

Deutsche Akkreditierungsstelle GmbH

Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV

Signatory to the Multilateral Agreements of
EA, ILAC and IAF for Mutual Recognition

Accreditation



The Deutsche Akkreditierungsstelle GmbH attests that the

Häfner Gewichte GmbH
Hohenhardtweiler Straße 4, 74420 Oberrot

with the calibration laboratory

MASSCAL - Kalibrierlaboratorium
Rottalstraße 95, 74420 Oberrot


is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out calibrations in the following fields:

Mechanical quantities:
- Mass

The accreditation certificate shall only apply in connection with the notice of accreditation of 04.06.2012 with the accreditation number D-K-15192-01 and is valid until 03.06.2017. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 4 pages.

Registration number of the certificate: **D-K-15192-01-00**

Braunschweig, 04.06.2012


Dr. Michael Wolf
Head of Division

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-K-15192-01-00 according to DIN EN ISO/IEC 17025:2005

Period of validity: 04.06.2012 to 03.06.2017

Holder of certificate:

Häfner Gewichte GmbH
Hohenhardtsweiler Straße 4, 74420 Oberrot

With the calibration laboratory

MASSCAL - Kalibrierlaboratorium
Rottalstraße 95, 74420 Oberrot

Head:	Dipl.-Ing.(FH) Martin Häfner
Deputies:	Dipl.-Biol. Ulrich Rost Gabriele Widmer

Accredited since:	31.01.2000
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Calibrations in the fields:

Mechanical quantities:
- Mass

Annex to the accreditation certificate D-K-15192-01-00

Permanent Laboratory

Measured quantity / Calibration item	Range	Measurement conditions / procedure	Best measurement capability ¹⁾	Remarks
Mass Conventional mass / Mass standards	1 mg, 2 mg, 5 mg		0,60 µg	For mass standards according to OIML R 111
	10 mg		0,80 µg	
	20 mg		1,0 µg	For weights class E1
	50 mg		1,2 µg	
	100 mg		1,5 µg	
	200 mg		2,0 µg	
	500 mg		2,5 µg	
	1 g		3,0 µg	For weights class E1
	2 g		4,0 µg	Determination of volume by an accredited laboratory is required. Without determination of volume the measurement uncertainty increases adequate to an assumed volume uncertainty.
	5 g		5,0 µg	
	10 g		6,0 µg	
	20 g		8,0 µg	
	50 g		10 µg	
	100 g		15 µg	
	200 g		30 µg	
500 g	75 µg			
1 kg	0,15 mg			
2 kg	0,30 mg			
5 kg	0,75 mg			
10 kg	1,5 mg			
20 kg	3,0 mg			
50 kg	8,0 mg			
100 kg	0,50 g	For weights class F2		
200 kg	1,0 g			
250 kg	1,3 g			
500 kg	2,5 g	For weights class M1		
1000 kg	15 g			
2000 kg	30 g			
	> 1 mg to 5 mg		1,8 µg	For free nominal values
	> 5 mg to 10 mg		2,3 µg	
	> 10 mg to 20 mg		2,8 µg	
	> 20 mg to 50 mg		3,0 µg	
	> 50 mg to 100 mg		3,2 µg	
	> 100 mg to 200 mg		3,5 µg	
	> 200 mg to 500 mg		3,8 µg	
	> 500 mg to 1 g		7,5 µg	
	> 1 g to 2 g		12 µg	Determination of volume by an accredited laboratory is required. Without determination of volume the measurement uncertainty increases adequate to an assumed volume uncertainty.
	> 2 g to 5 g		15 µg	
	> 5 g to 10 g		18 µg	
	> 10 g to 20 g		24 µg	
	> 20 g to 50 g		30 µg	
	> 50 g to 100 g		45 µg	
	> 100 g to 200 g		60 µg	
> 200 g to 500 g	90 µg			
> 500 g to 750 g	0,20 mg			
> 750 g to 1 kg	0,45 mg			
> 1 kg to 2 kg	0,90 mg			
> 2 kg to 5 kg	2,3 mg			
> 5 kg to 10 kg	4,5 mg			
> 10 kg to 20 kg	9,0 mg			
> 20 kg to 50 kg	20 mg			
> 50 kg to 60 kg	30 mg			
> 60 kg to 600 kg	$5,0 \cdot 10^{-6} \cdot m_N$	m_N Nominal value of the weight		
> 600 kg to 2500 kg	$1,5 \cdot 10^{-5} \cdot m_N$			

¹⁾ The best measurement capabilities are stated according to EA-4/02. These are expanded uncertainties of measurement with a coverage probability of 95% and have a coverage factor of $k = 2$ unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.

Annex to the accreditation certificate D-K-15192-01-00

Measured quantity / Calibration item	Range	Measurement conditions / procedure	Best measurement capability ¹⁾	Remarks
Volume	1 g	Hydrostatic method	0,60 mm ³	Volume determination of mass standards according to OIML R 111 and of weights with free nominal values
	> 1 g to 2 g		0,80 mm ³	
	> 2 g to 5 g		0,90 mm ³	
	> 5 g to 10 g		1,2 mm ³	
	> 10 g to 20 g		1,5 mm ³	
	> 20 g to 50 g		2,0 mm ³	
	> 50 g to 100 g		2,8 mm ³	
	> 100 g to 200 g		6,0 mm ³	
	> 200 g to 500 g		14 mm ³	
	> 500 g to 1 kg		28 mm ³	
	> 1 kg to 2 kg		60 mm ³	
	> 2 kg to 5 kg		0,14 cm ³	
	> 5 kg to 10 kg		0,28 cm ³	
	> 10 kg to 20 kg		0,80 cm ³	
> 20 kg to 50 kg	2,0 cm ³			
Density	1 g	Hydrostatic method	33 kg/m ³	Density determination of mass standards according to OIML R 111 and of weights with free nominal values
	> 1 g to 2 g		20 kg/m ³	
	> 2 g to 5 g		11 kg/m ³	
	> 5 g to 10 g		7,0 kg/m ³	
	> 10 g to 20 g		4,0 kg/m ³	
	> 20 g to 50 g		2,0 kg/m ³	
	> 50 g to 100 g		1,8 kg/m ³	
	> 100 g to 200 g		1,8 kg/m ³	
	> 200 g to 500 g		1,8 kg/m ³	
	> 500 g to 1 kg		1,8 kg/m ³	
	> 1 kg to 2 kg		1,8 kg/m ³	
	> 2 kg to 5 kg		1,8 kg/m ³	
	> 5 kg to 10 kg		1,8 kg/m ³	
	> 10 kg to 20 kg		2,5 kg/m ³	
> 20 kg to 50 kg	2,5 kg/m ³			

¹⁾ The best measurement capabilities are stated according to EA-4/02. These are expanded uncertainties of measurement with a coverage probability of 95% and have a coverage factor of $k = 2$ unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.

Annex to the accreditation certificate D-K-15192-01-00

On-site calibration

Measured quantity / Calibration item	Range	Measurement conditions / procedure	Best measurement capability ¹⁾	Remarks
Mass	1 mg, 2 mg, 5 mg		0,060 mg	For weights class M1
Conventional mass	10 mg		0,080 mg	
	20 mg		0,10 mg	
	50 mg		0,12 mg	
	100 mg		0,16 mg	
	200 mg		0,20 mg	
	500 mg		0,25 mg	
	1 g		0,30 mg	
	2 g		0,40 mg	
	5 g		0,50 mg	
	10 g		0,60 mg	
	20 g		0,80 mg	
	50 g		1,0 mg	
	100 g		1,6 mg	
	200 g		3,0 mg	
	500 g		8,0 mg	
	1 kg		16 mg	
	2 kg		30 mg	
	5 kg		80 mg	
	10 kg		0,16 g	
	20 kg		0,30 g	
	50 kg		0,80 g	
	100 kg		1,6 g	
	200 kg		3,0 g	
	250 kg		4,0 g	
500 kg		8,0 g		
1000 kg		16 g		

¹⁾ The best measurement capabilities are stated according to EA-4/02. These are expanded uncertainties of measurement with a coverage probability of 95% and have a coverage factor of $k = 2$ unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.