

## 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 calibration laboratory

**Helmut Fischer GmbH**  
**Institut für Elektronik und Messtechnik**  
**Industriestraße 21, 71069 Sindelfingen**

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

**Mechanical quantities**  
– **Mass per unit area**

The accreditation certificate shall only apply in connection with the notice of accreditation of 2018-07-09 with the accreditation number D-K-15076-01 and is valid until 2023-02-18. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 2 pages.

Registration number of the certificate: **D-K -15076-01-00**

# Deutsche Akkreditierungsstelle GmbH

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10117 Berlin

Office Frankfurt am Main  
Europa-Allee 52  
60327 Frankfurt am Main

Office Braunschweig  
Bundesallee 100  
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The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAkKS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf.

No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAkKS.

The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008, p. 30). DAkKS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations.

The up-to-date state of membership can be retrieved from the following websites:

EA: [www.european-accreditation.org](http://www.european-accreditation.org)

ILAC: [www.ilac.org](http://www.ilac.org)

IAF: [www.iaf.nu](http://www.iaf.nu)

## Deutsche Akkreditierungsstelle GmbH

### Annex to the Accreditation Certificate D-K-15076-01-00 according to ISO/IEC 17025:2005

Period of validity: 2018-07-09 to 2023-02-18

Date of issue: 2018-07-09

Holder of certificate:

**Helmut Fischer GmbH**  
**Institut für Elektronik und Messtechnik**  
**Industriestraße 21, 71069 Sindelfingen**

Head: Dr. Andreas Nutsch  
Deputy: Dr. Hans-Peter Vollmar  
Dr. Simone Dill  
Anja Sehorz

Accredited since: 2003-07-03

Calibrations in the fields:

**Mechanical quantities**  
– **Mass per unit area**

Abbreviations used: see last page

Annex to the accreditation certificate D-K-15076-01-00

Permanent Laboratory

Measured quantity / Calibration item	Range	Measurement conditions / procedure	Best measurement capability <sup>1)</sup>	Remarks
<b>Mass per unit area <math>m_A</math></b>  A) Mean value of mass per unit area of foils	0.2 mg/cm <sup>2</sup> to 100 mg/cm <sup>2</sup>	Measurement of: - edge length of foils 5 mm to 51 mm - mass of foil 100 µg to 5,1 g (gravimetric method)	$3.4 \cdot 10^{-5} \text{ mg/cm}^2$ $+1.9 \cdot 10^{-4} \cdot m_A$	$m_A$ Measured mean value of mass per unit area Best measurement capability U ( $m_A$ ) for foils having a size of about 50 mm x 50 mm
B) Mass per unit area of single element layers (also multiple layers), as foils or on plane substrates	Single element layers: 0.002 mg/cm <sup>2</sup> to 100 mg/cm <sup>2</sup>	X-ray fluorescence method	$5 \cdot 10^{-3} \cdot m_A$	The determination of mass per unit area of single element layers, multiple layers and alloy layers refers to elements detectable with X-ray fluorescence analysis.
	Multiple layers:: 0.01 mg/cm <sup>2</sup> to 100 mg/cm <sup>2</sup>		$3.5 \cdot 10^{-2} \cdot m_A$	
C) Mass per unit area of alloy layers and its mass fraction, as foils or deposited on flat substrates	0.01 mg/cm <sup>2</sup> to 100 mg/cm <sup>2</sup> (Mass per unit area)  1 g/kg to 1000 g/kg (Mass fraction)		$3.5 \cdot 10^{-2} \cdot m_A$  0.7 g/kg	
D) Mass fraction of all detectable elements of alloys with arbitrary thickness (flat, plane-parallel, homogeneous bulk samples)	1 g/kg to 1000 g/kg	X-ray fluorescence method	0.14 g/kg	The homogeneity is additionally measured and has to be taken into account for the uncertainty budget.

<sup>1)</sup> 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.