



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

FID 2010 T

Gas Analyser for TOC

Report Nr. 1529455 (August 1992), 24014741 (February 1996), 24095574 (July 2000)

Manufacturer:
Testa GmbH, Germany

TÜV Süd Industrie Service GmbH is herewith certifying that the analyser FID 2010 T 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} (Daily average value)	Range of measurement	Expanded Uncertainty mg/ m ³	In line with DIN EN ISO 14956
TOC	10 mg/m ³	0-15 mg/m ³	2,09	Yes

The response time was with maximum 10 s below the required value of 200 s.

The calculation according DIN EN ISO 14956 was performed on the basis of the results of the investigations for report Nr. 1529455 (August 1992), 24014741 (February 1996) and 24095574 (July 2000) 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, responsefactors, repeatability of zero point and span.

Munich, April 2008

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Results of the Calculation of the Uncertainty of a Measurement System (QAL 1 of EN 14181)

Manufacturer	Testa GmbH		
Name	FID 2010 T		
Certified range	0-15 mg/ m3 TOC		
Performance Characteristic			Value of uncertainty
Repeatability at zero point			0,03 mg/ m3
Lack of fit			0,02 mg/ m3
Zero drift			0,12 mg/ m3
Span drift			0,31 mg/ m3
Repeatability/ reproducibility			0,09 mg/ m3
Influence of flow			0,30 mg/ m3
Influence of atmospheric pressure			0,07 mg/ m3
Temperature dependent drift of span			0,16 mg/ m3
Influence of voltage			0,20 mg/ m3
Uncertainty of span gas			0,12 mg/ m3
Other influences			
Losses in sampling system			0,00 mg/ m3
Converter efficiency	not relevant		0,00 mg/ m3
Responsefactors (TOC-analysers)			0,82 mg/ m3
Misalignment of light beam	not relevant		0,00 mg/ m3
Contamination of optical surfaces	not relevant		0,00 mg/ m3
Long time drift of calibration standard	not relevant		0,00 mg/ m3
Interferences (Interf.)	Concentration of interfering component		
Sum positive Interf.>Sum negative Interf.			
	O2	20,8	Vol.-%
	CO	12492	mg/m3
	CO2	15	Vol.-%
	CH4	not relevant	mg/m3
	N2O general	not relevant	mg/m3
	N2O fluidized bed	not relevant	mg/m3
	NO	272	mg/m3
	NO2	45	mg/m3
	NH3	229	mg/m3
	SO2 general	not relevant	mg/m3
	SO2 coal without desulfurization	1216	mg/m3
	HCl general	80	mg/m3
	HCl coal fired plant	not relevant	mg/m3
	H2O (hot or inSitu)	16,6	Vol.-%
	H2O (gas over cooler)	not relevant	Vol.-%
Square sum			1,13
Combined uncertainty u_c			1,06 mg/ m3
Expanded uncertainty $U=1,96 \times u_c$			2,09 mg/ m3
Demanded uncertainty			3,00 mg/ m3
Requirement concerning uncertainty fulfilled			yes
Response time			10 s
Requirement concerning response time fulfilled			yes