SCS Directory

Accreditation number: SCS 0026

International standard: ISO/IEC 17025:2017
Swiss standard: SN EN ISO/IEC 17025:2018

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Scope of accreditation see: www.sas.admin.ch/ (Accredited bodies)

Scope of accreditation as of 23.10.2023

Calibration laboratory for amount of substance fraction in gas mixtures

Calibration and Measurement Capabilities (CMC)

Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Uncertainty ± [1)]	Remarks
Binary mixture in N_2 (matrix)	**Amount of substance**			**ISO 6142**
carbon monoxide (CO)	(5 ... < 10) • 10^{-6} mol/mol		3 % rel	
	(≥ 10 ... < 40) • 10^{-6} mol/mol		2 % rel	
	(≥ 40 ... < 500) • 10^{-6} mol/mol		1 % rel	
	(≥ 0,05 ... 20) • 10^{-2} mol/mol		0,5 % rel	
carbon dioxide (CO_2)	(20 ... < 100) • 10^{-6} (mol/mol		2 % rel	
	(≥ 0,01 ... < 1) • 10^{-2} mol/mol		1 % rel	
	(≥ 1 ... 50) • 10^{-2} mol/mol		0,5 % rel	
propane (C_3H_8)	(1 ... < 10) • 10^{-6} mol/mol		2 % rel	
	(≥ 10 ... < 100) • 10^{-6} mol/mol		1 % rel	
	(≥ 0,01 ... 1,5) • 10^{-2} mol/mol		0,5 % rel	

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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Uncertainty ± [1)]	Remarks
Binary mixture in N_2 (matrix)	**Amount of substance**			**ISO 6142**
hexane (n - C_6H_{14})	(50 ... 1000) • 10^{-6} mol/mol		0,5 % rel	
oxygen (O_2)	(0,1 ... < 1) • 10^{-2} mol/mol		1 % rel	
	(≥ 1 ... 25) • 10^{-2} mol/mol		0,5 % rel	
methane (CH_4)	(5 ... < 100) • 10^{-6} mol/mol		2 % rel	
	(≥ 0,01 ... 50) • 10^{-2} mol/mol		1 % rel	
hydrogen (H_2)	(0,01 ... < 5) • 10^{-2} mol/mol		1 % rel	
	(≥ 5 ... 99) • 10^{-2} mol/mol		0,5 % rel	
nitrous oxide (N_2O)	(50 ... 2000) • 10^{-6} mol/mol		2 % rel	
Binary mix in synth.air (matrix)	**Amount of substance**			**ISO 6142**
Carbon monoxide (CO)	(10 ... < 40) • 10^{-6} mol/mol		2 % rel	
	(≥ 40 ... < 500) • 10^{-6} mol/mol		1 % rel	
	(≥ 0,05 ... 10,5) • 10^{-2} mol/mol		0,5 % rel	
Carbon dioxide (CO_2)	(0,5 ... 50) • 10^{-2} mol/mol		1 % rel	
Propane (C_3H_8)	(10 ... < 100) • 10^{-6} mol/mol		1 % rel	
	(≥ 0,01 ... 1,5) • 10^{-2} mol/mol		0,5 % rel	
Methanie (CH_4)	(10 ... < 100) • 10^{-6} mol/mol		2 % rel	
	(≥ 0,01 ... 3) • 10^{-2} mol/mol		1 % rel	
Ethanol (C_2H_5OH)	(50 ... 500) • 10^{-6} mol/mol		2 % rel	
Binary mixtures with reactive components in N_2 (matrix)	**Amount of substance**			**ISO 6142**
Nitric oxide (NO)	(200 ... < 500) • 10^{-9} mol/mol		5 % rel.	
	(≥ 500 ... < 1000) • 10^{-9} mol/mol		3 % rel.	
	(≥ 1 ... < 50) • 10^{-6} mol/mol		2 % rel.	
	(≥ 50 ... 2500) • 10^{-6} mol/mol		1 % rel.	
Sulphur dioxide (SO_2)	(200 ... < 500) • 10^{-9} mol/mol		5 % rel.	
	(≥ 0,5 ... < 10) • 10^{-6} mol/mol		3 % rel.	
	(≥ 10 ... < 500) • 10^{-6} mol/mol		2 % rel.	
	(≥ 0,05 ... 1) • 10^{-2} mol/mol		1 % rel.	

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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Uncertainty ± [1)]	Remarks
Binary mixtures with reactive components in synth. air (matrix)	**Amount of substance**			**ISO 6142**
Sulphur dioxide (SO_2)	(200 ... < 500) • 10^{-9} mol/mol		5 % rel.	
	(≥ 0,5 ... < 10) • 10^{-6} mol/mol		3 % rel.	
	(≥ 10 ... < 500) • 10^{-6} mol/mol		2 % rel.	
	(≥ 0,05 ... 1) • 10^{-2} mol/mol		1 % rel.	
Nitrogen dioxide (NO_2)	(10 ... < 50) • 10^{-6} mol/mol		3 % rel.	
	(≥ 50 ... 1000) • 10^{-6} mol/mol		2 % rel.	
Ternary mixture in N_2 (matrix)	**Amount of substance**			**ISO 6142**
Methane (CH_4)	(5 ... 5000) • 10^{-6} mol/mol		2 % ... 1 % rel	3)
Oxygen (O_2)	(1 ... 21) • 10^{-2} mol/mol		1 % rel	
Quaternary mixture in N_2 (matrix)				**ISO 6142**
Hydrogen (H_2)	(100 ... 2000) • 10^{-6} mol/mol		1 % rel	
Carbon monoxide (CO)	(100 ... 2000) • 10^{-6} mol/mol		1 % rel	
Oxygen (O_2)	(1 ... 5) • 10^{-2} mol/mol		1 % rel	
Carbon monoxide (CO)	1,5 • 10^{-2} mol/mol		1 % rel	
Carbon dioxide (CO_2)	11 • 10^{-2} mol/mol		1 % rel	
Propane (C_3H_8)	600 • 10^{-6} mol/mol		2 % rel	
Multi-component mixture in N_2 (matrix)				**ISO 6142**
Propane (C_3H_8)	(1 ... 10000) • 10^{-6} mol/mol		2 % ... 0,5 %	3), 4), 5)
Carbon monoxide (CO)	(10 ... 200000) • 10^{-6} mol/mol		2 % ... 0,5 %	
Carbon dioxide (CO_2)	(0,05 ... 50) • 10^{-2} mol/mol		2 % ... 0,5 %	
Oxygen (O_2)	(0,1 ... 25) • 10^{-2} mol/mol		2 % ... 0,5 %	
Nitric oxide (NO)	(10 ... 2500) • 10^{-6} mol/mol		3 % ... 1 %	3), 4), 5)
Sulphur dioxide (SO_2)	(10 ... 5000) • 10^{-6} mol/mol		3 % ... 1 %	
Propane (C_3H_8)	(10 ... 5000) • 10^{-6} mol/mol		2 % ... 1 %	
Carbon monoxide (CO)	(10 ... 50000) • 10^{-6} mol/mol		3 % ... 0,5 %	
Carbon dioxide (CO_2)	(0,01 ... 50) • 10^{-2} mol/mol		2 % ... 0,5 %	
Sulphur dioxide (SO_2)	(10 ... 5000) • 10^{-6} mol/mol		3 % ... 1 %	3), 4), 5)

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Multi-component mixture in N_2 (matrix)				**ISO 6142**
Propane (C_3H_8)	(10 ... 5000) • 10^{-6} mol/mol		2 % ... 1 %	
Carbon monoxide (CO)	(10 ... 50000) • 10^{-6} mol/mol		3 % ... 0,5 %	
Carbon dioxide (CO_2)	(0,01 ... 50) • 10^{-2} mol/mol		2 % ... 0,5 %	
Oxygen (O_2)	(1 ... 25) • 10^{-2} mol/mol		1 % ... 0,5 %	
Special gas mixtures				**ISO 6142**
Gas mixtures with up to six components	Maximum of 6 components and none with an amount of substance fraction less than 1 - 10^{-6} mol/mol		0,5 % rel	

In case of contradictions in the language versions of the directories, the German version shall apply.

Abbreviation	Signification
Synth. air	Synthetic air

1) The expanded measurement uncertainty specified is the standard uncertainty of the measurement multiplied by a coverage factor k = 2, which corresponds to a confidence level of around 95 % for a normal distribution.

2) The composition of the gas mixtures can be converted according to ISO 14912:2003 into the quantities specified therein and certified in these quantities. The conversion may result in additional contributions to the measurement uncertainties, which can no longer be neglected.

3) The best possible measurement uncertainty depends on the amount of substance of the component in question and, in the case of gas mixtures with more than two components (including the matrix gas), on the composition of the gas mixture.

4) The composition of the gas mixture (concentrations of the various components) must be permissible in terms of safety.

5) Components can be omitted, but the mixture consists of at least 3 components including matrix gas (N_2).

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