m ³
CH ₄	0,906	mg/m ³
N ₂ O	0,616	mg/m ³
NO	0,000	mg/m ³
NO ₂	0,000	mg/m ³
NH ₃	0,462	mg/m ³
SO ₂ (coal firing without desulfurization)	0,000	mg/m ³
HCl (coal firing)	0,000	mg/m ³
H ₂ O (sample conditioning with cooler)	0,235	mg/m ³

Result

Target value	< 26	mg/m ³	according to 13. BImSchV
Result 95% confidence intervall	11,13	mg/m ³	equivalent to s _{AMS} acc. to EN 14181
<i>equals the extended measurement uncertainty</i>			
Combined standard uncertainty	5,56	mg/m ³	95% confidence interval met

Response Time

Target response time	< 200	s	
Measured response time	67	s	requirement fulfilled

Data base on: suitability test Ultramat 23 7MB2333, August 1997
Report-No: 24012833, TÜV Umwelttechnik GmbH, TÜV Süddeutschland AG

TÜV Süddeutschland
TÜV Ecoplan Umwelt GmbH
Multi Component Process Gas Analyzers
ULTRAMAT 23

Report-Nr. 24012833

Manufacturer:

SIEMENS AG, Karlsruhe, Germany

TÜV Ecoplan Umwelt GmbH, TÜV Süddeutschland group is herewith certifying for the Process gas analyzer ULTRAMAT 23, that the following measuring results for emission measurement at large power plants have been reached and are in accordance to the 13. BImSchV, and TA-Luft regulations.

Smallest tested measuring ranges:

CO	0...150 mg/m ³	NO	0...250 mg/m ³
SO ₂	0...400 mg/m ³	O ₂	0...10 / 25 Vol.-%

Availability:

> 98% over a period of 3 months for two independant systems including sample preparation.

Drift:

With internal automatical Calibration with Ambient air:

Zero-drift : <2% of range per year

Span-drift : <2% of range per year

The performance of the internal autocalibration must be checked once a year.

Cross Interference:

The sum of all interferences to the measuring component stated above for SO₂, NO, O₂, NH₃, NO₂, CH₄, N₂O, CO, and H₂O with typical stack gas concentrations is <4% of the ranges.

Limit of Detection:

CO	≤ 0,7% of range	NO	≤ 0,6% of range
SO ₂	≤ 0,8% of range	O ₂	≤ 0,04 Vol.-% O ₂

TÜV Ecoplan Umwelt GmbH
Unternehmensgruppe TÜV Süddeutschland
Westendstraße 199 · D-80686 München
Tel. (089) 57 91-28 21 · Fax (089) 57 91-28 22

Dr. A. Brandl

Dr. A. Witthuhn

Dr. A. Brandl, München, September 1999, Dr. A. Witthuhn
TÜV Ecoplan Umwelt GmbH, Westendstrasse 199, D-80686 München



Industrie Service

Certificate

TÜV Industrie Service GmbH
TÜV SÜD Gruppe

Laboratory for Environmental Services
(Laboratorium Umwelt Service)

accredited according DIN EN ISO/IEC 17025 DAP-PL-2885.99

Ultramat 23 - 7MB233

Gas Analyser for CO, NO, SO₂
Report Nr. 24012833 (August 1997)

Manufacturer:

Siemens AG, Karlsruhe, Germany

TÜV Industrie Service GmbH, TÜV SÜD Group is herewith certifying that the analyser Ultramat 23 7MB233 is in accordance with DIN EN ISO 14956, Jan. 2003 and fulfils QAL1 of EN 14181 for the following ranges of measurement or for higher ranges:

Component	C _{test} mg/ m ³	Range of measurement mg/ m ³	In accordance with DIN EN ISO 14956
CO	80	0-250	Yes
NO	80	0-250	Yes
NO as NO ₂	122	0-383	Yes
SO ₂	130	0-400	Yes

The calculation according DIN EN ISO 14956 was performed on the basis of the results of the investigations for report Nr. 24012833 (August 1997) for the German suitability test.

The following performance characteristics were regarded: Response time; Non-linearity, Instability/ drift; Selectivity/ interfering components; Dependence of ambient temperature, ambient pressure and voltage; Gas flow; Sample losses; Uncertainty of calibration gas; Uncertainty of independent reference method.

Munich, July 2004

Dr. D. Fiederer

Dr. A. Brandl

Laboratorium Umwelt Service, TÜV Industrie Service GmbH, Unternehmensgruppe TÜV
Süd, IS-US1-MUC, Westendstrasse 199, D-80686 München

VERIFICATION DE REGLAGE / CALIBRATION TEST			Date:	08/01/2013
FD101R5	Dernière rév :	27/04/2011	Lien procédure :	PROC010

Instruction(s) mise(s) en œuvre :	301 et 302
-----------------------------------	------------

Analyseur d'oxygène / Oxygen analyser	
N° de série capteur / SN Sensor	ATK/FD1301793
Longueur de pénétration / Length of penetration	400 mm
N° de série électronique / SN Control unit	ATK2020P13011821
Longueur de câble spécial / special cable length	40.00 m

Vérification de réglage / calibration test	Valeur nominale	Valeur certifiée	Fourchette d'acceptabilité	N° Bouteille	N° Mano-détendeur	Valeur affichée	Contrôle
	Nominal value	Certified value	Precision			Value on display	Control
	20 % O2	20.90 %	+/- 0.30 %			21.00 %	PS
	10 % O2	5.00 %	+/- 0.30 %	BV13780F	BT102	5.01 %	PS
	0 % O2	0.40 %	+/- 0.30 %	BD62739F	BT102	0.41 %	PS
	15 % O2	NA	+/- 0.30 %			NA	PS
	5 % O2	5.00 %	+/- 0.30 %	BV13780F	BT102	5.01 %	PS
	20 % O2	20.90 %	+/- 0.30 %			21.00 %	PS
	10 % O2	5.00 %	+/- 0.30 %	BV13780F	BT102	5.02 %	PS
	0 % O2	0.40 %	+/- 0.30 %	BD62739F	BT102	0.41 %	PS
	15 % O2	NA	+/- 0.30 %			NA	PS
	5 % O2	5.00 %	+/- 0.30 %	BV13780F	BT102	5.01 %	PS
	20 % O2	20.90 %	+/- 0.30 %			20.90 %	PS

Options	
Alimentation / Power supply :	230V AC
Kit de rétroaspiration / Back-flushing kit :	NA
Calorifuge / Heat insulator	OUI-YES
Contre-bride / Counter	Plate - Flat
Embout d'étalonnage / Calibration gas fitting device	OUI-YES
Ejecteur / Ejector	NON-NO
RS 232 / RS 232 port	NON-NO
Défaut de pression gaz test / Default of pression of cal. Gas	NON-NO
Entrée 4-20mA mesure CO / CO 4-20mA Input	NON-NO



Instruments pour l'Environnement
Contrôlé par ACIME (Association pour la certification des instruments de Mesure pour l'Environnement), 1 rue Gaston Boissier, 75724 PARIS CEDEX
Référentiel : Marque NF379
N° Identification : 04/01/01-01

Visa / Approved by	
Cyril Capeau	
Resp. Production / Prod. Manager	

N° identification SETNAG / Identification No :	00379/12690
Date de vente / Date of sale :	09-janv-13
Client / Customer :	MICHELL INSTRUMENTS Ltd
Adresse / Address :	48 Lancaster Way Business Park ELY CAMBRIDGESHIRE CB6 3NW ROYAUME UNI



Cet article ne doit pas être mis au rebut avec les déchets municipaux normaux non-triés.
Merci de nous contacter au 04.91.95.65.12 lorsqu'il arrive en fin de vie, nous nous occuperons de son recyclage.
Do not discard

TERMICA COLLEFERRO SPA

**Via Ariana km 5,2
00034 Colleferro (RM)**

ALLEGATO 7

Allegato 7 - Schema P&I laboratorio mobile, Certificati SRM TÜV/QAL1



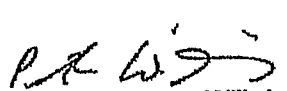
CERTIFICATE

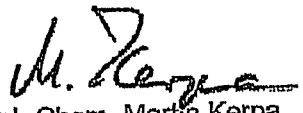
**TÜV Rheinland Immissionsschutz
und Energiesysteme GmbH**

Manufacturer:	Horiba Europe GmbH
Measuring System:	PG 250 SRM
Components:	CO, NO _x , O ₂
Test Report:	936/21206693/A, 2008-03-06

The measurement system fulfils
the requirements of
QAL 1
according to EN 14181 and EN ISO 14956.

Köln, 2008-06-20


Dr. rer. nat. Peter Wilbring


Dipl.-Chem. Martin Kerpa

www.umwelt-tuv.de / www.eco-tuv.com
tie@umwelt-tuv.de
Tel. +49 - 221 - 808 - 2275

TÜV Rheinland Immissionsschutz und Energiesysteme GmbH
Am Grauen Stein
51105 Köln

The company is accredited to DIN EN ISO/IEC 17025.

attached: 6 page(s)

EN ISO 14956 and prEN 15267-3 calculation for QAL 1 in EN 14181

Manufacturer data
 Manufacturer
 Measurement System
 Name
 Serial Number
 Measuring Principle

Horiba Europa GmbH
 Emission measurement
 PG 250 SRM 1
 H 0002Z8D
 NDIR

TÜV Data
 Approval Report
 Date
 Editor

936/21206693/A
 06.03.2008
 Guido Baum

Measurement Component and tested range

CO 75 mg/m³

Evaluation of the cross sensitivity (CS)

to 3 Vol.-% Oxygen
 to 21 Vol.-% Oxygen
 to 1 Vol.-% Humidity
 to 300 mg/m³ Carbon monoxide
 to 15 Vol.-% Carbon dioxide
 to 57 mg/m³ Methane
 to 40 mg/m³ Dinitrogen monoxide
 to 100 mg/m³ Dinitrogen monoxide
 to 300 mg/m³ Nitrogen monoxide
 to 30 mg/m³ Nitrogen dioxide
 to 20 mg/m³ Ammonia
 to 200 mg/m³ Sulphur dioxide
 to 1000 mg/m³ Sulphur dioxide
 to 50 mg/m³ Hydrogen chloride
 to 200 mg/m³ Hydrogen chloride

CS $X_{max,f}$
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,61 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³

Sum of positive cross sensitivities
 Sum of negative cross sensitivities

0,61 mg/m³
 0,00 mg/m³

Calculation of the combined standard uncertainty

Test Value

Lack of fit
 Biggest interference (positive or negative)
 Span shift in the field test
 Zero shift in the field test
 Sensitivity to sample volume flow
 Sensitivity to ambient temperature
 Dependence on supply voltage
 Repeatability at span
 Field reproducibility
 Uncertainty of the test gas at the reference point

	$\Delta X_{max,f}$	$u(\Delta X_{max,f}) = \frac{\Delta X}{\sqrt{3}}$	$u(\Delta X_{max,f})^2$
U_{fit}	-0,68 mg/m³	-0,38 mg/m³	0,152
U_{int}	0,61 mg/m³	0,35 mg/m³	0,123
$U_{s,dr}$	2,25 mg/m³	1,30 mg/m³	1,688
$U_{z,dr}$	1,50 mg/m³	0,87 mg/m³	0,750
$U_{s,ref}$	0,00 mg/m³	0,00 mg/m³	0,000
U_{temp}	-1,24 mg/m³	-0,71 mg/m³	0,510
U_{v}	-0,30 mg/m³	-0,17 mg/m³	0,030
U_{rep}	0,08 mg/m³	0,03 mg/m³	0,001
U_D	1,09 mg/m³	0,63 mg/m³	0,398
U_{ref}	1,60 mg/m³	0,87 mg/m³	0,750

Combined standard uncertainty (u_c)

Total expanded uncertainty
 Relative total expanded uncertainty
 Requirement

u_c	$u_c = \sqrt{\sum (u_{max,f})^2}$	2,088
$(u_c \cdot 10)$	$U_c = u_c \cdot 1,96$	4,112
	U_c in % of the limit 50 mg/m³	8,2
	U_c in % of the limit 50 mg/m³	10,0

Result: Requirements keep to QAL 1 of EN 14181

EN ISO 14956 and prEN 15267-3 calculation for QAL 1 in EN 14181

Manufacturer data
 Manufacturer
 Measurement System
 Name
 Serial Number
 Measuring Principle

Horiba Europe GmbH
 Emission measurement
 PG 250 SRM 2
 G 0800X2D
 NDIR

TÜV Data
 Approval Report
 Date
 Editor

936/21206693/A
 06.03.2008
 Guido Baum

Measurement Component and tested range

CO 75 mg/m³

Evaluation of the cross sensitivity (CS)

to 3 Vol.-% Oxygen
 to 21 Vol.-% Oxygen
 to 1 Vol.-% Humidity
 to 300 mg/m³ Carbon monoxide
 to 15 Vol.-% Carbon dioxide
 to 67 mg/m³ Methane
 to 40 mg/m³ Dinitrogen monoxide
 to 100 mg/m³ Dinitrogen monoxide
 to 300 mg/m³ Nitrogen monoxide
 to 30 mg/m³ Nitrogen dioxide
 to 20 mg/m³ Ammonia
 to 200 mg/m³ Sulphur dioxide
 to 1000 mg/m³ Sulphur dioxide
 to 50 mg/m³ Hydrogen chloride
 to 200 mg/m³ Hydrogen chloride

CS $X_{max,j}$
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,60 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³

Sum of positive cross sensitivities
 Sum of negative cross sensitivities

0,60 mg/m³
 0,00 mg/m³

Calculation of the combined standard uncertainty

Test Value

Lack of fit
 Biggest interference (positiv or negativ)
 Span shift in the field test
 Zero shift in the field test
 Sensitivity to sample volume flow
 Sensitivity to ambient temperature
 Dependence on supply voltage
 Repeatability at span
 Field reproducibility
 Uncertainty of the test gas at the reference point

	$\Delta X_{max,j}$	$u(\Delta X_{max,j}) = \frac{\Delta X}{\sqrt{3}}$	$u(\Delta X_{max,j})^2$
U_{fit}	0,68 mg/m³	0,39 mg/m³	0,152
U_{int}	0,60 mg/m³	0,35 mg/m³	0,120
$U_{s,dr}$	2,25 mg/m³	1,30 mg/m³	1,688
$U_{s,dr}$	2,10 mg/m³	1,21 mg/m³	1,470
$U_{s,fl}$	0,00 mg/m³	0,00 mg/m³	0,000
U_{temp}	1,88 mg/m³	1,08 mg/m³	1,191
U_{sv}	0,26 mg/m³	0,14 mg/m³	0,020
U_{top}	0,05 mg/m³	0,03 mg/m³	0,001
U_D	1,09 mg/m³	0,63 mg/m³	0,398
U_{ref}	1,60 mg/m³	0,87 mg/m³	0,750

Combined standard uncertainty (U_c)

U_c
 $(U_c \cdot k)$

$$U_c = \sqrt{\sum (u_{max,j})^2}$$

$$U_c = U_c \cdot 1,96$$

2,406
 4,716

Total expanded uncertainty

Relative total expanded uncertainty

Requirement

U_c in % of the limit 50 mg/m³
 U_c in % of the limit 50 mg/m³

9,4
 10,0

Result: Requirements keep to QAL 1 of EN 14181

EN ISO 14956 and prEN 15267-3 calculation for QAL 1 in EN 14181

Manufacturer data
 Manufacturer
 Measurement System
 Name
 Serial Number
 Measuring Principle

Horiba Europe GmbH
 Emission measurement
 PG 260 SRM 1
 H 0002Z8D
 CLD

TÜV Data
 Approval Report
 Date
 Editor

936/21206693/A
 06.03.2008
 Guido Baum

Measurement Component and tested range

NO 134 mg/m³

Evaluation of the cross sensitivity (CS)

to 3 Vol.-% Oxygen
 to 21 Vol.-% Oxygen
 to 20 Vol.-% Humidity
 to 300 mg/m³ Carbon monoxide
 to 15 Vol.-% Carbon dioxide
 to 50 mg/m³ Methane
 to 20 mg/m³ Dinitrogen monoxide
 to 100 mg/m³ Dinitrogen monoxide
 to 300 mg/m³ Nitrogen monoxide
 to 30 mg/m³ Nitrogen dioxide
 to 20 mg/m³ Ammonia
 to 200 mg/m³ Sulphur dioxide
 to 1000 mg/m³ Sulphur dioxide
 to 50 mg/m³ Hydrogen chloride
 to 200 mg/m³ Hydrogen chloride

CS $X_{max,j}$
 0,00 mg/m³
 -2,28 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,67 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,80 mg/m³

Sum of positive cross sensitivities
 Sum of negative cross sensitivities

1,47 mg/m³
 -2,28 mg/m³

Calculation of the combined standard uncertainty

Test Value

Lack of fit
 Biggest interference (positiv or negativ)
 Span shift in the field test
 Zero shift in the field test
 Sensitivity to sample volume flow
 Sensitivity to ambient temperature
 Dependence on supply voltage
 Repeatability at span
 Field reproducibility
 Uncertainty of the test gas at the reference point
 NOx converter efficiency adjustment

	$\Delta X_{max,j}$	$u(\Delta X_{max,j}) = \frac{\Delta X}{\sqrt{3}}$	$u(\Delta X_{max,j})^2$
u_{fit}	1,47 mg/m³	0,85 mg/m³	0,724
u_{int}	-2,28 mg/m³	-1,32 mg/m³	1,730
$u_{s,dr}$	1,74 mg/m³	1,01 mg/m³	1,012
$u_{z,dr}$	0,80 mg/m³	0,46 mg/m³	0,216
$u_{s,vf}$	0,00 mg/m³	0,00 mg/m³	0,000
u_{temp}	6,39 mg/m³	3,69 mg/m³	13,618
u_{av}	0,10 mg/m³	0,06 mg/m³	0,003
u_{top}	0,12 mg/m³	0,07 mg/m³	0,005
u_D	1,01 mg/m³	0,58 mg/m³	0,337
u_{adj}	2,68 mg/m³	1,55 mg/m³	2,394
u_{NOx}	3,08 mg/m³	1,78 mg/m³	3,166

Combined standard uncertainty (u_c)
 Total expanded uncertainty
 Relative total expanded uncertainty
 Requirement

u_c	$u_c = \sqrt{\sum(u_{max,j})^2}$	4,817
$(u_c \cdot k)$	$U_c = u_c \cdot 1,96$	9,442
	U_c in % of the limit 130,4 mg/m³	7,2
	U_c in % of the limit 130,4 mg/m³	20,0

Result: Requirements keep to QAL 1 of EN 14181

EN ISO 14956 and prEN 15267-3 calculation for QAL 1 in EN 14181

Manufacturer data
 Manufacturer
 Measurement System
 Name
 Serial Number
 Measuring Principle

Horiba Europe GmbH
 Emission measurement
 PG 260 SRM 2
 G 0800X2D
 CLD

TÜV Data
 Approval Report
 Date
 Editor

936/21206693/A
 06.03.2008
 Guido Baum

Measurement Component and tested range

NO 134 mg/m³

Evaluation of the cross sensitivity (CS)

to 3 Vol.-% Oxygen
 to 21 Vol.-% Oxygen
 to 20 Vol.-% Humidity
 to 300 mg/m³ Carbon monoxide
 to 15 Vol.-% Carbon dioxide
 to 50 mg/m³ Methane
 to 20 mg/m³ Dinitrogen monoxide
 to 100 mg/m³ Dinitrogen monoxide
 to 300 mg/m³ Nitrogen monoxide
 to 30 mg/m³ Nitrogen dioxide
 to 20 mg/m³ Ammonia
 to 200 mg/m³ Sulphur dioxide
 to 1000 mg/m³ Sulphur dioxide
 to 60 mg/m³ Hydrogen chloride
 to 200 mg/m³ Hydrogen chloride

CS $X_{max,j}$
 0,00 mg/m³
 -2,55 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,67 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 0,00 mg/m³
 1,07 mg/m³

Sum of positive cross sensitivities
 Sum of negative cross sensitivities

1,74 mg/m³
 -2,55 mg/m³

Calculation of the combined standard uncertainty

Test Value

Lack of fit
 Biggest interference (positiv or negativ)
 Span shift in the field test
 Zero shift in the field test
 Sensitivity to sample volume flow
 Sensitivity to ambient temperature
 Dependence on supply voltage
 Repeatability at span
 Field reproducibility
 Uncertainty of the test gas at the reference point
 NOx converter efficiency adjustment

	$\Delta X_{max,j}$	$u(\Delta X_{max,j}) = \frac{\Delta X}{\sqrt{3}}$	$u(\Delta X_{max,j})^2$
u_{fit}	1,88 mg/m³	1,08 mg/m³	1,173
u_{int}	-2,55 mg/m³	-1,47 mg/m³	2,161
$u_{s,dr}$	4,02 mg/m³	2,32 mg/m³	5,387
$u_{z,dr}$	1,07 mg/m³	0,62 mg/m³	0,383
u_{sM}	0,00 mg/m³	0,00 mg/m³	0,000
u_{temp}	-6,50 mg/m³	-3,75 mg/m³	14,079
u_{ev}	0,13 mg/m³	0,08 mg/m³	0,006
u_{rep}	0,12 mg/m³	0,07 mg/m³	0,005
u_D	1,01 mg/m³	0,58 mg/m³	0,337
u_{ndi}	2,68 mg/m³	1,55 mg/m³	2,394
u_{NOx}	3,48 mg/m³	2,01 mg/m³	4,046

Combined standard uncertainty (u_c)

$$u_c = \sqrt{\sum u_{max,j}^2}$$

$$u_c = u_c \cdot 1,96$$

Total expanded uncertainty
 Relative total expanded uncertainty
 Requirement

5,476
 10,730
 8,2
 20,0

Result: Requirements keep to QAL 1 of EN 14181

EN ISO 14956 and prEN 15267-3 calculation for QAL 1 in EN 14181

Manufacturer data
 Manufacturer
 Measurement System
 Name
 Serial Number
 Measuring Principle

Horiba Europe GmbH
 Emission measurement
 PG 250 SRM 1
 H 0002Z8D
 Paramagnetic

TÜV Data
 Approval Report
 Date
 Editor

936/21206693/A
 06.03.2008
 Guido Baum

Measurement Component and tested range

O2 25 Vol.-%

Evaluation of the cross sensitivity (CS)

to 3 Vol.-% Oxygen
 to 21 Vol.-% Oxygen
 to 30 Vol.-% Humidity
 to 300 mg/m³ Carbon monoxide
 to 15 Vol.-% Carbon dioxide
 to 50 mg/m³ Methane
 to 20 mg/m³ Dinitrogen monoxide
 to 100 mg/m³ Dinitrogen monoxide
 to 300 mg/m³ Nitrogen monoxide
 to 30 mg/m³ Nitrogen dioxide
 to 20 mg/m³ Ammonia
 to 200 mg/m³ Sulphur dioxide
 to 1000 mg/m³ Sulphur dioxide
 to 50 mg/m³ Hydrogen chloride
 to 200 mg/m³ Hydrogen chloride

CS $X_{max,j}$
 0,00 Vol.-%
 0,00 Vol.-%
 0,00 Vol.-%
 0,00 Vol.-%
 -0,06 Vol.-%
 0,00 Vol.-%
 0,00 Vol.-%
 0,00 Vol.-%
 -0,03 Vol.-%
 0,16 Vol.-%
 0,00 Vol.-%
 0,00 Vol.-%
 0,00 Vol.-%
 0,00 Vol.-%
 0,00 Vol.-%

Sum of positive cross sensitivities
 Sum of negative cross sensitivities

0,16 Vol.-%
 -0,09 Vol.-%

Calculation of the combined standard uncertainty

Test Value

Lack of fit
 Biggest Interference (positiv or negativ)
 Span shift in the field test
 Zero shift in the field test
 Sensitivity to sample volume flow
 Sensitivity to ambient temperature
 Dependence on supply voltage
 Repeatability at span
 Field reproducibility
 Uncertainty of the test gas at the reference point

	$\Delta X_{max,j}$	$u(\Delta X_{max,j}) = \frac{\Delta X}{\sqrt{3}}$	$u(\Delta X_{max,j})^2$
u_{fit}	-0,10 Vol.-%	-0,06 Vol.-%	0,003
u_{int}	0,16 Vol.-%	0,09 Vol.-%	0,009
$u_{e,dr}$	0,30 Vol.-%	0,17 Vol.-%	0,030
$u_{o,dr}$	-0,20 Vol.-%	-0,12 Vol.-%	0,013
$u_{o,M}$	0,00 Vol.-%	0,00 Vol.-%	0,000
u_{temp}	-0,23 Vol.-%	-0,13 Vol.-%	0,018
u_{EV}	0,20 Vol.-%	0,12 Vol.-%	0,013
u_{rep}	0,01 Vol.-%	0,00 Vol.-%	0,000
u_D	0,13 Vol.-%	0,08 Vol.-%	0,006
u_{ref}	0,60 Vol.-%	0,29 Vol.-%	0,083

Combined standard uncertainty (u_c)
 Total expanded uncertainty
 Relative total expanded uncertainty
 Requirement

u_c	$u_c = \sqrt{u_{max,j}^2}$	0,439
$(u_c \cdot k)$	$u_c \cdot 1,96$	0,861
	u_c in % of the limit 25 Vol.-%	3,4
	u_c in % of the limit 25 Vol.-%	6,0

Result: Requirements keep to QAL 1 of EN 14181

Attention: For this component no requirements in the EC-directives 2001/80/EG und 2000/76/EG are given.

EN ISO 14956 and prEN 15267-3 calculation for QAL 1 in EN 14181

Manufacturer data
 Manufacturer
 Measurement System
 Name
 Serial Number
 Measuring Principle

Horiba Europe GmbH
 Emission measurement
 PG 250 SRM 2
 G 0800X2D
 Paramagnetic

TÜV Data
 Approval Report
 Date
 Editor

936/21206693/A
 06.03.2008
 Guido Baum

Measurement Component and tested range

O2 25 Vol.-%

Evaluation of the cross sensitivity (CS)

to 3 Vol.-% Oxygen
 to 21 Vol.-% Oxygen
 to 30 Vol.-% Humidity
 to 300 mg/m³ Carbon monoxide
 to 15 Vol.-% Carbon dioxide
 to 50 mg/m³ Methane
 to 20 mg/m³ Dinitrogen monoxide
 to 100 mg/m³ Dinitrogen monoxide
 to 300 mg/m³ Nitrogen monoxide
 to 30 mg/m³ Nitrogen dioxide
 to 20 mg/m³ Ammonia
 to 200 mg/m³ Sulphur dioxide
 to 1000 mg/m³ Sulphur dioxide
 to 50 mg/m³ Hydrogen chloride
 to 200 mg/m³ Hydrogen chloride

CS $X_{max,j}$
 0,00 Vol.-%
 0,00 Vol.-%
 0,00 Vol.-%
 0,03 Vol.-%
 -0,03 Vol.-%
 0,00 Vol.-%
 0,00 Vol.-%
 0,00 Vol.-%
 0,06 Vol.-%
 0,00 Vol.-%
 0,03 Vol.-%
 0,03 Vol.-%
 0,00 Vol.-%
 -0,05 Vol.-%

Sum of positive cross sensitivities
 Sum of negative cross sensitivities

0,15 Vol.-%
 -0,08 Vol.-%

Calculation of the combined standard uncertainty

Test Value

Lack of fit
 Biggest interference (positive or negative)
 Span shift in the field test
 Zero shift in the field test
 Sensitivity to sample volume flow
 Sensitivity to ambient temperature
 Dependence on supply voltage
 Repeatability at span
 Field reproducibility
 Uncertainty of the test gas at the reference point

	$\Delta X_{max,j}$	$u(\Delta X_{max,j}) = \frac{\Delta X}{\sqrt{3}}$	$u(\Delta X_{max,j})^2$
u_{fit}	-0,10 Vol.-%	-0,05 Vol.-%	0,003
u_{int}	0,15 Vol.-%	0,09 Vol.-%	0,008
$u_{c,dr}$	0,30 Vol.-%	0,17 Vol.-%	0,030
$u_{c,dr}$	-0,10 Vol.-%	-0,06 Vol.-%	0,003
$u_{s,vf}$	0,00 Vol.-%	0,00 Vol.-%	0,000
u_{temp}	-0,23 Vol.-%	-0,13 Vol.-%	0,018
u_{sv}	0,10 Vol.-%	0,06 Vol.-%	0,003
u_{vol}	0,01 Vol.-%	0,00 Vol.-%	0,000
u_D	0,13 Vol.-%	0,08 Vol.-%	0,006
u_{ref}	0,50 Vol.-%	0,29 Vol.-%	0,083

Combined standard uncertainty (u_c)
 Total expanded uncertainty
 Relative total expanded uncertainty
 Requirement

$u_c = \sqrt{\sum (u_{max,j})^2}$
 $u_c = 0,407$
 $U_c = u_c \cdot 1,96$
 $U_c = 0,798$
 U_c in % of the limit 25 Vol.-%
 U_c in % of the limit 25 Vol.-%

Result: Requirements keep to QAL 1 of EN 14181

Attention: For this component no requirements in the EC-directives 2001/80/EG und 2000/76/EG are given.



LNI INDUSTRIES SA DIVISION INSTRUMENTATION
46, Chemin de Péling, Case Postale 256 CH-1219 Châtelaine-Geneve Suisse
Tel. ++41 22 979 87 24 Fax ++41 22 979 87 25 e-mail info.lni@lniindustries.com
www.lni-instrum.com

Laboratory of calibration accredited ISO 17025 by the Swiss Accreditation Service



Schweizerischer Kalibrierdienst
Service suisse d'étalonnage
Servizio svizzero di taratura
Swiss Calibration Service

N° d'attribution
N° d'accreditation
Acreditacion

SCS-1112

The Swiss Accreditation Service is one of the signatories of the EA Multilateral Agreement for the recognition of calibration certificates

SCS

CERTIFICATE OF CALIBRATION

SCS

N° 066

Customer:

Corporate Name:
Address:

Laser Lab srl
Via Custozza, 31
66100 Chieti (CH)
Italia

Date of order:
Order N°:

22/06/2011
CVC03612

Device under test:

Brand:
Serial Nr:
Produced by:
Measuring instruction:
Inlet pressure:

SONIMIX 7000 2L2R
3366
LNI INDUSTRIES SA
SONIMIX 7000 2L2R 3/27
3000 mbar rel

Date of Calibration:

23/09/2011

This certificate of calibration confirms the link with the national standards which materialize the physical units (SI)

The results, uncertainties with confidence level and the methods of measurement are given in the following pages and belong to the certificate

Stamp and Date

For measurements

Chief of the laboratory of calibration

LNI INDUSTRIES SA
Ch. de Péling 46
1219 Châtelaine/Geneve
23/09/11

Delphine Jaouen

JM Berleant

This certificate of calibration should not be reproduced, if not completely, without the written authorization of the laboratory
Certificate N°: 066

Page 1 sur 4

IRTECORA

COMPANY
WITH QUALITY MANAGEMENT
SYSTEM CERTIFIED BY DNV
= ISO 9001:2000 =

R Tecora s.r.l. - 20094 Corsico - Milano - Via A. Volta, 22 - Tel +39 02 4505501 - Fax +39 02 48601811 - www.irtecora.it
S.I.A.A. 1023629 di Milano - N. Reg. M. 1037198 - Reg. Imp. 191048 Trib di Milano - Cod. Fisc. B.P. Ita IT:04579990157

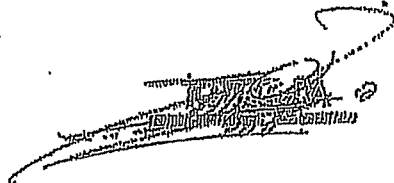
Strumento - Instrument: Isostack Basic HV
Matricola - Serial Number: 009839T
Anno di costruzione - Construction year: 2010

Dichiarazione di conformità Certificate of Conformity

In qualità di costruttori dichiariamo sotto la nostra responsabilità che
strumentazione di cui sopra è conforme alle direttive 2006/95/CE, 2004/108/CE, 2006/42/CE,
DIRETTIVA 459-96 ed è stata realizzata in conformità
alle norme armonizzate applicabili CEI EN 61010-1

As manufacturer we declare under our sole responsibility that the equipment,
in accordance with the provisions of the Directives 2006/95/EC, 2004/108/EC, 2006/42/EC,
and with the harmonized norm EN 61010-1

Date: 09/03/2010





LN INDUSTRIES SA DIVISION INSTRUMENTATION
46, Chemin de l'Étang, Case Postale 256 CH-1219 Châtelaine-Genève Suisse
Tél. ++ 41 22 979 37 24 Fax ++ 41 22 979 37 20 e-mail info.instrument@lnindustries.com
www.lni-instrum.com

Laboratory of calibration accredited ISO 17025 by the Swiss Accreditation Service



S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

S Akkreditierungs-Nr
C N° d'accréditation
S Accreditation-Nbr

SCS 119

The Swiss Accreditation Service is one of the signatories of the EA Multilateral Agreement for the recognition of calibration certificates

SCS	CERTIFICATE OF CALIBRATION	SCS
N° 966		

Customer: Corporate Name: Laser Lab srl
Address: Via Custoza, 31
66100 Chieti (CH)
Italia

Date of order: 22/08/2011
Order N°: CVS03612

Device under test : Brand: SONIMIX 7000 2L2R
Serial Nr: 3366
Produced by: LN INDUSTRIES SA
Measuring Instruction: SONIMIX 7000 2L2R 3/27
Inlet pressure: 3000 mbar rel

Date of Calibration : 28/09/2011

This certificate of calibration confirms the link with the national standards which materialize the Physical units (SI)

The results, uncertainties with confidence level and the methods of measurement are given in the following pages and belong to the certificate

Stamp and Date

For measurements

Chief of the laboratory of calibration

LN INDUSTRIES SA
Ch. de l'Étang 46
1219 Châtelaine/Genève

28/09/11

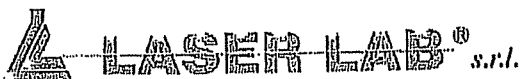
Delphine Jaouen

JM Bertelotti

This certificate of calibration should not be reproduced, if not completely, without the written authorization of the laboratory

Certificate N°: 966

Page 1 sur 4



Via Custoza, 31 - Chieti - www.laserlab.it - mail@laserlab.it
Tel. 0871 564343 - Fax. 0871 564443



Laser Lab	PO-71/1
Procedura Operativa n°71	Rev. 01 del 23/10/2009
Titolo della procedura: Taratura interna miscelatore Sonimix 7000-2L2R	Pag. 1 di 1

CERTIFICATO DI TARATURA					
CLIENTE			LASER LAB		
STRUMENTO TESTATO			SONIMIX 7000-2L2R		
UNITA' GAS S/N			3366		
PROCEDURA DI RIFERIMENTO			PO-71		
FLUSSO IN CONDIZIONI NORMALI	IMPOSTATO	RILEVATO (Drycal)	MISURATO (Miscelatore)	INCERTEZZA TOT RELATIVA %	CRITERIO DI ACCETTABILITA'
MFC CAR 0,25...5,0 l/min (25±1°C, 1013 hPa) MISCELA GAS TECNICI COMPLEMENTARI AZOTO certificato analisi N° 13006 calibrato con DRYCAL DC-LITE DCL-MH SN.106723	ml/min			%	% MAX
	250,00	255,27	252,31	0,73	2
	500,00	552,66	526,36	1,55	2
	1000,00	1047,43	1018,45	0,15	2
	1500,00	1628,09	1540,23	0,73	2
	2000,00	2155,79	2031,65	0,66	2
	2500,00	2728,58	2523,11	0,96	2
	3000,00	3172,57	3089,54	0,39	2
	3500,00	3750,18	3545,22	0,82	2
	4000,00	4157,11	4033,81	0,73	2
MFC DIL I 0,25...5,0 l/min (25±1°C, 1013 hPa) MISCELA GAS TECNICI COMPLEMENTARI AZOTO certificato analisi N° 13006 calibrato con DRYCAL DC-LITE DCL-MH SN.106723	ml/min			%	% MAX
	250,00	277,07	252,14	0,62	2
	500,00	552,17	523,65	0,51	2
	1000,00	1205,72	1089,31	0,29	2
	1500,00	1624,11	1487,2	0,38	2
	2000,00	2247,14	2049,01	0,51	2
	2500,00	2681,02	2421,58	0,85	2
	3000,00	3149,70	2929,54	0,13	2
	3500,00	3711,31	3411,68	0,47	2
	4000,00	4223,39	4102,32	0,20	2
MFC DIL I 0,25...5,0 l/min (25±1°C, 1013 hPa) MISCELA GAS TECNICI COMPLEMENTARI AZOTO certificato analisi N° 13006 calibrato con DRYCAL DC-LITE DCL-MH SN.106723	ml/min			%	% MAX
	250,00	277,07	252,14	0,62	2
	500,00	552,17	523,65	0,51	2
	1000,00	1205,72	1089,31	0,29	2
	1500,00	1624,11	1487,2	0,38	2
	2000,00	2247,14	2049,01	0,51	2
	2500,00	2681,02	2421,58	0,85	2
	3000,00	3149,70	2929,54	0,13	2
	3500,00	3711,31	3411,68	0,47	2
	4000,00	4223,39	4102,32	0,20	2

Laser Lab S.r.l.

Via Custoza, 31 Chieti (CH)
66100 ITALY

DATA

16/05/2013



TERMICA COLLEFERRO SPA

**Via Ariana km 5,2
00034 Colleferro (RM)**

Allegato 8

Elenco prove accreditate e Certificato di accreditamento Accredia

CERTIFICATO DI ACCREDITAMENTO *Accreditation Certificate*

Accreditamento n°
Accreditation n°

0142

Rev. **1**

Si dichiara che
We declare that

LASER LAB SrL

Sede:

Via Custoza 31 - 66013 Chieti CH

è conforme ai requisiti
della norma

UNI CEI EN ISO/IEC 17025:2005 "Requisiti generali per la competenza dei
Laboratori di prova e taratura"

*meets the requirements
of the standard*

*EN ISO/IEC 17025:2005 "General Requirements for the Competence of Testing
and Calibration Laboratories" standard*

quale

Laboratorio di Prova

as

Testing Laboratory


L'accreditamento attesta la competenza tecnica del Laboratorio relativamente allo scopo riportato nelle schede allegate al presente certificato. Le schede possono variare nel tempo. I requisiti gestionali della ISO/IEC 17025:2005 (sezione 4) sono scritti in un linguaggio idoneo all'attività dei Laboratori di Prova, sono conformi ai principi della ISO 9001:2008 ed allineati con i suoi requisiti applicabili. Il presente certificato non è da ritenersi valido se non accompagnato dalle schede allegate e può essere sospeso o revocato in qualsiasi momento nel caso di inadempienza accertata da parte di ACCREDIA. La vigenza dell'accreditamento può essere verificata sul sito WEB (www.accredia.it) o richiesta direttamente ai singoli Dipartimenti.

The accreditation certifies the technical competence of the laboratory limited to the scope detailed in the attached Enclosure. The scope may vary in the time. The management system requirements in ISO/IEC 17025:2005 (Section 4) are written in a language relevant to Testing Laboratories operations and meet the principles of ISO 9001:2008 and are aligned with its pertinent requirements. The present certificate is valid only if associated to the annexed schedule, and can be suspended or withdrawn at any time in the event of non fulfilment as ascertained by ACCREDIA. The in force status of the accreditation may be checked in the WEB site (www.accredia.it) or on direct request to appointed Department.

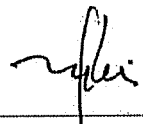
Data di 1ª emissione
1st issue date
1997-04-03

Data di modifica
Modification date
2013-07-16

Data di scadenza
Expiring date
2017-05-04


Il Direttore Generale
The General Director
(Dr. Filippo Trifiletti)


Il Direttore di Dipartimento
Department Director
(Dr. Paolo Bianco)


Il Presidente
The President
(Cav. del Lav. Federico Grazioli)

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 1 di 20 PA163AR25.pdf

ELENCO PROVE ACCREDITATE - CATEGORIA: 0

Acque naturali e di scarico

Denominazione della prova / Campi di prova

Carbonio organico disciolto (DOC)

Metodo di prova

APAT CNR IRSA 5040 Man 29 2003

Oli e Grassi animali e vegetali (da calcolo)

APAT CNR IRSA 5160 B1 Man 29 2003 + APAT CNR IRSA 5160 B2 Man 29 2003

Acque naturali e di scarico

Denominazione della prova / Campi di prova

Idrocarburi totali

Metodo di prova

APAT CNR IRSA 5160 B2 Man 29 2003

Acque naturali e di scarico

Denominazione della prova / Campi di prova

Sostanze oleose totali

Metodo di prova

APAT CNR IRSA 5160 B1 Man 29 2003

Acque naturali, superficiali, sotterranee, di scarico

Denominazione della prova / Campi di prova

Cloruri, Fluoruri, Nitrati, Solfati, Fosfati, Bromuri

Metodo di prova

APAT CNR IRSA 4020 Man 29 2003

Acque destinate al consumo umano

Denominazione della prova / Campi di prova

Colore

Metodo di prova

Rapporti ISTISAN 2007/31 pag 90 Met ISS BJA 021

Odore

Rapporti ISTISAN 2007/31 pag 80 Met ISS BAA 026

Residuo fisso a 180°C

Rapporti ISTISAN 2007/31 pag 65 Met ISS BFA 032

Sapore

Rapporti ISTISAN 2007/31 pag 85 Met ISS BKA 028

Acque destinate al consumo umano, naturali e di piscina

Denominazione della prova / Campi di prova

Azoto Organico, Azoto Kjeldahl

Metodo di prova

APAT CNR IRSA 5030 Man 29 2003

Cloro libero e Cloro totale

Rapporti ISTISAN 2007/31 pag 45 Met ISS BHD 033

Colore

APAT CNR IRSA 2020 A Man 29 2003

Conducibilità elettrica

Rapporti ISTISAN 2007/31 Pag 55 Met ISS BDA 022

pH

Rapporti ISTISAN 2007/31 Pag 68 Met ISS BCA 023

Acque destinate al consumo umano, naturali, minerali, di pozzo, di falda e di piscina

Denominazione della prova / Campi di prova

Indice di permanganato (Ossidabilità Kubel)

Metodo di prova

UNI EN ISO 8467: 1997

Acque destinate al consumo umano, naturali, superficiali, sotterranee

Denominazione della prova / Campi di prova

Conta di Pseudomonas aeruginosa

Metodo di prova

UNI EN ISO 16266: 2008

Numerazione di Clostridium perfringens

DLgs n° 31 02/02/2001 GU SO n° 52 03/03/2001 All III

Ricerca ed enumerazione di enterococchi intestinali.

UNI EN ISO 7899-2: 2003

Ricerca ed enumerazione di Escherichia coli e batteri coliformi

UNI EN ISO 9308-1: 2002

Acque destinate al consumo umano, naturali, superficiali, sotterranee

Denominazione della prova / Campi di prova

Metodo di prova

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 2 di 20 PA163AR25.pdf

Numerazione di microrganismi coltivabili: conteggio delle colonie a 22°C e 37°C

UNI EN ISO 6222: 2001

Acque destinate al consumo umano, naturali, superficiali, sotterranee, di scarico

Denominazione della prova / Campi di prova

Metodo di prova

Carbonio Organico Totale (TOC), Carbonio organico disciolto (DOC)

UNI EN 1484: 1999

Acque di scarico

Denominazione della prova / Campi di prova

Metodo di prova

Azoto ammoniacale

APAT CNR IRSA 4030 A2 Man 29 2003

Polichlorobifenili (PCB): Aroclor 1260, Aroclor 1254, Aroclor 1242

APAT CNR IRSA 5110 Man 29 2003

Acque di scarico, superficiali e sotterranee

Denominazione della prova / Campi di prova

Metodo di prova

Glicoli: Glicole etilenico, glicole dietilenico, glicole trietilenico

M.U. 1367:99

Mercurio

UNI EN 1483:2008

Odore

APAT CNR IRSA 2050 Man 29 2003

Tensioattivi anionici

APAT CNR IRSA 5170 Man 29 2003

Acque e campioni acquose

Denominazione della prova / Campi di prova

Metodo di prova

Idrocarburi policiclici aromatici (IPA): naftalene, acenaftilene, acenaftene, fluorene, fenantrene, antracene, fluorantene, pirene, benzo(a) antracene, crisene, benzo(b) fluorantene, benzo(a) pirene, dibenzo(a,h) antracene, benzo(g,h,i) perilene, indeno(1,2,3,cd) pirene, benzo(k) fluorantene

APAT CNR IRSA 5080 Man 29 2003 (ad esclusione del paragrafo 7.4 e 7.1.2)

Acque e Campioni acquosi

Denominazione della prova / Campi di prova

Metodo di prova

Acrilammide

DIN 38413-6 2007

Aldeidi: formaldeide, acetaldeide, acroleina, propionaldeide, butirraldeide, benzaldeide, gluteraleide

EPA 8315A 1996

Alluminio, Antimonio, Argento, Arsenico, Berillio, Boro, Cadmio, Calcio, Cobalto, Cromo, Ferro, Fosforo, Magnesio, Manganese, Mercurio, Molibdeno, Nichel, Piombo, Potassio, Rame, Selenio, Sodio, Stronzio, Tallio, Tellurio, Vanadio, Zinco.

EPA 3015A 2007+ EPA 6010C 2007

Alluminio, Antimonio, Argento, Arsenico, Berillio, Cadmio, Ferro, Manganese, Nichel, Piombo, Selenio, Tallio, Vanadio, Cobalto, Cromo, Rame, Zinco, Boro; Bario; Molibdeno.

EPA 3015A 2007+ EPA 6020A 2007

Alluminio, Antimonio, Argento, Arsenico, Berillio, Cadmio, Ferro, Manganese, Nichel, Piombo, Selenio, Tallio, Vanadio, Cobalto, Cromo, Rame, Zinco, Boro; Bario; Molibdeno.

EPA 6020A 2007

Alluminio, Antimonio, Argento, Bario, Berillio, Boro, Cadmio, Calcio, Cobalto, Cromo, Ferro, Fosforo, Magnesio, Manganese, Nichel, Piombo, Potassio, Rame, Selenio, Silice, Sodio, Stagno, Stronzio, Tallio, Vanadio, Zinco, Titanio, Litio, Arsenico, Mercurio, Molibdeno, Tellurio

EPA 6010C 2007

Alluminio, Arsenico, Bario, Berillio, Cadmio, Calcio, Cobalto, Cromo, Ferro, Magnesio, Manganese, Nichel, Piombo, Potassio, Rame, Selenio, Sodio, Tallio, Vanadio, Zinco, Molibdeno

EPA 3010A 1992 + EPA 6010C 2007

Ammine aromatiche: anilina, o-anisidina, m-anisidina, p-anisidina, difenilammina, p-toluidina

EPA 3510C 1996 + EPA 8270D 2007

Atrazina, Alaclor (> 0,01 µg/l)

MP 279/C rev 5 2013

Bromuri, Cloruri, Fluoruri, Nitrati, Fosfati, Solfati

EPA 9056A 2007

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 3 di 20 PA163AR25.pdf

Cianuri (liberi e totali)

ISO 6703-2:1984 sez. 1 e 2

Cloruri, Salinità (come NaCl)

APHA Standard Methods for the Examination of Water and Wastewater ed 22nd 2012 4500 B

Composti organici alogenati: cloroformio, tetracloruro di carbonio, 1,1,1 tricloroetano, tricloroetilene, tetracloroetilene, 1,1,2,2 tetracloroetano, 1,1,1,2 tetracloroetano, clorometano, 1,2 dicloroetano, esaclorobutadiene, 1,1 dicloroetilene, 1,1 dicloroetano, 1,2 dicloropropano, 1,1,2 tricloroetano, 1,2,3 tricloropropano, cis-1,2 dicloroetilene, trans-1,2 dicloroetilene, 1,2 dibromoetano
monoclorobenzene, 1,2 diclorobenzene, 1,4 diclorobenzene, bromoformio, bromodiclorometano, dibromoclorometano, esaclorobenzene, pentaclorobenzene, 1,2,4 triclorobenzene, 1,2,4,5 tetraclorobenzene.

EPA 5021A 2003 + EPA 8021B 1996

Idrocarburi < C12 (come sommatoria C6-C12), Idrocarburi =< C12 (come sommatoria C6-C12)

EPA 5021A 2003 + EPA 8015C 2007

Idrocarburi > C12 (come sommatoria C13-C40)

EPA 3510C 1996 + EPA 8015C 2007

Idrocarburi policiclici aromatici (IPA): naftalene, acenaftilene, acenaftene, fluorene, fenantrene, antracene, fluorantene, pirene, benzo(a) antracene, crisene, benzo(b) fluorantene, benzo(a) pirene, dibenzo(a,h) antracene, benzo(g,h,i) perilene, indeno(1,2,3,cd) pirene, benzo(k) fluorantene; Nitrobenzeni: Nitrobenzene, 2-cloronitrobenzene, 3- cloronitrobenzene, 4-cloronitrobenzene, 1,3-dinitrobenzene, 1,2-dinitrobenzene; Clorobenzeni: 1,2,4-triclorobenzene, 1,2,4,5-tetraclorobenzene, pentaclorobenzene, esaclorobenzene, Ftalati: Bis(2-etilesil)ftalato, butil benzil ftalato, di-n-butil ftalato, di-n-ottil ftalato, dietil ftalato, dimetil ftalato; acido paraftalico Fenoli: Fenolo, m+p cresolo, o-cresolo, 2-clorofenolo, 2,4-diclorofenolo, 2,4,6-triclorofenolo, pentaclorofenolo

EPA 3510C 1996+ EPA 8270D 2007

Idrocarburi totali (C≤12 nel range C5 -C12 + C>12 nel range C13-C40), Idrocarburi totali (espressi come n-esano)

EPA 5021A 2003 +EPA 8015C 2007+ EPA 3510C 1996 + EPA 8015C 2007

Metilterbutiletere (MTBE), Solventi organici aromatici: benzene, toluene, o-m-p-xilene, etilbenzene, stirene, cumene.

EPA 5021A 2003 + EPA 8015C 2007

Pesticidi organofosforati: Clorpirifos-me, Clorpirifos-et, Pirimifos-me, Paration-me, disulfoton.
Pesticidi clorurati: esaclorobenzene, a-HCH, b-HCH, aldrina, 4,4'-Diclorodifeniltricloroetano (4,4'-DDT), 2,4'-Diclorodifeniltricloroetano (2,4'-DDT), 4,4'-Diclorodifenildicloroetano (4,4'-DDD), 2,4'-Diclorodifenildicloroetano (2,4'-DDD), 4,4'-Diclorodifenildicloroetilene (4,4'-DDE), 2,4'-Diclorodifenildicloroetilene (2,4'-DDE), somma di DDD, DDT e DDE, lindano (g-HCH), dieltrin, endrin, isodrin, clordano.

EPA 3510C 1996 + EPA 8270D 2007

Piombo tetraetile

EPA 3510C 1996 + EPA 8270D 2007

Policlorobifenili (PCB): #28, #52, #77, #81, #95, #99, #101, #105, #110, #114, #118, #123, #126, #128+#167, #138, #146, #149, #151, #153, #156, #157, #169, #170, #177, #180, #183, #187, #189; Policlorobifenili (PCB) Diossina-simili: #77, #81, #105, #114, #118, #123, #126, #156, #157, #167, #169, #189; PCB Totali

EPA 3510C 1996 + EPA 8270D 2007

Potenziale Redox

APHA Standard Methods for the Examination of Water and Wastewater ed 22nd 2012 2580 B

Richiesta biochimica d'ossigeno (BOD5)

APHA Standard Methods for the Examination of Water and Wastewater ed 22nd 2012 5210 D

Richiesta chimica di ossigeno (COD)

ISO 15705: 2002

Solidi fissi e volatili a 600°C

APAT CNR IRSA 2090 D Man 29 2003

Solventi organici aromatici: benzene, toluene, m,p-xilene, o-xilene, etilbenzene, stirene, cumene

APAT CNR IRSA 5140 Man 29 2003

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 4 di 20 PA163AR25.pdf

Solventi organici clorurati e alogenati: cloroformio, tetracloruro di carbonio, 1,1,1-tricloroetano, tricloroetilene, tetracloroetilene, 1,1,2,2-tetracloroetano, 1,1,1,2-tetracloroetano, clorometano, diclorometano, 1,2-dicloroetano, 1,1-dicloroetilene, 1,1-dicloroetano, 1,2-dicloropropano, 1,1,2-tricloroetano, 1,2,3-tricloropropano, cis-1,2 dicloroetilene, trans-1,2 dicloroetilene, 1,2-dibromoetano, monoclorobenzene, 1,2-diclorobenzene, 1,4-diclorobenzene, bromoformio, bromodichlorometano, dibromoclorometano

APAT CNR IRSA 5150 Man 29 2003

Solventi organici clorurati e alogenati: cloroformio, tetracloruro di carbonio, 1,1,1-tricloroetano, tricloroetilene, tetracloroetilene, 1,1,2,2-tetracloroetano, 1,1,1,2-tetracloroetano, clorometano, diclorometano, cloruro di vinile monomero (CVM), 1,2-dicloroetano, esaclorobutadiene, 1,1-dicloroetilene, 1,1-dicloroetano, 1,2-dicloropropano, 1,1,2-tricloroetano, 1,2,3-tricloropropano, cis-1,2 dicloroetilene, trans-1,2 dicloroetilene, 1,2-dibromoetano, 1,3-diclorobenzene, monoclorobenzene, 1,2-diclorobenzene, 1,4-diclorobenzene, bromoformio, dibromodichlorometano, bromodichlorometano, diclorobromometano. Solventi organici aromatici: benzene, toluene, p-o-m-xilene, etilbenzene, stirene, cumene. Trialometani Totali (cloroformio, bromoformio, dibromoclorometano, bromodichlorometano)

EPA 5030C 2003 + EPA 8260C 2006

Acque e campioni acquosi, Sedimenti, Suoli

Denominazione della prova / Campi di prova

Dibenzodiossine/furani policlorurati (PCDD/PCDF):
2,3,7,8-Tetraclorodibenzodiossina (TCDD),
1,2,3,7,8-Pentaclorodibenzodiossina (PeCDD),
1,2,3,4,7,8-Esaclorodibenzodiossina (HxCDD),
1,2,3,6,7,8-Esaclorodibenzodiossina (HxCDD),
1,2,3,7,8,9-Esaclorodibenzodiossina (HxCDD),
1,2,3,4,6,7,8-Eptaclorodibenzodiossina (HpCDD), Octaclorodibenzodiossina (OCDD) Policlorodibenzofurani (PCDF): 2,3,7,8-Tetraclorodibenzofurano (TCDF), 1,2,3,7,8-Pentaclorodibenzofurano (PeCDF), 2,3,4,7,8-Pentaclorodibenzofurano (PeCDF), 1,2,3,4,7,8-Esaclorodibenzofurano (HxCDF), 1,2,3,6,7,8-Esaclorodibenzofurano (HxCDF), 1,2,3,7,8,9-Esaclorodibenzofurano (HxCDF), 2,3,4,6,7,8-Esaclorodibenzofurano (HxCDF), 1,2,3,4,6,7,8-Eptaclorodibenzofurano (HpCDF), 1,2,3,4,7,8,9-Eptaclorodibenzofurano (HpCDF), Octaclorodibenzofurano (OCDF);
Sommatoria PCDD/PCDF I-TEQ

Metodo di prova

EPA 1613 B 1994 + NATO/CCMS Report n° 176 1988

Acque naturali e di scarico

Denominazione della prova / Campi di prova

Acidità e Alcalinità (Idrossidi, Carbonati, Bicarbonati, Alcalinità totale)

Metodo di prova

APAT CNR IRSA 2010 B Man 29 2003

Aldeidi

APAT CNR IRSA 5010 A Man 29 2003

Cloro attivo libero, cloro residuo

APAT CNR IRSA 4080 Man 29 2003

Cromo esavalente (Cromo VI)

APAT CNR IRSA 3150 C Man 29 2003

Cromo esavalente (Cromo VI)

APAT CNR IRSA 3150 B2 Man 29 2003

Fenoli: fenolo, fenoli orto e meta-sostituiti e para-sostituiti con sostituyente carbossile, alogeno, metossile o gruppo solfonico.

APAT CNR IRSA 5070 A1 Man 29 2003, APAT CNR IRSA 5070 A2 Man 29 2003

pH

APAT CNR IRSA 2060 Man 29 2003

Richiesta chimica d'ossigeno (COD)

APAT CNR IRSA 5130 Man 29 2003

Solfito

APAT CNR IRSA 4150 A Man 29 2003

Solidi Sedimentabili

APAT CNR IRSA 2090 C Man 29 2003

Solidi sospesi totali

APAT CNR IRSA 2090 B Man 29 2003

Solidi Totali disciolti (Residuo secco a 105 °C)

APAT CNR IRSA 2090 A Man 29 2003

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 5 di 20 PA163AR25.pdf

Acque naturali, destinate al consumo umano e industriali

Denominazione della prova / Campi di prova

Durezza totale (come CaCO₃)

Metodo di prova

APAT CNR IRSA 2040 B Man 29 2003

Acque naturali, di mare e di scarico

Denominazione della prova / Campi di prova

Azoto nitroso

Metodo di prova

APAT CNR IRSA 4050 Man 29 2003

Acque naturali, dolci, di mare, sotterranee

Denominazione della prova / Campi di prova

Azoto ammoniacale

Metodo di prova

APAT CNR IRSA 4030 A1 Man 29 2003

Acque potabili, superficiali e di scarico

Denominazione della prova / Campi di prova

Torbidità

Metodo di prova

APAT CNR IRSA 2110 Man 29 2003

Acque reflue, superficiali, sotterranee

Denominazione della prova / Campi di prova

Alluminio, Arsenico, Bario, Berillio, Cadmio, Calcio, Cobalto, Cromo, Ferro, Magnesio, Manganese, Nichel, Piombo, Potassio, Rame, Selenio, Sodio, Tallio, Tellurio, Vanadio, Zinco, Molibdeno.

Metodo di prova

APAT CNR IRSA 3020 Man 29 2003

Acque sotterranee, superficiali, di mare e di scarico

Denominazione della prova / Campi di prova

Conducibilità elettrica

Metodo di prova

APAT CNR IRSA 2030 Man 29 2003

Acque sotterranee, superficiali, di mare, di scarico, domestici ed industriali

Denominazione della prova / Campi di prova

Solfuro

Metodo di prova

APAT CNR IRSA 4160 Man 29 2003

Acque superficiali, di fiume, di lago ed acque di scarico anche sottoposte a trattamento

Denominazione della prova / Campi di prova

Conta Spore di clostridi solfito riduttori

Metodo di prova

APAT CNR IRSA 7060 B Man 29 2003

Conta Streptococchi fecali, Enterococchi (MF)

APAT CNR IRSA 7040 C Man 29 2003

Conta Coliformi fecali (MF)

APAT CNR IRSA 7020 B Man 29 2003

Conta Coliformi fecali (MPN)

APAT CNR IRSA 7020 A Man 29 2003

Conta Coliformi totali (MF)

APAT CNR IRSA 7010 C Man 29 2003

Conta Coliformi totali (MPN)

APAT CNR IRSA 7010 A Man 29 2003

Conta Escherichia coli

APAT CNR IRSA 7030 C Man 29 2003

Conta Escherichia coli

APAT CNR IRSA 7030 F Man 29 2003

Conta Streptococchi fecali, Enterococchi (MPN)

APAT CNR IRSA 7040 A Man 29 2003

Conteggio delle colonie su Agar a 36 °C e 22 °C

APAT CNR IRSA 7050 Man 29 2003

Alimenti

Denominazione della prova / Campi di prova

Ceneri

Metodo di prova

Rapporti ISTISAN 1996/34 Pag 77

Cloruro di sodio (>0,5 % (m/m))

MP 65/C rev 3 2013

Piombo, Cadmio

UNI EN 13805: 2002 + UNI EN 14083: 2003

Sostanze azotate totali, Proteine (da calcolo)

Rapporti ISTISAN 1996/34 pag 13

LASER LAB SrL Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 6 di 20 PA163AR25.pdf

Sostanze grasse totali

Rapporti ISTISAN 1996/34 pag 41 Met A

Sostanze grasse totali

Rapporti ISTISAN 1996/34 pag 39

Alimenti che non contengono sostanze termolabili a 103°C

Denominazione della prova / Campi di prova

Metodo di prova

Umidità (Residuo secco)

Rapporti ISTISAN 1996/34 Pag 7 Met B

Alimenti destinati al consumo umano ed animale

Denominazione della prova / Campi di prova

Metodo di prova

Conta Bacillus Cereus presunto a 30°

UNI EN ISO 7932:2005

Conta Batteri lattici mesofili

NF ISO 15214:1998

Conta Batteri solfito riduttori

NF V 08-061 2009

Conta Escherichia coli beta-glucuronidasi positivo

ISO 16649-2:2001

Conta Listeria monocytogenes

UNI EN ISO 11290-2:2005

Conta Listeria monocytogenes

NF EN ISO 11290-2:1998/A1: 2005

Conta Stafilococchi coagulasi positivi (Staphylococcus aureus e altre specie)

UNI EN ISO 6888-1:2004

Conta Stafilococchi coagulasi positivi (Staphylococcus aureus e altre specie)

UNI EN ISO 6888-2:2004

Ricerca Listeria monocytogenes

NF EN ISO 11290-1:1997/A1: 2005

Alimenti destinati al consumo umano ed animale (con aw maggiore di 0,95)

Denominazione della prova / Campi di prova

Metodo di prova

Conta Lieviti e Muffe

ISO 21527-1:2008

Alimenti destinati al consumo umano ed animale (con aw minore o uguale di 0,95)

Denominazione della prova / Campi di prova

Metodo di prova

Conta Lieviti e Muffe

ISO 21527-2:2008

Alimenti destinati al consumo umano ed animale (escluso latte e derivati)

Denominazione della prova / Campi di prova

Metodo di prova

Listeria monocytogenes

Rapporti ISTISAN 1996/35 Met 20

Alimenti destinati al consumo umano ed animale, tamponi

Denominazione della prova / Campi di prova

Metodo di prova

Conta Coliformi

ISO 4832:2006

Conta Coliformi a 44°C

NF V 08-060 2009

Conta Coliformi a 30°C

NF V 08-050 2009

Conta Enterobacteriaceae

ISO 21528-2: 2004

Conta Lieviti e Muffe

NF V 08-059 2002

Conta microbica a 30°C

ISO 4833:2003

Conta Stafilococchi coagulasi positivi

NF V 08-057-1 2004

Ricerca Listeria monocytogenes

UNI EN ISO 11290-1:2005

Alimenti grassi: Oli e grassi

Denominazione della prova / Campi di prova

Metodo di prova

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 7 di 20 PA163AR25.pdf

Multiresiduale dei fitofarmaci clorurati: alfa-HCH, beta-HCH, Aldrin, 4,4'-Diclorodifeniltricloroetano (4,4'-DDT), 2,4'-Diclorodifeniltricloroetano (2,4'-DDT), 4,4'-Diclorodifenildicloroetano (4,4'-DDD), 2,4'-Diclorodifenildicloroetano (2,4'-DDD), 4,4'-Diclorodifenildicloroetilene (4,4'-DDE), 2,4'-Diclorodifenildicloroetilene (2,4'-DDE), somma di DDD, DDT e DDE, Lindano (gamma-HCH), Dieldrin, Endrin, Eptacoloro, Eptacoloroepossido, Clordano

UNI EN 1528-1: 1997 + UNI EN 1528-2: 1997 + UNI EN 1528-3: 1997 Met F + UNI EN 1528-4: 1997

Aria: Ambienti di lavoro

Denominazione della prova / Campi di prova

Metodo di prova

Cromo esavalente (Cromo VI)

NIOSH 7600 1994

Fibre di Amianto aerodisperse

DM 06/09/1994 GU SO n° 288 10/12/1994 All 2A

Aria: Ambienti di lavoro, Fiala attivata (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Aldeidi: formaldeide, acetaldeide, propionaldeide, butirraldeide, benzaldeide, acroleina

EPA 0100 1996 + EPA 8315A 1996

Aria: Ambienti di lavoro, Fiala in carbone attivo (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Chetoni: acetone, cicloesano, metil isobutilchetone, 2-exanone

NIOSH 1300 1994

Composti organici volatili (COV): acetato di etile, acetato di n-butile, alcool isobutilico, alcool n-butilico, alcool terz-butilico, cicloesano, n-eptano, n-esano, tetraidrofurano

OSHA 07 2000

Aria: Ambienti di lavoro, Fiala in gel di silice e membrana (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Acido fluoridrico, Acido cloridrico, Acido nitrico, Acido solforico, Acido fosforico, Acido bromidrico

NIOSH 7903 1994

Aria: Ambienti di lavoro, Membrana (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Alluminio, Antimonio, Bario, Boro, Calcio, Cromo, Ferro, Magnesio, Manganese, Nichel, Piombo, Rame, Sodio, Stagno, Zinco

NIOSH 7300 2003

Piombo

NIOSH 7105 1994

Aria: Ambienti di lavoro; Fiala carbone attivo (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Idrocarburi aromatici: benzene, toluene, o,m,p-xilene, cumene, viniltoluene, stirene, etilbenzene

NIOSH 1501 2003

Aria: Ambienti di lavoro; fiala attivata (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Glicoli: Glicole etilenico, glicole dietilenico, glicole trietilenico

NIOSH 5523 1996

Aria: ambienti di lavoro; membrana filtrante (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Polveri: frazione respirabile

M.U. 2010: 2011

Aria: Aria Ambiente; membrana filtrante (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Benzo(a) pirene

UNI EN 15549: 2008((escluso il par. 11.1)

Cadmio, Arsenico, Piombo, Nichel (nella frazione PM10 del particolato in sospensione)

UNI EN 14902:2005

Frazione massica PM 2,5

UNI EN 14907:2005

LASER LAB S.r.l. Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 8 di 20 PA163AR25.pdf

Particolato in sospensione PM 10

UNI EN 12341:2001

Aria: emissioni in atmosfera

Denominazione della prova / Campi di prova

Metodo di prova

Contenuto di vapor d'acqua del gas umido, Umidità

UNI EN 14790:2006

Fluoruri, Acido Fluoridrico (HF)

ISO 15713:2006

Particolato fine < 2,5 micron (PM 2,5), Particolato fine < 10 micron (PM 10)

ISO 23210: 2009

Aria: emissioni in atmosfera, Fiala in carbone attivo (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Sostanze organiche volatili (SOV):
triclorometano (cloroformio), 1,1,1 tricloroetano (metilcloroformio),
tetracloruro di carbonio, tricloroetilene, tetracloroetilene, 1,1,2,2
tetracloroetano, 1,2-dicloropropano, o-diclorobenzene, p-diclorobenzene,
acetone, benzene, 2-butanone (MEK), n-butilacetato, butanolo, cumene,
cicloesano, etilacetato, etilbenzene, eptano, esano, metilisobutilchetone
(MIBK), metilcicloesano, stirene, toluene, o,m-viniltoluene, xilene,
p-metilstirene, cicloesanone, tetraidrofurano, alcool terbutilico, alcool
isobutilico, 1-butanolo

UNI EN 13649: 2002

Aria: emissioni in atmosfera, Filtro +Soluzione per campionamento (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Arsenico, Cadmio, Cromo, Cobalto, Rame, Manganese, Nichel, Piombo,
Antimonio, Tallio, Vanadio

UNI EN 14385:2004

Mercurio totale

UNI EN 13211:2003 + UNI EN 1483:2008, UNI EN
1483:2008

Aria: emissioni in atmosfera, Membrana (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Polveri totali

UNI EN 13284-1: 2003

Solfuro di idrogeno

M.U. 634:84

Aria: emissioni in atmosfera, Membrana + soluzione di lavaggio (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Alluminio, Cadmio, Cromo, Manganese, Nichel, Piombo, Rame, Stagno,
Zinco (su polveri)

UNI EN 13284-1:2003 + M.U. 723:86 + UNI EN ISO
11885:2009

Aria: emissioni in atmosfera, Soluzione per campionamento (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

Acido cloridrico

UNI EN 1911: 2010 metodo C

Acido cloridrico, Acido fluoridrico

DM 25/08/2000 GU n° 223 23/09/2000 SO n° 158 All.
2 pag 37

Aldeidi: formaldeide, acetaldeide, propionaldeide, butirraldeide, benzaldeide

EPA 0011 1996 + EPA 8315A 1996

Ammoniaca

M.U. 632:84

Anidride solforosa, Biossido di zolfo

UNI EN 14791:2006 Metodo A

Aria: emissioni in atmosfera; materiale adsorbente+filtro+condensa (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova

Metodo di prova

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A	
	Revisione: 25	Data: 16/07/2013
	Scheda 9 di 20	PA163AR25.pdf

Dibenzodiossine/furani policlorurati (PCDD/PCDF):
2,3,7,8-Tetraclorodibenzodiossina (TCDD),
1,2,3,7,8-Pentaclorodibenzodiossina (PeCDD),
1,2,3,4,7,8-Esaclorodibenzodiossina (HxCDD),
1,2,3,6,7,8-Esaclorodibenzodiossina (HxCDD),
1,2,3,7,8,9-Esaclorodibenzodiossina (HxCDD),
1,2,3,4,6,7,8-Eptaclorodibenzodiossina (HpCDD), Octaclorodibenzodiossina (OCDD)
Policlorodibenzofurani (PCDF): 2,3,7,8-Tetraclorodibenzofurano (TCDF), 1,2,3,7,8-Pentaclorodibenzofurano (PeCDF),
2,3,4,7,8-Pentaclorodibenzofurano (PeCDF),
1,2,3,4,7,8-Esaclorodibenzofurano (HxCDF),
1,2,3,6,7,8-Esaclorodibenzofurano (HxCDF),
1,2,3,7,8,9-Esaclorodibenzofurano (HxCDF),
2,3,4,6,7,8-Esaclorodibenzofurano (HxCDF),
1,2,3,4,6,7,8-Eptaclorodibenzofurano (HpCDF), 1,2,3,4,7,8,9-Eptaclorodibenzofurano (HpCDF), Octaclorodibenzofurano (OCDF) -
Sommatoria come Tossicità equivalente I-TEQ

UNI EN 1948-1: 2006 + UNI EN 1948-2: 2006 + UNI EN 1948-3:2006 + NATO /CCMS Report n° 176 1988

Aria: emissioni, Filtro + puff + resina + condensa (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova	Metodo di prova
Idrocarburi policiclici aromatici (IPA): fluorantene, benzo(a) antracene, crisene, benzo(b) fluorantene+ benzo(j)fluorantene, benzo(a) pirene, dibenzo(a,h) antracene, benzo(g,h,i) perilene, indeno(1,2,3,cd) pirene, benzo (k) fluorantene + benzo (j) fluorantene, dibenzo(a,e)pirene,dibenzo(a,h)pirene, dibenzo(a,i)pirene, dibenzo(a,l)pirene, dibenzo(a,h)pirene	ISO 11338-1: 2003 + ISO 11338-2: 2003, ISO 11338-2: 2003

Aria: emissioni, Soluzione per campionamento (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova	Metodo di prova
Ossidi di azoto, Ossidi di zolfo	DM 25/08/2000 GU n° 223 23/09/2000 SO n° 158 All 1 pag. 30

Aria:ambienti di lavoro; Membrana (nel caso di esclusione del campionamento)

Denominazione della prova / Campi di prova	Metodo di prova
Polveri totali, Polveri frazione inalabile	M.U.1998:05

Cacao e cioccolato

Denominazione della prova / Campi di prova	Metodo di prova
Umidità	DM 06/01/1979 GUSO n° 67 08/03/1979 All B Met 1 - A

Campioni ambientali incluse acque potabili, industriali, naturali e materiali associati come sedimenti, depositi e melme

Denominazione della prova / Campi di prova	Metodo di prova
Conta Legionella	ISO 11731: 1998

Carcasse comprese quelle di pollo

Denominazione della prova / Campi di prova	Metodo di prova
Carica microbica totale	ISO 17604:2003 /Amd 1: 2009 (escluso Annex D)+ ISO 4833:2003
Conta Enterobacteriaceae	ISO 17604:2003 /Amd 1: 2009 (escluso Annex D) + ISO 21528-2:2004

Carne e derivati

Denominazione della prova / Campi di prova	Metodo di prova
Ceneri	AOAC 920.153 1920
Conta Pseudomonas spp presunto	UNI EN ISO 13720: 2010
Umidità	AOAC 950.46 Met B (a) 1991

Carni

Denominazione della prova / Campi di prova	Metodo di prova
--	-----------------

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 10 di 20 PA163AR25.pdf

Ricerca Trichinella

Reg CE 2075/2005 05/12/2005 GU CE L338
22/12/2005 All I Cap I (escluso par 2) + Reg CE
1245/2007 24/10/2007 GU CE L281 25/10/2007

Cereali e derivati

Denominazione della prova / Campi di prova

Metodo di prova

Glutine secco

DM 23/07/1994 GU n° 186 10/08/1994 SO Pag 8

Ocratossina A (> 0,5 µg/kg)

MP 280/C rev 5 2013

pH

AOAC 943.02 1943

Sostanze azotate, Proteine (da calcolo)

DM 23/07/1994 GU SO n° 186 10/08/1994 Pag 2

Cereali e derivati (solo per sfarinati e pasta)

Denominazione della prova / Campi di prova

Metodo di prova

Umidità

DM 27/05/1985 SO n° 3 GU n° 145 21/06/1985

Cereali e derivati, frutta, conserve vegetali, prodotti dell'industria dolciaria

Denominazione della prova / Campi di prova

Metodo di prova

Fibra alimentare totale

AOAC 985.29 1986

Combustibili solidi non minerali ricavati da rifiuti (CDR), Non mineral refuse derived fuels (RDF)

Denominazione della prova / Campi di prova

Metodo di prova

Piombo volatile

UNI EN
15402: 2011 + UNI EN 15411: 2011 Met. C + UNI EN
ISO 11885:2009

Vetro

UNI 9903-14: 1997

Combustibili solidi secondari (CSS), Solid recovered fuels (SRF)

Denominazione della prova / Campi di prova

Metodo di prova

Antimonio, Arsenico, Bario, Berillio, Cadmio, Cobalto, Cromo, Molibdeno,
Manganese, Nichel, Piombo, Rame, Selenio, Tallio, Vanadio, Zinco, Mercurio

UNI EN 15411: 2011 Met. C + UNI EN ISO
11885:2009

Ceneri

UNI EN
15403: 2011

Umidità

UNI EN
15414-3: 2011

Concimi, Fertilizzanti, Compost, Ammendanti

Denominazione della prova / Campi di prova

Metodo di prova

pH

DM 19/07/1989 GU n° 196 23/07/1989 met. 4

Conserve vegetali

Denominazione della prova / Campi di prova

Metodo di prova

Acidità totale, Acidità (come acido acetico) (da calcolo)

DM 03/02/1989 GU n° 168 20/07/1989 Met 15

pH

DM 03/02/1989 GU n° 168 20/07/1989 Met 17

Sodio cloruro

DM 03/02/1989 GU n° 168 20/07/1989 Met 33

Solidi totali/ Sostanza secca

DM 03/02/1989 GU n° 168 20/07/1989 Met 5

Umidità

DM 03/02/1989 GU n° 168 20/07/1989 Met 6

Fanghi, rifiuti

Denominazione della prova / Campi di prova

Metodo di prova

Conducibilità in eluati da test di cessione in acqua

UNI 10802:2004 App A+ App B + UNI EN
12457-2:2004+ UNI EN 16192: 2012+ UNI EN 27888:
1995

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 11 di 20 PA163AR25.pdf

Solventi organici alogenati: cloroformio, 1,2-dicloroetano, percloroetilene, tricloroetilene, 1,2-dicloropropano, metilcloroformio, 1,1,2,2-tetracloroetano, 1,1,2-tricloroetano, 1,2,3-tricloropropano, tetracloruro di carbonio.

EPA 3580A 1992 + EPA 8021B 1996

Solventi organici aromatici: benzene, toluene, o-xilene, m+p-xilene, etilbenzene, stirene, cumene, MTBE, m-Viniltoluene, p-vinilstirene, Acetone, 2-Butanone (MEK), 4-metil-2-pentanone (MIBK)

EPA 3580A 1992 + EPA 8015C 2007

Fanghi, Rifiuti

Denominazione della prova / Campi di prova

Dibenzodiossine/furani policlorurati (PCDD/PCDF):
2,3,7,8-Tetraclorodibenzodiossina (TCDD),
1,2,3,7,8-Pentaclorodibenzodiossina (PeCDD),
1,2,3,4,7,8-Esaclorodibenzodiossina (HxCDD),
1,2,3,6,7,8-Esaclorodibenzodiossina (HxCDD),
1,2,3,7,8,9-Esaclorodibenzodiossina (HxCDD),
1,2,3,4,6,7,8-Eptaclorodibenzodiossina (HpCDD), Octaclorodibenzodiossina (OCDD) Policlorodibenzofurani (PCDF): 2,3,7,8-Tetraclorodibenzofurano (TCDF), 1,2,3,7,8-Pentaclorodibenzofurano (PeCDF), 2,3,4,7,8-Pentaclorodibenzofurano (PeCDF), 1,2,3,4,7,8-Esaclorodibenzofurano (HxCDF), 1,2,3,6,7,8-Esaclorodibenzofurano (HxCDF), 1,2,3,7,8,9-Esaclorodibenzofurano (HxCDF), 2,3,4,6,7,8-Esaclorodibenzofurano (HxCDF), 1,2,3,4,6,7,8-Eptaclorodibenzofurano (HpCDF), 1,2,3,4,7,8,9-Eptaclorodibenzofurano (HpCDF), Octaclorodibenzofurano (OCDF);
Sommatoria PCDD/PCDF I-TEQ

Metodo di prova

EPA 1613 B 1994 + UNEP/POPS/COP.3/INF/27
11/04/2007

Fanghi, Rifiuti, Sedimenti, Terreni

Denominazione della prova / Campi di prova

Alluminio, Antimonio, Argento, Arsenico, Bario, Berillio, Boro, Cadmio, Calcio, Cobalto, Cromo, Ferro, Fosforo, Magnesio, Mercurio, Manganese, Molibdeno, Nichel, Piombo, Potassio, Rame, Selenio, Sodio, Stronzio, Tallio, Tellurio, Vanadio, Zinco, Zolfo, Stagno

Metodo di prova

EPA 3052 1996 + EPA 6010C 2007

Alluminio, Antimonio, Argento, Arsenico, Bario, Berillio, Boro, Cadmio, Calcio, Cobalto, Cromo, Ferro, Fosforo, Magnesio, Mercurio, Manganese, Molibdeno, Nichel, Piombo, Potassio, Rame, Selenio, Sodio, Stagno, Stronzio, Tallio, Tellurio, Vanadio, Zinco

EPA 3051A 2007 + EPA 6010C 2007

Alluminio, Antimonio, Argento, Bario, Berillio, Boro, Cadmio, Calcio, Cobalto, Cromo, Ferro, Fosforo, Magnesio, Manganese, Mercurio, Molibdeno, Nichel, Piombo, Rame, Silicio, Stagno, Stronzio, Tallio, Tellurio, Vanadio, Zinco

EPA 3050B 1996 + EPA 6010C 2007

Amianto: polveri e fibre libere

CNR IRSA App III Q 64 Vol 3 1996

Azoto ammoniacale

CNR IRSA 7 Q 64 Vol 3 1986

Carbonio Organico Disciolto (DOC) in eluati da Test di cessione in acqua (a pH corretto 7,5-8,0)

UNI 10802:2004 App A+ App B + UNI EN 16192:2012+ UNI CEN/TS 14429:2006 + ISO 10523:2009 + UNI EN 1484:1999

Carbonio Organico Disciolto (DOC) in eluati da test di cessione in acqua

UNI 10802:2004 App A + App B + UNI EN 12457-2:2004+UNI EN 1484:1999

Carbonio Organico Totale (TOC)

UNI EN 13137:2002

Cianuri in eluati da test di cessione in acqua

UNI 10802:2004 App:A+App.B + UNI EN 12457-2:2004+UNI EN 16192:2012+M.U. 2251:2008

Cianuri liberi e totali

M.U. 2251:2008

Cloruri (Come Cl⁻), Solfati (Come SO₄²⁻), Fluoruri (Come F⁻), Nitrati (Come NO₃⁻), Fosfati (Come PO₄³⁻)

EPA 9056A 2007

Cloruri, Solfati, Fluoruri in eluati da test di cessione in acqua

UNI 10802:2004 App A + App B + UNI EN 12457-2:2004 + UNI EN 16192:2012 + UNI EN ISO 10304-1:2009

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 12 di 20 PA163AR25.pdf

Cromo esavalente (Cromo VI)	CNR IRSA 16 Q 64 Vol 3 1986
Densità	CNR IRSA 3 Q 64 Vol 2 1984
Elementi in eluati da test di cessione in acqua: Antimonio, Arsenico, Bario, Cadmio, Cromo, Molibdeno, Nichel, Piombo, Rame, Selenio, Zinco	UNI 10802:2004 App A + App B + UNI EN 12457-2:2004 + UNI EN ISO 11885:2009
Esteri dell'acido ftalico: Bis(2-etilesil)ftalato, butil benzil ftalato, di-n-butil ftalato, di-n-ottil ftalato, dietil ftalato, dimetil ftalato	EPA 3545A 2007 + EPA 8270D 2007
Idrocarburi C<12 (5<C<=12), Metil-tert-butiletere	EPA 3815 2007 + EPA 5021A 2003 + EPA 8015C 2007
Indice fenolo in eluati da test di cessione in acqua	UNI 10802:2004 App A + App B + UNI EN 16192: 2012 + ISO 6439:1990 met A
Mercurio	CNR IRSA 10 Q 64 Vol 3 1985 + APAT CNR IRSA 3200 A1 Man 29 2003
Mercurio in eluati da test di cessione in acqua	UNI 10802:2004 App A + App B + UNI EN 12457-2:2004 + UNI EN 1483:2008
Oli e grassi totali	CNR IRSA 21 Q 64 Vol 3 1988
Pesticidi organofosforati: Clorpirifos-me, Clorpirifos-et, Pirimifos-me, Paration-me, disulfoton, sulfotepp Pesticidi organoclorurati: esaclorobenzene, a-HCH, b-HCH, aldrin, 4,4'-Diclorodifeniltricloroetano (4,4'-DDT), 2,4'-Diclorodifeniltricloroetano (2,4'-DDT), 4,4'-Diclorodifenildicloroetano (4,4'-DDD), 2,4'-Diclorodifenildicloroetano (2,4'-DDD), 4,4'-Diclorodifenildicloroetilene (4,4'-DDE), 2,4'-Diclorodifenildicloroetilene (2,4'-DDE), somma di DDD, DDT e DDE, lindano (g-HCH), dieldrin, isodrin, Endrin, Clordano.	EPA 3550C 2007 + EPA 3640A 1994 + EPA 8270D 2007
pH	CNR IRSA 1 Q 64 Vol 3 1985
pH in eluati da Test di cessione in acqua	UNI 10802:2004 App A+ App B + UNI EN 16192: 2012 + ISO 10523:2008
Piombo tetraetile	EPA 3545A 2007+ EPA 8270D 2007
Policlorobifenili (PCB): Aroclor 1260, Aroclor 1254, Aroclor 1242	CNR IRSA 24b Q 64 Vol 3 1988
Potere Calorifico	CNR IRSA 4 Q 64 Vol.2 1988
Solidi sospesi	CNR IRSA 1 Q 64 Vol.2 1984 A e B
Solidi Totali Disciolti (TDS) in eluati da Test di cessione in acqua	UNI 10802:2004 App A+ App B + UNI EN 12457-2:2004 + UNI EN 15216:2008
Solidi totali, Residuo secco a 105°C, Residuo secco a 550 °C	CNR IRSA 2 Q 64 Vol 2 1984
Fanghi, Rifiuti, Sedimenti, Terreni, Oli minerali, Combustibili solidi non minerali ricavati da rifiuti (CDR), Non mineral refuse derived fuels (RDF)	
<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Cloro post-combustione, Zolfo post-combustione	EPA 5050 1994 + EPA 9056A 2007
Fanghi, Rifiuti, Sedimenti, Terreni, substrati assorbenti da campionamenti di aria	
<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A	
	Revisione: 25	Data: 16/07/2013
	Scheda 13 di 20	PA163AR25.pdf

Ammine aromatiche: anilina, o-anisidina, m-anisidina, p-anisidina, difenilammina, p-toluidina
Idrocarburi policiclici aromatici (IPA):
naftalene, acenafilene, acenafene, fluorene, fenantrene, antracene, fluorantene, pirene, dibenzo(a,e)pirene, dibenzo(a,l)pirene, dibenzo(a,i)pirene, dibenzo(a,h)pirene, benzo(a) antracene, crisene, benzo(b) fluorantene, benzo(a) pirene, dibenzo(a,h) antracene, benzo(g,h,i) perilene, indeno(1,2,3,cd) pirene, benzo(k) fluorantene; Clorobenzeni: 1,2,4-triclorobenzene, 1,2,4,5-tetraclorobenzene, pentaclorobenzene, esaclorobenzene;
Nitrobenzeni: Nitrobenzene, 2-cloronitrobenzene, 3-cloronitrobenzene, 4-cloronitrobenzene, 1,3-dinitrobenzene, 1,2-dinitrobenzene Fenoli: Fenolo, m+p cresolo, o-cresolo, 2-clorofenolo, 2,4-diclorofenolo, 2,4,6-triclorofenolo, Pentaclorofenolo.
Policlorobifenili (PCB): #28, #52, #95, #99, #101, #110, #128 + #138, #146, #149, #151, #153, #170, #177, #180, #183, #187; Policlorobifenili (PCB)
Diossina simile: #77, #81, #105, #114, #118, #123, #126, #156, #157, #167, #169, #189; PCB Totali.

EPA 3545A 2007 + EPA 8270D 2007

Farina di grano tenero, semola di grano duro

Denominazione della prova / Campi di prova

Filth Test

Metodo di prova

ISO 11050: 1993

Farine

Denominazione della prova / Campi di prova

Ceneri

Metodo di prova

AOAC 923

Fertilizzanti, Compost, Ammendanti

Denominazione della prova / Campi di prova

Umidità

Metodo di prova

DM 24/03/1986 Met B GU n° 180 05/08/1986

Frutta e vegetali

Denominazione della prova / Campi di prova

pH

Metodo di prova

ISO 1842:1991

Gas naturali e gas combustibili

Denominazione della prova / Campi di prova

Caratteristiche fisiche calcolate a 15°C (288,15 K) e 1,01325 bar (101,325 Kpa) : Indice di Wobbe, densità, densità relativa

Metodo di prova

UNI EN 15984:2011 +UNI EN ISO 6976:2008 Par 8

Caratteristiche fisiche calcolate a 15°C (288,15 K) e 1,01325 bar (101,325 Kpa): Potere calorifico superiore, potere calorifico inferiore, peso molecolare medio

UNI EN 15984:2011 +UNI EN ISO 6976:2008 Par 5,6,7

Composizione centesimale: metano, etano, propano, butano, iso-butano, pentano, iso-pentano, esano, eptano, ottano, nonano, idrocarburi >C9 (decano), anidride carbonica, monossido di carbonio, ossigeno, azoto. Alcani come C, Tenore di carbonio

UNI EN 15984:2011

Dew point idrocarburi (da calcolo)

UNI EN 15984:2011+ ISO 23874:2006

Fattore di compressione

UNI EN 15984:2011 +UNI EN ISO 6976:2008 Par 4.2

Fattore di emissione

UNI EN 15984:2011 DEC CE 156/2004 29/01/2004
GU CE L59 26/02/2004 All. 1 P.to 4.2.2.1.6

Fattore di ossidazione

UNI EN 15984:2011 DEC CE 156/2004 29/01/2004
GU CE L59 26/02/2004 All. 2 P.to 2.1.1.1C

Gas naturali e gas di scarica

Denominazione della prova / Campi di prova

Composizione (%mol): Metano, etano, propano, butano, altri idrocarburi superiori (esano, pentano, eptano, ottano, idrocarburi >C9, (decano), anidride carbonica, elio, ossigeno, azoto, monossido di Carbonio, Alcani come C (tenore di Carbonio)

Metodo di prova

UNI EN ISO 10715:2001+ISO 6975:1997

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 14 di 20 PA163AR25.pdf

Solfuro di idrogeno (Acido solfidrico), tetraidrotiofene, dietilsolfuro, metilmercaptano, etilmercaptano, terbutilmercaptano, ossisolfuro di carbonio, zolfo da mercaptani (calcolo), zolfo totale (calcolo)

UNI EN ISO 19739: 2007/EC1: 2010

Latte

Denominazione della prova / Campi di prova

Attività perossidasi

Metodo di prova

DM 26/03/1992 GUSO 90/1992 16/04/1992 Met. 3

Azoto non proteico

AOAC 991.21 1994

Azoto totale, Proteine (da calcolo)

AOAC 991.20 1994

Materiali da costruzione contenenti amianto

Denominazione della prova / Campi di prova

Amianto

Metodo di prova

VDI 3866 Parte 1 Cap 6 : 2000+VDI 3866 Parte 2: 2001

Oli di oliva e oli di sansa

Denominazione della prova / Campi di prova

Acidi grassi liberi (Acidità)

Metodo di prova

Reg CEE 2568/1991 11/07/1991 GU CEE L248 05/09/1991 All II
Reg CE 702/2007 21/06/2007 GU CE L161 22/06/2007

Oli di oliva, oli di sansa, sostanze grasse

Denominazione della prova / Campi di prova

Analisi spettrofotometrica nell'ultravioletto (escluso il passaggio su allumina) Delta K, K232, K270

Metodo di prova

Reg CEE 2568/1991 11/07/1991 GU CEE L248 05/09/1991 All IX Reg CEE 183/1993 29/01/1993 GU CEE L22 30/01/1993

Oli e grassi

Denominazione della prova / Campi di prova

Saggio Kreiss

Metodo di prova

NGD C56 - 1979

Oli e grassi animali e vegetali

Denominazione della prova / Campi di prova

Numero di Iodio

Metodo di prova

Reg CEE 2568/1991 11/07/1991 GU CEE L248 05/09/1991 All XVI

Numero di perossidi

Reg CEE 2568/1991 11/07/1991 GU CEE L248 05/09/1991 All III

Oli, Grassi, Cere

Denominazione della prova / Campi di prova

Antimonio, Arsenico, Bario, Berillio, Cadmio, Cromo totale, Ferro, Manganese, Nichel, Piombo, Rame, Vanadio

Metodo di prova

EPA 3040A 1996 + EPA 6010C 2007

Olio d'oliva, oli vegetali per uso alimentare

Denominazione della prova / Campi di prova

Polifenoli totali (> 50 mg/Kg come Acido Caffeico)

Metodo di prova

MP 67/C rev 10 2013

Olio di oliva e di sansa, Alimenti di origine vegetale, oli di oliva, di semi, e grassi vegetali

Denominazione della prova / Campi di prova

Esteri metilici degli acidi grassi (composizione acidica) (Acido miristico (C 14:0), Acido palmitico (C 16:0), Acido palmitoleico (C 16:1), Acido eptadecanoico (C 17:0), Acido eptadecenoico (C 17:1), Acido stearico (C 18:0), Acido oleico (C 18:1), Acido linoleico (C 18:2), Acido arachico (C 20:0), Acido eicosenoico (C 20:1), Acido beenico (C 22:0), Acido lignoceroico (C 24:0)).

Metodo di prova

Reg CE 796/2002 06/05/2002 GU CE L128 15/05/2002 All XB + Reg CEE 2568/1991 11/07/1991 GU CEE L248 05/09/1991 All XA+
Reg CEE 1429/1992 26/05/1992 GU CEE L150 02/06/1992

Pesce e derivati

Denominazione della prova / Campi di prova

Metodo di prova

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 15 di 20 PA163AR25.pdf

Azoto Basico Volatile Totale (ABVT)

Reg CE 2074 2005 05/12/2005 GU CE L338
22/12/2005 All.II Cap. III

Pesce e frutti di mare

Denominazione della prova / Campi di prova

Metodo di prova

Mercurio

UNI EN 13806:2003

Prodotti lattiero caseari

Denominazione della prova / Campi di prova

Metodo di prova

Azoto solubile, proteine (da calcolo)

DM 21/04/1986 GU SO n° 229 02/10/1986 Met 8

Materia secca, umidità (da calcolo)

DM 21/04/1986 GU SO n° 229 02/10/1986 Met 2

pH

DM 21/04/1986 GU SO 229/1986 02/10/1986 Met 20

Sostanze azotate totali, proteine (da calcolo)

DM 21/04/1986 GU SO n° 229 02/10/1986 Met 6

Prodotti ortofrutticoli Alimenti non grassi: Drupacee (pesche, comprese nettarine e percoche, albicocche, ciliegie)

Denominazione della prova / Campi di prova

Metodo di prova

Multiresiduale fitofarmaci: Metsulfuron-metile, Clorfeninfos, Carbendazim, Fention, Malation, Pirimifos metile, Pirazofos, Acetamiprid, Benalaxil, Imidacloprid, Metalaxil, Pirimicarb, Tiametoxam, Tolclofos-metile, Nuarimolo, Fenarimolo, Fenitroton, Diazinone, Metomil, Fenexamide, Esaconazolo, Imazalil, Mepanipirim, Clorfentezina, Propizamide (Pronamide), Ometoato, Triadimefon, Triadimenol, Pirimetanil, Trifloxistrobina, Clorpirifos, Sistano (Miclobutanil), Penconazolo, Acefate, Tiram

UNI EN 12393-1:2009 + UNI EN 12393-2:2009 + UNI EN 12393-3:2009 met N

Prodotti ortofrutticoli: Ortaggi a foglia (lattughe e altre insalate, dolcetta, scarola, indivia, crescione, barbarea, rucola, foglie e germogli di cavolo)

Denominazione della prova / Campi di prova

Metodo di prova

Ditiocarbammati (come CS2) (>0,25mg/kg)

MP 282/C rev 03 2013

Prodotti petroliferi ed olii usati e materiali correlati

Denominazione della prova / Campi di prova

Metodo di prova

Policlorobifenili totali (PCB)

UNI EN 12766-1:2001 + UNI EN 12766-2:2004

Rifiuti

Denominazione della prova / Campi di prova

Metodo di prova

Alluminio, Antimonio, Argento, Arsenico, Bario, Berillio, Boro, Cadmio, Calcio, Cobalto, Cromo, Ferro, Fosforo, Magnesio, Mercurio, Manganese, Molibdeno, Nichel, Piombo, Potassio, Rame, Selenio, Sodio, Stronzio, Tallio, Tellurio, Vanadio, Zinco, Zolfo, Stagno (espressi in diverse forme i.e. come ossidi...)

UNI EN 13657: 2004 + UNI EN ISO 11885: 2009

Arsenico, Bario, Berillio, Cadmio, Cobalto, Cromo, Nichel, Piombo, Rame, Selenio, Vanadio, Zinco su eluati da test cessione in acqua

DM 186/2006 05/04/2006 GU n°115 19/05/2006 All.3 + UNI 10802:2004 App.A + App.B+ UNI EN 16192: 2012 + UNI EN 12457-2:2004 + UNI EN ISO 11885:2009

Azoto nitrico, Cloruri, Solfati su eluati da test cessione in acqua

DM 186/2006 05/04/2006 GU n° 115 19/05/2006 All.3 + UNI 10802:2004 App.A + App.B+ UNI EN 16192: 2012 + UNI EN 12457-2:2004 + UNI EN ISO 10304-1:2009

Ceneri (550°C)

UNI EN 15169: 2007

Cianuri su eluati da test cessione in acqua

DM 186/2006 05/04/2006 GU n°115 19/05/2006 All.3 + UNI 10802:2004 App.A+ App.B+ UNI EN 16192: 2012 + UNI EN 13370:2004 + M.U.2251:2008

Fluoruri su eluati da test di cessione in acqua

DM 186/2006 05/04/2006 GU n° 115 19/05/2006 All.3 + UNI 10802:2004 App.A + App.B+ UNI EN 12457-2:2004+ UNI EN 16192: 2012+ UNI EN ISO 10304-1:2009

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 16 di 20 PA163AR25.pdf

Idrocarburi C10-C40 (Olio minerale C10-C40)	UNI EN 14039: 2005
Idrocarburi policiclici aromatici (IPA): naftalene, acenafilene, acenafte, fluorene, fenantrene, antracene, fluorantene, pirene, dibenzo(a,e)pirene, dibenzo(a,l)pirene, dibenzo(a,i)pirene, dibenzo(a,h)pirene, benzo(a) antracene, crisene, benzo(b) fluorantene, benzo(a) pirene, dibenzo(a,h) antracene, benzo(g,h,i) perilene, indeno(1,2,3,cd) pirene, benzo(k) fluorantene	UNI EN 15527: 2008
Mercurio su eluati da test cessione in acqua	DM 186/2006 05/04/2006 GU n°115 19/05/2006 All.3+ UNI 10802:2004 App.A + App. B+ UNI EN 12457-2:2004 + UNI EN 1483:2008
pH su eluati da test cessione in acqua	DM 186/2006 05/04/2006 GU 115 19/05/2006 All.3 + UNI 10802 2004 App.A + App.B+UNI EN 16192: 2012 + UNI EN 12457-2 2004 + ISO 10523:2008
Richiesta chimica di ossigeno (COD) su eluati da test cessione in acqua	DM 186/2006 05/04/2006 GU n°115 19/05/2006 All.3 + UNI 10802:2004 App.A + App.B+ UNI EN 16192: 2012 + UNI EN 12457-2:2004 + ISO 15705:2002
Sostanza secca (residuo a 105°C)	UNI EN 14346:2007 Met A
Rifiuti	
<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Arsenico, Berillio, Cadmio, Nichel, Piombo, Selenio, Vanadio su eluati da test cessione in acqua	DM 186/2006 05/04/2006 GU n°115 19/05/2006 All.3+ UNI 10802:2004 App.A + App.B+ UNI EN 12506:2004 + UNI EN 12457-2:2004 + UNI EN ISO 17294-2: 2005
Rifiuti, Sedimenti, Terreni	
<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Antimonio, Arsenico, Cadmio, Nichel, Piombo, Selenio su eluati da test di cessione in acqua	UNI 10802:2004 App A + App. B + UNI EN 12457-2:2004 + UNI EN ISO 17294-2: 2005
Suoli, Sedimenti, Terreni	
<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Atrazina, Alaclor (> 0,001 mg/Kg)	MP 277/C rev 5 2013
Suoli, Sedimenti, Terreni	
<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Acidità	DM 13/09/1999 SO n° 185 GU n° 248 21/10/1999 Met XIII.3 DM 25/03/2002 GU n° 84 10/04/2002
Azoto totale	DM 13/09/1999 SO n° 185 GU n° 248 21/10/1999 Met XIV.2 + XIV.3 DM 25/03/2002 GU n° 84 10/04/2002
Clorobenzeni: monoclorobenzene, 1,2-diclorobenzene, 1,4-diclorobenzene, 1,2,4-triclorobenzene, 1,2,4,5-tetraclorobenzene, pentaclorobenzene, esaclorobenzene. Solventi organici clorurati e alogenati: cloroformio, tetracloruro di carbonio, 1,1,1,1-tetracloroetano, tricloroetilene, tetracloroetilene, 1,1,2,2-tetracloroetano, 1,1,1,2-tetracloroetano, clorometano, diclorometano, 1,2dicloroetano, esaclorobutadiene, 1,1dicloroetilene, 1,1dicloroetano, 1,2dicloropropano, 1,1,2tricloroetano, 1,2,3tricloropropano, 1,2dicloroetilene, 1,2 dibromoetano, monoclorobenzene, 1,2diclorobenzene, 1,4diclorobenzene, bromoformio, bromodiclorometano, dibromoclorometano.	EPA 3815 2007 + EPA 5021A 2003 + EPA 8021B 1996
Cloruri, Nitrati, Solfati, Fluoruri, Fosfati solubili in acqua	DM 13/09/1999 SO n° 185 GU n° 248 21/10/1999 Met IV.2 DM 25/03/2002 GU n° 84 10/04/2002
Conducibilità	DM 13/09/1999 SO n° 185 GU n° 248 21/10/1999 Met IV.1 + DM 25/03/2002 GU n° 84 10/04/2002

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 17 di 20 PA163AR25.pdf

Idrocarburi C>12, Idrocarburi C10-C40	ISO 16703: 2004
Indice di disponibilità per le piante dei metalli pesanti: Cadmio, Nichel, Piombo, Rame, Zinco	DM 13/09/1999 SO n° 185 GU n° 248 21/10/1999 Met XII.1, XII.2 + DM 25/03/2002 GU n° 84 10/04/2002
Metalli pesanti estraibili in acqua regia: Cadmio, Cobalto, Cromo, Manganese, Nichel, Piombo, Rame, Zinco	DM 13/09/1999 SO n° 185 GU n° 248 21/10/1999 Met XI.2 + DM 25/03/2002 GU n° 84 10/04/2002
Metalli pesanti estraibili in acqua regia: Cadmio, Cobalto, Cromo, Manganese, Nichel, Piombo, Rame, Zinco	DM 13/09/1999 SO n° 185 GU n° 248 21/10/1999 Met XI.1
pH	DM 13/09/1999 SO n° 185 GU n° 248 21/10/1999 Met III.1 + DM 25/03/2002 GU n° 84 10/04/2002
Scheletro (frazione granulometrica >= 2 mm; Terra fine (frazione granulometrica < 2 mm)	DM 13/09/1999 SO n° 185 GU n° 248 21/10/1999 Met II.1
Solidi disciolti nel suolo o negli estratti acquosi di suolo	DM 13/09/1999 SO n° 185 GU n° 248 21/10/1999 Met IV.3
Solventi organici aromatici: benzene, toluene, o-xilene, m+p-xilene, etilbenzene, stirene	EPA 3815 2007 + EPA 5021A 2003 + EPA 8015C 2007
Solventi organici clorurati e alogenati: cloruro di vinile monomero (CVM), Cloroformio, Bromoformio, Dibromoclorometano, Bromodichlorometano	EPA 5035 1996 + EPA 8260C 2006
Umidità	DM 13/09/1999 GU n° 248 21/10/1999 SO n° 185 Met II.2
Superfici (Tamponi)	
<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Conta di Enterobacteriaceae	ISO 18593:2004 + ISO 21528-2:2004
Conta Coliformi	ISO 18593: 2004 + ISO 4832:2006
Conta Coliformi a 44°C	ISO 18593:2004 + NF V 08-060 2009
Conta Coliformi a 30°C	ISO 18593:2004 + NF V 08-050 2009
Conta di stafilococchi coagulasi positivi a 37 °C	ISO 18593 :2004 + NF V 08-057-1: 2004
Conta Escherichia coli beta-glucuronidasi positivo	ISO 18593: 2004 + ISO 16649-2:2001
Conta Lieviti e Muffe	ISO 18593 :2004 + NF V 08-059:2002
Conta Microrganismi a 30 °C	ISO 18593:2004 + ISO 4833:2003
Conta Pseudomonas spp presunto	ISO 18593 :2004 + UNI EN ISO 13720: 2010
Ricerca di Listeria monocytogenes	ISO18593:2004+ NF EN ISO 11290-1:1997/A1: 2005
Ricerca Listeria monocytogenes	ISO 18593:2004 + UNI EN ISO 11290-1:2005
Yogurt	
<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Conta di microrganismi caratteristici	Rapporti ISTISAN 1996/35 Met 24

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 18 di 20 PA163AR25.pdf

ELENCO PROVE ACCREDITATE - CATEGORIA: II

Aria ambiente

<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Biossido di zolfo (SO ₂)	UNI EN 14212:2012
Monossido di azoto (NO), Ossidi di Azoto (NO _x), Biossido di azoto (NO ₂),	UNI EN 14211:2012
Monossido di carbonio (CO)	UNI EN 14626:2012

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 19 di 20 PA163AR25.pdf

ELENCO PROVE ACCREDITATE - CATEGORIA: III

Acque destinate al consumo umano e di piscina

<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Cloro libero e Cloro totale	Rapporti ISTISAN 2007/31 pag 45 Met ISS BHD 033

Acque naturali

<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Ossigeno disciolto	UNI EN ISO 5814: 2013

Acque naturali, di scarico

<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Campionamento	APAT CNR IRSA 1030 Man 29 2003

Acque naturali (sotterranee, superficiali, di mare), acque di scarico

<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Conducibilità elettrica	APAT CNR IRSA 2030 Man 29 2003

Acque naturali e di scarico, incluse acque di mare

<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Temperatura	APAT CNR IRSA 2100 Man 29 2003

Acque naturali, sotterranee, superficiali, di mare, acque di scarico

<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
pH	APAT CNR IRSA 2060 Man 29 2003
Potenziale Redox	APHA Standard Methods for the Examination of Water and Wastewater ed 22nd 2012 2580 B

Acque sotterranee

<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Campionamento	M.U. 196/2:04

Acque superficiali, di scarico

<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Campionamento	APAT CNR IRSA 6010 Man 29 2003

Ambiente abitativo ed esterno

<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Livello continuo equivalente di pressione sonora ponderato A	DPCM 01/03/1991 GU n° 57 08/03/1991, L n° 447 26/10/1995 GU n° 254 30/10/1995 SO, DM 16/03/98 GU n° 76 01/04/98

Ambienti di lavoro

<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Livello continuo equivalente di pressione sonora ponderato A (LAeq, T) Livello di pressione sonora di picco ponderato C Lpico, C (ppeak) Livello di esposizione giornaliera al rumore (LEX, 8h) Livello di esposizione settimanale al rumore (LEX, w)	ISO 1999:1990 + UNI EN ISO 9612:2011 +UNI 9432:2011
Misurazione e Valutazione dell'esposizione dell'uomo alle vibrazioni trasmesse al corpo intero aw, A (8)	UNI ISO 2631-1:2008 + UNI EN 14253:2008
Misurazione e valutazione dell'esposizione dell'uomo alle vibrazioni trasmesse al sistema mano - braccio ahv, A(8)	UNI EN ISO 5349-1:2004 + UNI EN ISO 5349-2:2004

Aria: Emissioni in atmosfera

<i>Denominazione della prova / Campi di prova</i>	<i>Metodo di prova</i>
Biossido di Zolfo (SO2)	UNI 10393: 1995 (escluso il punto 7.2.1)

LASER LAB Srl Via Custoza 31 66013 Chieti CH	Numero di accreditamento: 0142 Sede A
	Revisione: 25 Data: 16/07/2013
	Scheda 20 di 20 PA163AR25.pdf

Biossido di zolfo(SO₂), Ammoniaca(NH₃), Acido fluoridrico(HF), Acido cloridrico(HCl), Ossido di azoto(NO), Biossido di azoto(NO₂), Monossido di carbonio(CO), Biossido di carbonio(CO₂), Acqua(H₂O)

ASTM D6348-12

Carbonio Organico Totale (COT)

UNI EN 13526:2002

Carbonio Organico Totale (da 0 mg/m³ a 20 mg/m³) (COT)

UNI EN 12619:2002

Metano (CH₄)

UNI EN ISO 25140: 2010

Monossido di Carbonio (CO)

UNI EN 15058:2006

Ossidi di Azoto (Nox), ossidi di azoto (come NO₂), Monossido di azoto (NO), Biossido di azoto (NO₂)

UNI EN 14792:2006

Ossigeno (O₂)

UNI EN 14789:2006

Ossigeno (O₂), Monossido di Carbonio (CO), Biossido di carbonio (CO₂)

ISO 12039:2001 (escluso il punto 7.4)

Velocità, Portata, Temperatura, Pressione

UNI EN ISO 16911-1:2013 + UNI EN 15259:2008

Emissioni da combustione di gas naturale

Denominazione della prova / Campi di prova

Metodo di prova

Monossido di Carbonio, Ossidi di Azoto (Nox), ossidi di azoto (come NO₂), Monossido di azoto (NO), Ossigeno

ASTM D6522-11

Gas naturali e gas Combustibili

Denominazione della prova / Campi di prova

Metodo di prova

Dew point acqua

ISO 6327:1981

Legenda

MP: Metodo di prova interno del laboratorio

AOAC: Association of Official Analytical Chemists

APAT: Agenzia per la Protezione dell'Ambiente e per i servizi Tecnici

CNR IRSA: Consiglio Nazionale delle Ricerche - Istituto di Ricerca sulle Acque

ASTM: American Society for Testing Materials

EPA: Environmental Protection Agency (USA)

Dec, Reg CEE: Decisione, Regolamento della Comunità Economica Europea

DLgs, DM, DPCM, OM: Decreto Legislativo, Decreto Ministeriale, Decreto del Presidente del Consiglio dei Ministri, Ordinanza

Ministeriale della Repubblica italiana

UNI: Ente Nazionale di Unificazione Italiano

GU: Gazzetta Ufficiale

M.U.: Metodo UNICHIM (Associazione per l'unificazione nel settore dell'industria chimica)

EN: Norma Europea

ISO: International Organization for Standardization

NF: Norma AFNOR (Association Française de Normalisation)

NGD: Norme Grassi e Derivati

NIOSH: National Institute of Occupational Safety and Health

OSHA: Occupation Safety and Health Administration

ISTISAN: Istituto Superiore di Sanità

ACCREDIA
Il Direttore del Dipartimento
(Dr. Paolo Bianco)

Bianco Paolo

Firmato digitalmente da Bianco Paolo
ND: c=IT, o=ACCREDIA/10566361001, cn=Bianco
Paolo, serialNumber=IT:BNCPLA52M23L219N,
givenName=Paolo, sn=Bianco,
dnQualifier=11004771, title=Direttore
Dipartimento Laboratori di prova
Data: 2013.07.24 20:25:43 +02'00'