

of **Minerva Meettechniek B.V.**

This annex is valid from: **04-08-2020** to **01-01-2025**

Replaces annex dated: **19-11-2020**

**Location(s) where activities are performed under accreditation**

**Head Office**

Chrysantstraat 1  
 3812 WX  
 Amersfoort  
 Nederland

Location	Abbreviation/ location code
Chrysantstraat 1 3812 WX Amersfoort Nederland	AM

HCS code	Measured quantity, Instrument, Measure	Range	CMC <sup>1</sup>	Remarks	Location
MW 1 0	Mass	100 mg - 11 kg	$1,0 \cdot 10^{-5} \cdot m_c + 0,05 \text{ mg}$	Mass piece density $\geq 6400 \text{ kg/m}^3$	AM
	True Mass	100 mg - 11 kg	$1,1 \cdot 10^{-5} \cdot m + 0,05 \text{ mg}$		
PV 1 1	Absolute pressure	0 kPa - 15 kPa	$2,9 \cdot 10^{-5} \cdot p + 0,008 \text{ Pa}$	Nitrogen determination of effective area by means of cross-floating calibration of secondary standards and pressure devices	AM
		5 kPa - 190 kPa	$1,8 \cdot 10^{-5} \cdot p + 0,5 \text{ Pa}$		
		25 kPa - 2,5 MPa	$2,8 \cdot 10^{-5} \cdot p + 0,5 \text{ Pa}$		

<sup>1</sup> Calibration and Measurement Capability (CMC): Demonstrated measurement uncertainty, with coverage probability of 95%, in a given measurement point or measurement range. Measurement uncertainty, *U*, is calculated according to EA-4/02 "Evaluation of the Uncertainty of Measurement in Calibration".

This annex has been approved by the Board of the Dutch Accreditation Council, on its behalf,

J.A.W.M. de Haas  
 Director of Operations

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HCS code	Measured quantity, Instrument, Measure	Range	CMC <sup>1</sup>	Remarks	Location
		50 kPa - 5 MPa	$3,0 \cdot 10^{-5} \cdot p + 0,5 \text{ Pa}$		
		300 kPa - 20 MPa	$3,1 \cdot 10^{-5} \cdot (p - p_{amb}) + 5,5 \text{ Pa}$		
		1 MPa - 70 MPa	$4,0 \cdot 10^{-5} \cdot (p - p_{amb}) + 19 \text{ Pa}$		
PV 1 2	Gauge pressure	0 kPa - 15 kPa	$3,0 \cdot 10^{-5} \cdot p_e + 0,005 \text{ Pa}$	Nitrogen determination of effective area by means of cross-floating calibration of secondary standards and pressure devices	AM
		5 kPa - 190 kPa	$1,8 \cdot 10^{-5} \cdot p_e + 0,12 \text{ Pa}$		
		25 kPa - 2,5 MPa	$2,8 \cdot 10^{-5} \cdot p_e + 0,06 \text{ Pa}$		
		50 kPa - 5 MPa	$3,0 \cdot 10^{-5} \cdot p_e + 0,12 \text{ Pa}$		
		200 kPa - 20 MPa	$3,1 \cdot 10^{-5} \cdot p_e + 3,8 \text{ Pa}$		
		1 MPa - 70 MPa	$4,0 \cdot 10^{-5} \cdot p_e + 19 \text{ Pa}$		
PV 2 1	Absolute pressure	600 kPa - 50 MPa	$3,1 \cdot 10^{-5} \cdot (p - p_{amb}) + 31 \text{ Pa}$	Oil determination of effective area by means of cross-floating calibration of secondary standards and pressure devices	AM
		2 MPa - 200 MPa	$4,2 \cdot 10^{-5} \cdot (p - p_{amb}) + 50 \text{ Pa}$		
		5 MPa - 500 MPa	$5,8 \cdot 10^{-5} \cdot (p - p_{amb}) + 0,1 \text{ kPa}$		
PV 2 2	Gauge pressure	500 kPa - 50 MPa	$3,1 \cdot 10^{-5} \cdot p_e + 30 \text{ Pa}$	Oil determination of effective area by means of cross-floating calibration of secondary standards and pressure devices	AM
		2 MPa - 200 MPa	$4,2 \cdot 10^{-5} \cdot p_e + 50 \text{ Pa}$		
		5 MPa - 500 MPa	$5,8 \cdot 10^{-5} \cdot p_e + 0,1 \text{ kPa}$		

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HCS code	Measured quantity, Instrument, Measure	Range	CMC <sup>1</sup>	Remarks	Location
	Differential pressure on elevated line pressure	8 MPa (max. line pressure)	$1 \cdot 10^{-6} \cdot p_e + 5,6 \cdot 10^{-5} \cdot \Delta p + 13 \text{ Pa}$	$\Delta p$ = Differential pressure	
PV 3 1	Under atmospheric pressure	-8 ... -98 kPa	$2,8 \cdot 10^{-5} \cdot  p_e  + 0,12 \text{ Pa}$	Negative gauge pressure determination of effective area by means of cross-floating calibration of secondary standards and pressure devices	AM

Remarks:

- This annex is applicable to calibrations carried out in the own laboratory.
- The calibrations are carried out at an ambient temperature of 20 °C (nominal).
- $p_e = p - p_{amb}$ ;  $p_e$  is the gauge pressure,  $p_{amb}$  is the ambient pressure.
- The accreditation for mass measurements is restricted to calibrations of weights related to pressure balances.
- For a weight with a temperature of 20 °C, the conventional mass is the mass of a reference weight with a density of 8000 kg/m<sup>3</sup>, which is in balance in air with a density of 1,2 kg/m<sup>3</sup>.

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HCS code	Measured quantity, Range	Frequency	CMC <sup>2</sup>	Remarks	Location
LF 1 1	DC Voltage				AM
	0 – 20 V		$5,8 \cdot 10^{-6} \cdot U + 2 \cdot 10^{-6} \text{ V}$	Measuring and generating	
	0 – 100 V		$8,6 \cdot 10^{-6} \cdot U + 0,12 \cdot 10^{-3} \text{ V}$	Measuring and generating	
LF 2 1	DC Current				AM
	0 – 20 mA		$14 \cdot 10^{-6} \cdot I + 40 \cdot 10^{-6} \text{ mA}$	Measuring and generating	
	0 – 100 mA		$57 \cdot 10^{-6} \cdot I + 1 \cdot 10^{-3} \text{ mA}$	Measuring and generating	

Remarks:

- This annex is applicable to calibrations carried out in the own laboratory.
- The calibrations are carried out at an ambient temperature of 20 °C (nominal).

<sup>2</sup> Calibration and Measurement Capability (CMC): Demonstrated measurement uncertainty, with coverage probability of 95%, in a given measurement point or measurement range. Measurement uncertainty,  $U$ , is calculated according to EA-4/02 "Evaluation of the Uncertainty of Measurement in Calibration".