SCOPE OF ACCREDITATION

LEGAL ENTITY, INDIVIDUAL ENTREPRENEUR, PERFORMING WORK AND/OR PROVIDING SERVICES IN AREAS OF ENSURING UNITY OF MEASUREMENT

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No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
1. Calibration of measuring instruments (PBP)								
1.1.	Measurement of flows, level, volume of substances; flow measuring instruments	Volume flow, volume (in flow)	Verification setups for volume flow and liquid volume	0.001 to 2500 m^3/h 0.001 to 4500 m^3/h		$U_{0.95}$ = 0.034 % ER ± (0.045 - 0.055) % $U_{0.95}$ = 0.034 % ER ± (0.06 - 1.0) %	Direct comparison method using liquid flow standard. Comparison method using transfer standard along with liquid flow standard	-

No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
1.2.	Measurement of flows, level, volume of substances; flow measuring instruments	Volume flow, volume (in flow)	Verification setups for tube pistons, compact-provers	0.01 to 4500 m^3/h		$U_{0.95}$ = 0.029 % ER ± (0.05 - 0.1) %	Direct comparison method using liquid flow standard. Comparison method using transfer standard along with liquid flow standard	-
1.3.	Measurement of flows, level, volume of substances; flow measuring instruments	Mass flow, mass (in flow)	Verification setups for mass flow and liquid mass	0.001 to 2500 t/h 0.001 to 4500 t/h		$U_{0.95}$ = 0.033 % ER ± (0.04 - 0.05) % $U_{0.95}$ = 0.033 % ER ± (0.06 - 1.0) %	Direct comparison method using liquid flow standard. Comparison method using transfer standard along with liquid flow standard	-
1.4.	Measurement of flows, level, volume of substances; flow measuring instruments	Volume flow, volume (in flow)	Verification setups for gas volume flow	$3 \cdot 10^{-4}$ to 72000 m^3/h		$U_{0.95}$ = 0.2 % ER ± (0.2 - 2.0)%	Direct comparison method using gas flow standard	-

No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
1.5.	Measurement of flows, level, volume of substances; flow measuring instruments	Mass flow, mass (in flow)	Verification setups for gas mass flow	$3.6 \cdot 10^{-4}$ to $6.3 \cdot 10^{6}$ kg/h		$U_{0.95}$ = 0.2 % ER ± (0.2 - 0.5) %	Direct comparison method using gas flow standard	-
1.6.	Measurement of flows, level, volume of substances; flow measuring instruments	Volume flow, volume (in flow)	Flow transducers, flow meters and volume meters for liquids	0.01 to 50 m^3/h 2.5 to 500 m^3/h 5 to 50 m^3/h 50 to 500 m^3/h		$U(V)_{0.95}$ = 0.0273 % $U(Q_V)_{0.95}$ = 0.0303 % ER ± (0.07 – 5.0) % $U(V)_{0.95}$ = 0,0324 % $U(Q_V)_{0.95}$ = 0.0332 % ER ± (0.07 – 5.0) % $U(V)_{0.95}$ = 0.0349 % $U(Q_V)_{0.95}$ = 0.0350 % ER ± (0.07 – 5.0) % $U(V)_{0.95}$ = 0.0354 % $U(Q_V)_{0.95}$ = 0.0357 % ER ± (0.07 – 5.0) %	Direct comparison method using liquid flow standard	-

No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
				500 to 1000 m^3/h 1000 to 1500 m^3/h 1500 to 2000 m^3/h		$U(V)_{0.95}$ = 0.0357 % $U(Q_V)_{0.95}$ = 0.0358 % ER ± (0.07 – 5.0) % $U(V)_{0.95}$ = 0.0359 % $U(Q_V)_{0.95}$ = 0.0359 % ER ± (0.07 – 5.0) % $U(V)_{0.95}$ = 0.0359 % $U(Q_V)_{0.95}$ = 0.0360 % ER ± (0.07 – 5.0) %		
1.7.	Measurement of flows, level, volume of substances; flow measuring instruments	Mass flow, mass (in flow)	Flow transducers, flow meters and mass meters for liquids	0.01 до 50 t/h 2,5 до 500 t/h 5 до 50 t/h 50 до 500 t/h		$U(M)_{0.95}$ = 0.0273 % $U(Q_M)_{0.95}$ = 0.0303 % ER ± (0.05 – 5.0) % $U(M)_{0.95}$ = 0.0322 % $U(Q_M)_{0.95}$ = 0.0324 % ER ± (0.05 – 5.0) % $U(M)_{0.95}$ = 0.0347 % $U(Q_M)_{0.95}$ = 0.0348 % ER ± (0.05 – 5.0) % $U(M)_{0.95}$ = 0.0354 % $U(Q_M)_{0.95}$ = 0.0355 % ER ± (0.05 – 5.0) %	Direct comparison method using liquid flow standard	-

No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
				500 до 1000 t/h 1000 до 1500 t/h 1500 до 2000 t/h		$U(M)_{0.95}$ = 0.0357 % $U(Q_M)_{0.95}$ = 0.0353 % ER ± (0.05 – 5.0) % $U(M)_{0.95}$ = 0.0357 % $U(Q_M)_{0.95}$ = 0.0353 % ER ± (0.05 – 5.0) % $U(M)_{0.95}$ = 0.0358 % $U(Q_M)_{0.95}$ = 0.0357 % ER ± (0.05 – 5.0) %		
1.8.	Measurement of flows, level, volume of substances; flow measuring instruments	Volume flow	Critical nozzles	$3 \cdot 10^{-4}$ to 2000 m^3/h		$U_{0.95}$ = 0.1 % ER ± (0.15 - 0.5) %	Direct comparison method using gas flow standard	-
1.9.	Measurement of flows, level, volume of substances; flow measuring instruments	Volume flow, volume (in flow)	Flow transducers, flow meters, gas volume flow meters, rotameters, rheometers	$3 \cdot 10^{-4}$ to $1{,}6 \cdot 10^{4}$ m^3/h		$U_{0.95}$ = 0.1 % ER ± (0.2 - 5.0) %	Direct comparison method using gas flow standard	-

No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
1.10.	Measurement of flows, level, volume of substances; flow measuring instruments	Volume flow	Leakage calibrators	$3 \cdot 10^{-4}$ to 1 m^3/h		$U_{0.95}$ = 1.0 % ER ± (1.0 - 5.0) %	Direct comparison method using gas flow standard	-
1.11.	Measurement of flows, level, volume of substances; volume measuring instruments	Volume, capacity	Horizontal tanks	0.3 to 10000 m^3 3 to 10000 m^3		$U_{0.95}$ = 0.07 % ER ± (0.2 - 0.25) % $U_{0.95}$ = 0.07 % ER ± (0.2 - 0.25) %	Indirect measurement method (geometric method) using length and temperature measuring instruments Indirect measurement method (volumetric method) using volume, length, temperature and level measuring instruments	Calibration can only be carried out outside the place of activity (at temporary work sites)

No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
1.12.	Measurement of flows, level, volume of substances; volume measuring instruments	Volume, capacity	Vertical tanks	0.3 to 160000 m^3		$U_{0.95}$ = 0.07 % ER ± 0.1 %	Indirect measurement method (volumetric method) using volume, length, temperature and level measuring instruments. Indirect measurement method (geometric method) using length and temperature measuring instruments	Calibration can only be carried out outside the place of activity (at temporary work sites)
1.13.	Measurement of flows, level, volume of substances; volume measuring instruments	Volume, capacity	Vertical cylindrical reinforced concrete tanks	100 to 3000 m^3 3000 to 5000 m^3 5000 to 100000 m^3		$U_{0.95}$ = 0.07 % ER ± 0.2 % $U_{0.95}$ = 0.05 % ER ± 0.15 % $U_{0.95}$ = 0.03 % ER ± 0.1 %	Indirect measurement method (volumetric method) using volume, length, temperature and level measuring instruments. Indirect measurement method (geometric method) using length and temperature measuring instruments	Calibration can only be carried out outside the place of activity (at temporary work sites)

No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
1.14.	Measurement of flows, level, volume of substances; volume measuring instruments	Volume, capacity	Rectangular tanks	0.3 to 3000 m^3		$U_{0.95}$ = 0.07 % ER ± (0.2 - 0.25) %	Indirect measurement method (geometric method) using length and temperature measuring instruments	Calibration can only be carried out outside the place of activity (at temporary work sites)
1.15.	Measurement of flows, level, volume of substances; volume measuring instruments	Volume, capacity	Ball (spherical) tanks	3 to 3000 m^3		$U_{0.95}$ = 0.07 % ER ± 0.2 %	Indirect measurement method (geometric method) using length and temperature measuring instruments	Calibration can only be carried out outside the place of activity (at temporary work sites)
1.16.	Measurement of flows, level, volume of substances; volume measuring instruments	Volume, capacity	Trench buried steel tanks	500 to 10000 m^3		$U_{0.95}$ = 0.07 % ER ± (0.2 - 0.25) %	Indirect measurement method (volumetric method) using volume, length, temperature and level measuring instruments	Calibration can only be carried out outside the place of activity (at temporary work sites)

No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
1.17.	Measurement of flows, level, volume of substances; volume measuring instruments	Volume, capacity	Bulk vessel tanks	3 to 100000 m^3		$U_{0.95}$ = 0.07 % ER ± (0.2 - 0.5) %	Indirect measurement method (geometric method) using length and temperature measuring instruments	Calibration can only be carried out outside the place of activity (at temporary work sites)
1.18.	Measurement of flows, level, volume of substances; volume measuring instruments	Volume, capacity	Tank trucks for liquid petroleum products	1 to 50 m^3		$U_{0.95}$ = 0.13 % ER ± 0.4 %	Indirect measurement method (volumetric method) using volume, length, temperature and level measuring instruments	Calibration can only be carried out outside the place of activity (at temporary work sites)
1.19.	Measurement of flows, level, volume of substances; volume measuring instruments	Volume, capacity	Rail tank cars (tank wagons)	3 to 200 m^3		$U_{0.95}$ = 0.1 % ER ± 0.3 %	Indirect measurement method (volumetric method) using volume, length, temperature and level measuring instruments	Calibration can only be carried out outside the place of activity (at temporary work sites)

No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
1.20.	Measurement of flows, level, volume of substances; level measuring instruments	Level	Level gauging systems	0 to 80 m		$U_{0.95}$ = 0.06 mm ER ± (0.1 - 6) mm	Direct comparison method using length measuring instruments	-
1.21.	Measurement of flows, level, volume of substances; level measuring instruments	Level	Level gauges and level transmitters	0 to 20 m 20 to 100 m		$U_{0.95}$ = 0.12 mm ER ± (0.3 - 16) mm $U_{0.95}$ = (4 - 16) mm ER ± (6 - 20) mm	Direct comparison method using length measuring instruments, level measuring instruments and coordinate-time measuring instruments. Direct measurement method using level gauges. Indirect measurement method using mass measuring instruments, gauge pressure measuring instruments	-

No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
1.22.	Measurement of flows, level, volume of substances; level measuring instruments	Level	Level signaling devices	0 to 20 m		$U_{0.95}$ = 0.12 mm ER ± (0.3 - 16) mm	Direct comparison method using length measuring instruments, level measuring instruments and coordinate-time measuring instruments. Direct measurement method using level gauges. Indirect method Measurements using mass measuring instruments, gauge pressure measuring instruments	-
1.23.	Measurements of physical-chemical composition and properties of substances; instruments for measuring	Volume fraction of water	Oil and petroleum product moisture meters and verification setups – 1st class working standards	0.01 to 0.1 % wvf 0.1 to 10 % wvf 10 to 60 % wvf 60 to 99.9 % wvf		$U_{0.95}$ = 4-10^{-3} % wvf $U_{0.95}$ = 1.4-10^{-2} % wvf $U_{0.95}$ = 3.5-10^{-2} % wvf $U_{0.95}$ = 8.4-10^{-2} % wvf ER ± (0.01 - 0.1) % wvf	Direct comparison method using standard volumetric moisture content (for moisture meters of oil and petroleum products). Comparison method using comparator along	-

No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
	water volume fraction						with volumetric moisture content standard (for verification setups)	
1.24.	Measurements of physical-chemical composition and properties of substances; instruments for measuring water volume fraction	Volume fraction of water	Oil and petroleum product moisture meters and verification setups – 2nd class working standards	0.01 to 0.1% wvf 0.1 to 10 % wvf 10 to 60 % wvf 60 to 99.9 % wvf		$U_{0.95}$ = 9-10^{-3} % wvf $U_{0.95}$ = 1.6-10^{-2} % wvf $U_{0.95}$ = 6-10^{-2} % wvf $U_{0.95}$ = 9.4-10^{-2} % wvf ER ± (0.02 - 0.5) % wvf	Direct comparison method using standard volumetric moisture content (for moisture meters of oil and petroleum products). Comparison method using comparator along with volumetric moisture content standard (for verification setups)	-
1.25.	Measurements of physical-chemical composition and properties of substances; instruments for measuring water volume fraction	Volume fraction of water	Oil and petroleum product moisture meters (working measuring instruments)	0.01 to 0.1 % wvf 0.1 to 10 % wvf 10 to 60 % wvf 60 to 99.9 % wvf		$U_{0.95}$ = 1.9-10^{-2} % wvf $U_{0.95}$ = 2.5-10^{-2} % wvf $U_{0.95}$ = 8,5-10^{-2} % wvf $U_{0.95}$ = 0.436 % wvf ER ± (0.05 - 2.5) % wvf	Direct comparison method using volumetric moisture content standard	-

No	Measurements	Measured value	Calibration object	Measurement range	Complementary parameters	Expanded measurement uncertainty	Calibration method/ procedure	Note
1.26.	Measurements of physical-chemical composition and properties of substances; density measuring instruments	Density	In-line liquid density transducers	650 to 1200 kg/m^3		$U_{0.95}$ = 0.04 kg/m^3 ER ± (0.1 - 10) kg/m^3	Direct comparison method using liquid density standard in flow	-
1.27.	Measurements of physical-chemical composition and properties of substances; density measuring instruments	Density	Pycnometers, pycnometer systems, automatic density meters - working density standards	650 to 1200 kg/m^3		$U_{0.95}$ = 0.05 kg/m^3 ER ± (0.1 - 0.2) kg/m^3	Direct comparison method using liquid density standard in flow	-

Director of Affiliated branch of the D.I. Mendeleyev Institute for Metrology (VNIIM-VNIIR) — authorized person's position

Signed with an e-signature — authorized person's signature

N.S. Zaripov — initials, surname of the authorized person