CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

BYK - Gardner

c/o BYK-Gardner USA
9104 Guilford Road
Columbia, MD 21046, USA
(and satellite locations as listed on the scope)

Fulfills the requirements of

ISO/IEC 17025:2017

In the fields of

CALIBRATION and TESTING

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

Jason Stine, Vice President

Expiry Date: 28 April 2025
Certificate Number: AC-1534

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

BYK – Gardner
Dr. Ing Torsten Gruhn, 17025 Quality Manager
Torsten.Gruhn@altana.com
Phone: +49 (8171) 3493 341
This scope applies to the following locations:

Headquarter
c/o BYK – Gardner GmbH
Lausitzerstr.8, 82538 Geretsried, Germany

Headquarter USA
c/o BYK–Gardner USA
9104 Guilford Rd., Columbia, MD 21046, USA

BYK-Gardner Service Point Spain
c/o Actega Artística S.A
Calle Balmes 8, Suite: 3º 2ª, 08291
Ripollet, Spain

BYK–Gardner Service Point France
c/o Eckart France S.A.S.
31 Rue Amilcar Cipriani 93400,
Saint Ouen, France

BYK-Gardner Service Point China
c/o BYK (Tongling) Co., Ltd. Shanghai Branch
Block 6A, Building A, No 88 Hong Cao Road,
Xuhui District, Shanghai 200233, P.R China

BYK-Gardner Service Point South Latin America
c/o MAST COMERCIAL E IMPORTADORA LTDA
Rua Itaporanga, 340-B, Bairro Paraiso,
Santo André – SP, 09190-640, Brazi

BYK-Gardner Service Point Japan
c/o TETSUTANI CO., LTD
Chuo-ku, Osaka, Tokui cho 2-2-2, Japan

BYK-Gardner Service Point Austria, Hungary, Slovenia
c/o FRIEDRICH W. BLOCH GmbH
Wagramerstrasse 201, 1210 Vienna, Austria

BYK-Gardner Service Point India
c/o IMCD India Private Limited
1101-03, B-Wing, ONE BKC,
Bandra Kurla Complex, Bandra East,
Mumbai, MH. Pin.: 400 051. India

CALIBRATION AND TESTING

Valid to: **April 28, 2025**

Certificate Number: **AC-1534**

CALIBRATION

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Digital Film Thickness Units [1,3]	Up to 100 µm (>100 to 250) µm (>250 to 3 000) µm	2.9 µm 4.6 µm 11 µm	Certified Shims	All
Digital Film Thickness micro-Tri-gloss [1,3]	Up to 100 µm (>100 to 250) µm (>250 to 3 000) µm	9.9 µm 11 µm 15 µm	Certified Shims	All
Film Thickness Shims	Up to 100 µm (>100 to 250) µm (>250 to 3 000) µm	0.4 µm 0.6 µm 0.8 µm	Micrometer	Columbia, MD Geretsried, Germany
Adhesion Tape Test Roller Length Weight Hardness, Shore A	 (1 to 150) mm (1 to 3 000) g (70 to 90) Duro	 0.1 mm 1.2 g 1.8 Duro	 Vernier Caliper Scale Durometer	Columbia, MD Geretsried, Germany

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations [5]
Density Cups [3]	(8 to 101) ml	0.1 % of reading	Scale, Thermometer	Columbia, MD Geretsried, Germany
Kinematic Viscosity [3,4] Ford Cups DIN Cups ISO Cups Zahn Cups	Drain Time (10 to 100) s	2.5 % of drain time 2 % of drain time 2 % of drain time 2 % of drain time	Thermometer, Timer, Certified Oil	Columbia, MD Geretsried, Germany
Rotational Viscosity[3,7]	(1 to 320 000 000) cP	0.14 cP	Thermometer, Certified Oil	Columbia, MD Geretsried, Germany Santo André, Brazil
	(40 to 141) KU	0.53 KU		

Photometry and Radiometry

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Gloss [1,2]	(0 to 10) GU (>10 to 94) GU (>94 to 100) GU (158-168 GU at 20°) (148-158 GU at 45°) (128-138 GU at 60°) (108-118 GU at 75°) (100-110 GU at 85°)	0.21 GU 0.61 GU 0.41 GU 0.34 GU 0.34 GU 0.33 GU 0.31 GU 0.36 GU	Gloss Standards	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.25 a*: 0.10 b*: 0.10 ΔE*(CIELab): 0.29 ΔE*(CIELCH): 0.29 ΔE*(CIE94): 0.21 L*: 0.30 a*: 0.10 b*: 0.10 ΔE*(CIELab): 0.29 ΔE*(CIELCH): 0.29 ΔE*(CIE94): 0.29	White Standard	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.21 a*: 0.14 b*: 0.14 ΔE*(CIELab): 0.29 ΔE*(CIELCH): 0.29 ΔE*(CIE94): 0.29 L*: 0.42 a*: 0.14 b*: 0.14 ΔE*(CIELab): 0.46 ΔE*(CIELCH): 0.46 ΔE*(CIE94): 0.46	Pale Grey Standard (BCRA)	All

Photometry and Radiometry

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.21 a*: 0.14 b*: 0.18 ΔE*(CIELab): 0.31 ΔE*(CIELCH): 0.31 ΔE*(CIE94): 0.31 L*: 0.35 a*: 0.14 b*: 0.14 ΔE*(CIELab): 0.40 ΔE*(CIELCH): 0.40 ΔE*(CIE94): 0.40	Mid/Diff Standard (BCRA)	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.42 a*: 0.20 b*: 0.21 ΔE*(CIELab): 0.51 ΔE*(CIELCH): 0.51 ΔE*(CIE94): 0.51 L*: 0.71 a*: 0.14 b*: 0.20 ΔE*(CIELab): 0.75 ΔE*(CIELCH): 0.75 ΔE*(CIE94): 0.75	Deep Grey Standard (BCRA)	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.28 a*: 0.26 b*: 0.21 ΔE*(CIELab): 0.44 ΔE*(CIELCH): 0.44 ΔE*(CIE94): 0.43 L*: 0.42 a*: 0.28 b*: 0.21 ΔE*(CIELab): 0.55 ΔE*(CIELCH): 0.55 ΔE*(CIE94): 0.55	Deep Pink Standard (BCRA)	All

Photometry and Radiometry

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.42 a*: 0.35 b*: 0.71 ΔE*(CIELab): 0.90 ΔE*(CIELCH): 0.90 ΔE*(CIE94): 0.88 L*: 0.57 a*: 0.42 b*: 1.3 ΔE*(CIELab): 1.5 ΔE*(CIELCH): 1.5 ΔE*(CIE94): 1.4	Red Standard (BCRA)	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.28 a*: 0.28 b*: 0.52 ΔE*(CIELab): 0.65 ΔE*(CIELCH): 0.65 ΔE*(CIE94): 0.65 L*: 0.42 a*: 0.28 b*: 0.86 ΔE*(CIELab): 1.0 ΔE*(CIELCH): 1.0 ΔE*(CIE94): 0.98	Orange Standard (BCRA)	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.35 a*: 0.21 b*: 0.44 ΔE*(CIELab): 0.60 ΔE*(CIELCH): 0.60 ΔE*(CIE94): 0.60 L*: 0.42 a*: 0.21 b*: 0.42 ΔE*(CIELab): 0.63 ΔE*(CIELCH): 0.63 ΔE*(CIE94): 0.63	Bright Yellow Standard (BCRA)	All

Photometry and Radiometry

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.30 a*: 0.24 b*: 0.30 ΔE*(CIELab): 0.49 ΔE*(CIELCH): 0.49 ΔE*(CIE94): 0.49 L*: 0.35 a*: 0.21 b*: 0.28 ΔE*(CIELab): 0.49 ΔE*(CIELCH): 0.49 ΔE*(CIE94): 0.49	Green/Diff Green Standard (BCRA)	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.28 a*: 0.28 b*: 0.21 ΔE*(CIELab): 0.45 ΔE*(CIELCH): 0.45 ΔE*(CIE94): 0.45 L*: 0.42 a*: 0.28 b*: 0.28 ΔE*(CIELab): 0.58 ΔE*(CIELCH): 0.58 ΔE*(CIE94): 0.58	Cyan Standard (BCRA)	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 1.2 a*: 1.8 b*: 1.4 ΔE*(CIELab): 2.6 ΔE*(CIELCH): 2.6 ΔE*(CIE94): 2.5 L*: 2.1 a*: 3.2 b*: 2.5 ΔE*(CIELab): 4.5 ΔE*(CIELCH): 4.5 ΔE*(CIE94): 4.2	Deep Blue Standard (BCRA)	All

Photometry and Radiometry

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Clarity [1,2,6]	Up to 100 %	0.2 %	Clarity Standards ASTM D1003 Illuminant A, ASTM D1003 Illuminant C	All
Transmission [1,2,6]	Up to 50 % (>50 to 100) %	0.37 % 0.07 %	Transmission Standards ASTM D1003 Illuminant A, ASTM D1003 Illuminant C, ISO 13468	All
Haze [1,2,6]	(0.1 to 1) % (>1 to 10) % (>10 to 100) %	0.1 % 0.1 % 0.2 %	Haze Standards ASTM D1003 Illuminant A, ASTM D1003 Illuminant C, ISO 13468	All
Wavescan / DOI [1,2]	(0 to 99) units	1.7 units	Orange Peel Standards	All
Optical Radiation – Illuminance [1,3]	(50 to 200) fc (540 to 2 200) lx	11 fc 120 lx	Spectroradiometer	Columbia, MD Geretsried, Germany Ripollet, Spain Saint Ouen, France Vienna, Austria
Optical Radiation - Color Temperature [1,3]	(2 250 to 3 500) K (3 800 to 4 350) K (6 300 to 6 700) K	55 K 74 K 82 K	Spectroradiometer	Columbia, MD Geretsried, Germany Ripollet, Spain Saint Ouen, France Vienna, Austria

Thermodynamic

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment	Locations[5]
Thermocouple Simulation [3]	Type K (50 to 500) °C	0.9 °C	Universal Calibrator	Columbia, MD Geretsried, Germany Vienna, Austria Shanghai, P.R China
Temperature	(15 to 50) °C	0.65 °C	Climatic Chamber	Columbia, MD Geretsried, Germany

Thermodynamic

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment	Locations[5]
Relative Humidity	(30 to 75) %RH	1.8 %RH	Climatic Chamber	Columbia, MD Geretsried, Germany
Dewpoint	(10 to 30) °C	Calculated from temperature and humidity	Calculated from temperature and humidity	Columbia, MD Geretsried, Germany

TESTING

Dimensional

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Digital Film Thickness Units [1,3]	Up to 100 µm (>100 to 250) µm (>250 to 3 000) µm	2.9 µm 4.6 µm 11 µm	Certified Shims BYK-Gardner working instructions Customer defined procedures	All
Digital Film Thickness micro-Tri-gloss [1,3]	Up to 100 µm (>100 to 250) µm (>250 to 3 000) µm	9.9 µm 11 µm 15 µm	Certified Shims BYK-Gardner working instructions Customer defined procedures	All
Film Thickness Shims	Up to 100 µm (>100 to 250) µm (>250 to 3 000) µm	0.4 µm 0.6 µm 0.8 µm	Micrometer BYK-Gardner working instructions Customer defined procedures	Columbia, MD Geretsried, Germany
Adhesion Tape Test Roller Length Weight Hardness, Shore A	(1 to 150) mm (1 to 3 000) gr (70 to 90) Duro	0.1 mm 1.2 g 1.8 Duro	Vernier Caliper Scale Durometer BYK-Gardner working instructions Customer defined procedures	Columbia, MD Geretsried, Germany

Mechanical

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Density Cups [3]	(8 to 101) ml	0.1 % of reading	Scale, Thermometer BYK-Gardner working instructions Customer defined procedures	Columbia, MD Geretsried, Germany
Kinematic Viscosity [3,4] Ford Cups DIN Cups ISO Cups Zahn Cups	Drain Tiem (10 to 100) sec	2.5 % of drain time 2 % of drain time 2 % of drain time 2 % of drain time	Thermometer, Timer, Certified Oil BYK-Gardner working instructions Customer defined procedures	Columbia, MD Geretsried, Germany

Mechanical

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Rotational Viscosity [3,7]	(1 to 320 000 000) cP	0.14 cP	Thermometer, Certified Oil BYK-Gardner working instructions Customer defined procedures	Columbia, MD Geretsried, Germany Santo André, Brazil
	(40 to 141) KU	0.53 KU		

Optical

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Gloss [1,2]	(0 to 10) GU (>10 to 94) GU (>94 to 100) GU (158-168 GU at 20°) (148-158 GU at 45°) (128-138 GU at 60°) (108-118 GU at 75°) (100-110 GU at 85°)	0.21 GU 0.61 GU 0.41 GU 0.34 GU 0.34 GU 0.33 GU 0.31 GU 0.36 GU	Gloss Standards BYK-Gardner working instructions Customer defined procedures	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.25 a*: 0.10 b*: 0.10 ΔE*(CIELab): 0.29 ΔE*(CIELCH): 0.29 ΔE*(CIE94): 0.21 L*: 0.30 a*: 0.10 b*: 0.10 ΔE*(CIELab): 0.29 ΔE*(CIELCH): 0.29 ΔE*(CIE94): 0.29	White Standard BYK-Gardner working instructions Customer defined procedures	All

Optical

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.21 a*: 0.14 b*: 0.14 ΔE*(CIELab): 0.29 ΔE*(CIELCH): 0.29 ΔE*(CIE94): 0.29 L*: 0.42 a*: 0.14 b*: 0.14 ΔE*(CIELab): 0.46 ΔE*(CIELCH): 0.46 ΔE*(CIE94): 0.46	Pale Grey Standard (BCRA) BYK-Gardner working instructions Customer defined procedures	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.21 a*: 0.14 b*: 0.18 ΔE*(CIELab): 0.31 ΔE*(CIELCH): 0.31 ΔE*(CIE94): 0.31 L*: 0.35 a*: 0.14 b*: 0.14 ΔE*(CIELab): 0.40 ΔE*(CIELCH): 0.40 ΔE*(CIE94): 0.40	Mid/Diff Standard (BCRA) BYK-Gardner working instructions Customer defined procedures	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.42 a*: 0.20 b*: 0.21 ΔE*(CIELab): 0.51 ΔE*(CIELCH): 0.51 ΔE*(CIE94): 0.51 L*: 0.71 a*: 0.14 b*: 0.20 ΔE*(CIELab): 0.75 ΔE*(CIELCH): 0.75 ΔE*(CIE94): 0.75	Deep Grey Standard (BCRA) BYK-Gardner working instructions Customer defined procedures	All

Optical

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.28 a*: 0.26 b*: 0.21 ΔE*(CIELab): 0.44 ΔE*(CIELCH): 0.44 ΔE*(CIE94): 0.43 L*: 0.42 a*: 0.28 b*: 0.21 ΔE*(CIELab): 0.55 ΔE*(CIELCH): 0.55 ΔE*(CIE94): 0.55	Deep Pink Standard (BCRA) BYK-Gardner working instructions Customer defined procedures	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.42 a*: 0.35 b*: 0.71 ΔE*(CIELab): 0.90 ΔE*(CIELCH): 0.90 ΔE*(CIE94): 0.88 L*: 0.57 a*: 0.42 b*: 1.3 ΔE*(CIELab): 1.5 ΔE*(CIELCH): 1.5 ΔE*(CIE94): 1.4	Red Standard (BCRA) BYK-Gardner working instructions Customer defined procedures	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.28 a*: 0.28 b*: 0.52 ΔE*(CIELab): 0.65 ΔE*(CIELCH): 0.65 ΔE*(CIE94): 0.65 L*: 0.42 a*: 0.28 b*: 0.86 ΔE*(CIELab): 1.00 ΔE*(CIELCH): 1.00 ΔE*(CIE94): 0.98	Orange Standard (BCRA) BYK-Gardner working instructions Customer defined procedures	All

Optical

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.35 a*: 0.21 b*: 0.44 ΔE*(CIELab): 0.60 ΔE*(CIELCH): 0.60 ΔE*(CIE94): 0.60 L*: 0.42 a*: 0.21 b*: 0.42 ΔE*(CIELab): 0.63 ΔE*(CIELCH): 0.63 ΔE*(CIE94): 0.63	Bright Yellow Standard (BCRA) BYK-Gardner working instructions Customer defined procedures	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.30 a*: 0.24 b*: 0.30 ΔE*(CIELab): 0.49 ΔE*(CIELCH): 0.49 ΔE*(CIE94): 0.49 L*: 0.35 a*: 0.21 b*: 0.28 ΔE*(CIELab): 0.49 ΔE*(CIELCH): 0.49 ΔE*(CIE94): 0.49	Green/Diff Green Standard (BCRA) BYK-Gardner working instructions Customer defined procedures	All
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 0.28 a*: 0.28 b*: 0.21 ΔE*(CIELab): 0.45 ΔE*(CIELCH): 0.45 ΔE*(CIE94): 0.45 L*: 0.42 a*: 0.28 b*: 0.28 ΔE*(CIELab): 0.58 ΔE*(CIELCH): 0.58 ΔE*(CIE94): 0.58	Cyan Standard (BCRA) BYK-Gardner working instructions Customer defined procedures	All

Optical

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Color / Spectrophotometer [1,2]	8°:di / 8°:de: (380-780 nm) 0°:45°a (380-780 nm)	L*: 1.2 a*: 1.8 b*: 1.4 ΔE*(CIELab): 2.6 ΔE*(CIELCH): 2.6 ΔE*(CIE94): 2.5 L*: 2.1 a*: 3.2 b*: 2.5 ΔE*(CIELab): 4.5 ΔE*(CIELCH): 4.5 ΔE*(CIE94): 4.2	Deep Blue Standard (BCRA) BYK-Gardner working instructions Customer defined procedures	All
Clarity [1,2,6]	Up to 100 %	0.2 %	Clarity Standards ASTM D1003 Illuminant A, ASTM D1003 Illuminant C, BYK-Gardner working instructions Customer defined procedures	All
Transmission [1,2,6]	Up to 50 % (>50 to 100) %	0.37 % 0.07 %	Transmission Standards ASTM D1003 Illuminant A, ASTM D1003 Illuminant C, ISO 13468, BYK-Gardner working instructions Customer defined procedures	All

Optical

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	Locations[5]
Haze [1,2,6]	(0.1 to 1) % (>1 to 10) % (>10 to 100) %	0.1 % 0.1 % 0.2 %	Haze Standards ASTM D1003 Illuminant A, ASTM D1003 Illuminant C, ISO 13468, BYK-Gardner working instructions Customer defined procedures	All
Wavescan / DOI [1,2]	(0 to 99) units	1.7 units	Orange Peel Standards BYK-Gardner working instructions Customer defined procedures	All
Optical Radiation – Illuminance [1,3]	(50 to 200) fc (540 to 2 200) lx	11 fc 120 lx	Spectroradiometer BYK-Gardner working instructions Customer defined procedures	Columbia, MD Geretsried, Germany Ripollet, Spain Saint Ouen, France Vienna, Austria
Optical Radiation - Color Temperature [1,3]	(2 250 to 3 500) K (3 800 to 4 350) K (6 300 to 6 700) K	55 K 74 K 82 K	Spectroradiometer BYK-Gardner working instructions Customer defined procedures	Columbia, MD Geretsried, Germany Ripollet, Spain Saint Ouen, France Vienna, Austria

Thermal

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment	Locations[5]
Thermocouple Simulation [3]	Type K (50 to 500) °C	0.9 °C	Universal Calibrator BYK-Gardner working instructions Customer defined procedures	Columbia, MD Geretsried, Germany Vienna, Austria Shanghai, P.R China
Temperature	(15 to 50) °C	0.65 °C	Climatic Chamber BYK-Gardner working instructions Customer defined procedures	Columbia, MD Geretsried, Germany

Thermal

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment	Locations[5]
Relative Humidity	(30 to 75) %RH	1.8 %RH	Climatic Chamber BYK-Gardner working instructions Customer defined procedures	Columbia, MD Geretsried, Germany
Dewpoint	(10 to 30) °C	Calculated from temperature and humidity	Calculated from temperature and humidity BYK-Gardner working instructions Customer defined procedures	Columbia, MD Geretsried, Germany

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 (k=2), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration/testing services are available for this parameter; based on strict protocols, the same uncertainties are achieved on-site.
2. Applies to both instruments and standards (standards can only be calibrated in-laboratory)
3. Applies to instruments only
4. Drain time of certified calibration oil
5. The capabilities of all sites are identical using same procedures and equipment, under the same environment conditions.
6. Unit-less measure expressed as a percentage.
7. Uncertainties of rotational viscometers above 125 000 cP and above 105 KU are extrapolated mathematically, KU is Krebs-Stromer Unit.
8. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1534.

Jason Stine, Vice President