



## SCS Directory

Accreditation number: SCS 0069

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

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Internet: <http://www.empa.com>  
Initial accreditation: 12.09.1995  
Current accreditation: 18.10.2019 to 17.10.2024  
Scope of accreditation see: [www.sas.admin.ch](http://www.sas.admin.ch)  
(Accredited bodies)

### Scope of accreditation as of 18.02.2022

#### Calibration laboratory for materials testing machines and static transducers

##### Calibration and Measurement Capability (CMC)

Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Capability $\pm$ <sup>1)</sup>	Remarks
<b>MATERIALS TESTING MACHINES</b>	0.01 N ... 200 N	With loading pieces	0.01 %	Calibration/testing of materials testing machines to ISO 7500-1 and ASTM E4
Tensile force and compression	1 N ... 2000 N 500 N ... 200 kN 100 kN ... 5 MN	With force transducers class 0.5 as per: DIN EN ISO 376 and ASTM E74	0.06 %	
	1 N ... 2000 N 500 N ... 200 kN 100 kN ... 5 MN	With force transducers class 1 as per: DIN EN ISO 376 and ASTM E74	0.12 %	



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Measured Quantity / Instrument or Gauge	Measurement Range	Measurement Conditions	Best Measurement Capability $\pm$ <sup>1)</sup>	Remarks
Compression	1 MN ... 20 MN	With force transducers class 0.5 as per: DIN EN ISO 376 and ASTM E74	0.06 %	Calibration/testing of materials testing machines to ISO 7500-1 and ASTM E4
	1 MN ... 20 MN	With force transducers class 1 as per: DIN EN ISO 376 and ASTM E74	0.12 %	
	1 MN ... 30 MN	With force transducers class 00 as per: DIN EN ISO 376 and ASTM E74	0.03 %	
	1 MN ... 30 MN	With force transducers class 0.5 as per: DIN EN ISO 376 and ASTM E74	0.06 %	
Torque	1 Nm ... 6000 Nm	With torque transducers	0.24 %	SOP 00'405
<b>PENDULUM IMPACT</b>	0,5 J ... 600 J	DIN EN ISO 148-2 and DIN 51222	Maximum deviations acc. to procedural standard	Calibration/testing of pendulum impact testing machines to DIN EN ISO 148-2 and DIN 51222
<b>HARDNESS TESTING MACHINES</b>				
Brinell hardness	All hardness scales		Maximum deviations acc. to procedural standard	Direct and indirect test procedure as per: DIN EN ISO 6506-2 ASTM E10
Rockwell hardness	hardness scales A, B, C, D, E, F, G, H, K, N, T		Maximum deviations acc. to procedural standard	Direct and indirect test procedure as per: DIN EN ISO 6508-2, ASTM E18
Vickers hardness	hardness scale < 0,2 HV			Indirect test procedure as per: ASTM E92, ASTM E384
Vickers hardness	hardness scale $\geq$ 0,2 HV			Direct and indirect test procedure as per: DIN EN ISO 6507-2, ASTM E92, ASTM E384



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Knoop hardness	All hardness scales			Test method as per: DIN EN ISO 4545-2
Ball indentation tests	hardness scales H 49, H 132, H 358, H 961			Direct test procedure as per: DIN EN ISO 2039-1
Special procedure	As agreed			Direct and indirect test procedure according to the submitted standard
IRHD hardness	Microhardness			Direct test method as per: DIN ISO 48-2, ISO 48-5
Shore hardness	Shore A and D	DIN ISO 48-9	0,2 Shore	
<b>LENGTH</b>				
Precision strain gauge	0,01 mm ... 60 mm	DIN EN ISO 9513 and ASTM E83	(0,2 $\mu\text{m}$ + 0,1 • 10 <sup>-3</sup> • L) L: Length	Can be clamped on manually or permanently installed on the machine
	For samples $\geq \varnothing$ 50 mm	ASTM E83	(0,4 $\mu\text{m}$ + 0,1 • 10 <sup>-3</sup> • L) L: Length	
		18 °C $\leq$ t $\leq$ 28 °C		
Traverse distance	5 mm ... 500 mm	18 °C $\leq$ t $\leq$ 28 °C	(12 $\mu\text{m}$ + 0,11 • 10 <sup>-3</sup> • L) L: Length	Built-in distance transducer
			L in mm	
<b>ANGLE OF ROTATION</b>	$\pm$ 30°	Horizontal rotation axis	56"	
	$\pm$ 45°		1'	
<b>FORCE</b>	0,1 N ... 2 kN	Calibration via generation of the force by means of loading pieces	1,3•10 <sup>-4</sup> •F	Calibration of static transducers as per ISO 376
Tensile force and compression	1 kN ... 50 kN	Reference force sensor in mechanical instrument	1•10 <sup>-4</sup> •F + 0,1 N	
	10 kN ... 300 kN	Reference pressure sensor in hydraulic instrument	2•10 <sup>-3</sup> •F	
Compression	300 kN ... 5 MN	Reference pressure sensor in hydraulic instrument	2•10 <sup>-4</sup> •F + 180 N	



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<b>TORQUE</b>	1 MN ... 10 MN	Lever arm with loading pieces	$2 \cdot 10^{-4} \cdot F + 365 \text{ N}$	Calibration of static transducers as per DIN 51 309
	1 MN ... 20 MN		$5 \cdot 10^{-3} \cdot F$	
	0,1 Nm ... 200 Nm		0,15 %	
<b>PRESSION</b>	> 200 Nm ... 6000 Nm	Piston manometer	0,1 %	
	5 bar ... < 50 bar		0,05 % + 20 mbar	
	50 bar ... 550 bar		0,03 % + 60 mbar	
<b>TEMPERATURE</b>				
Temperature sensor on test machines	- 50 °C ... 150 °C	Thermocouple mounted on temperature sensor of the testing machine	1 °C	

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