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Project: Water tightness test of the universal building entry MIS200 with membrane injection system, installed in a test block with 200 mm core drill and exterior waterproofing (waterproofing class W2.1 E according to DIN 18533-1)

Producer: HAUFF-Technik

Date of Order: 06.08.2025

Examination of: Water tightness test $\geq 1,0$ bar for 72 hours

Description: Universal building entry Hauff MIS200 with membrane injection system

**Number of samples/
specimen:** 1 test

Sampling by: Client

Sampling receipt: 27.08.2025

Test period: 27.08 – 20.11.2025

Remark: Translation of Test Report A25420130-01_dt
13 Januar 2026

Gersthofen, 13 January 2026

i. V. Johannes Thienel
Team Leader

i. A. Lukas Eikelmann
Project Leader

^{a)} Information provided by the client. ^{k)} Modification.

The test results relate only on the items tested. Without the written approval of the testing laboratory, a duplication in extracts of the test report is not permitted.

Managing director: Andreas Müller, Dr. Gero Schönwaßer
District court of Hamburg, HRB 130568, St.Nr.: 46/736/032681

1. General

Kiwa GmbH, Bautest Augsburg, was contracted by Hauff-Technik GmbH & Co. KG to test the water tightness of the universal building entry Hauff MIS200, installed in a test block with 200 mm core drill and exterior waterproofing (waterproofing class W2.1 E according to DIN 18533-1 [3] and DIN 18533-3 [4])

Therefore Hauff-Technik GmbH & Co. KG delivered the concrete test block with the already installed universal building entry Hauff MIS200 together with the components for the test setup to our test laboratory in Gersthofen, Germany. (see Figure 1)



Figure 1. Assembled test setup.

a) Information provided by the client. k) Modification.



Figure 2. external waterproofing.

2. References

- [1] Hauff-Technik GmbH & Co. KG - „Assembly instruction – MIS200 Einzelhauseinführung mit Membran-Injektionssystem“, Rev.: 00/2025-05-21.
- [2] Hauff-Technik GmbH & Co. KG – Prüfbericht-Nr. PB_01486. Version 01. Vom 09.10.2025
- [3] DIN 18533-1. Waterproofing of elements in contact with soil. Part 1: Requirements and principles for design and execution. Edition July 2017.
- [4] DIN 18533-3. Waterproofing of elements in contact with soil. Part 3: Waterproofing with liquid-applied waterproofing materials. Edition July 2017.
- [5] DIN EN 15814. Polymer modified bituminous thick coatings for waterproofing - Definitions and requirements. Edition March 2015.

3. Test procedure

3.1 Test preparation (Hauff Technik GmbH & Co. KG)

The assembly of the test setup was carried out by the manufacturer of the wall penetration, Hauff-Technik GmbH & Co. KG. According to the manufacturer, the test setup was assembled as described below. [2]

a) Information provided by the client. k) Modification.

A core hole with a diameter of 200 mm was drilled in the center of a concrete test block. The external waterproofing is then applied in accordance with DIN EN 15814 [5]

The rubber component was installed into the test block and subsequently foam-filled. The test was conducted with a corrugated pipe with an outer diameter (OD) of 125 mm. The changeover insert 163/125 made of EPDM55 with a depth of 60 mm was used. The free end of the corrugated pipe was sealed with a suitable socket and a blind plug.

Two test cylinders were used to cover the entire height of the installed wall penetration, including the corrugated pipe and blind plug. Lubricant was applied during the installation of the changeover insert to facilitate the assembly and improve the adhesion between the rubber surfaces. The lubricant also seals small grooves on the rubber surface, thereby optimizing the tightness. The clamping band was tightened to 7 Nm.

Four clamping profiles with an interposed sealing ring were used to seal and fix the test cylinders against the surface of the stone.

A schematic of the test setup is shown in Figure 2.

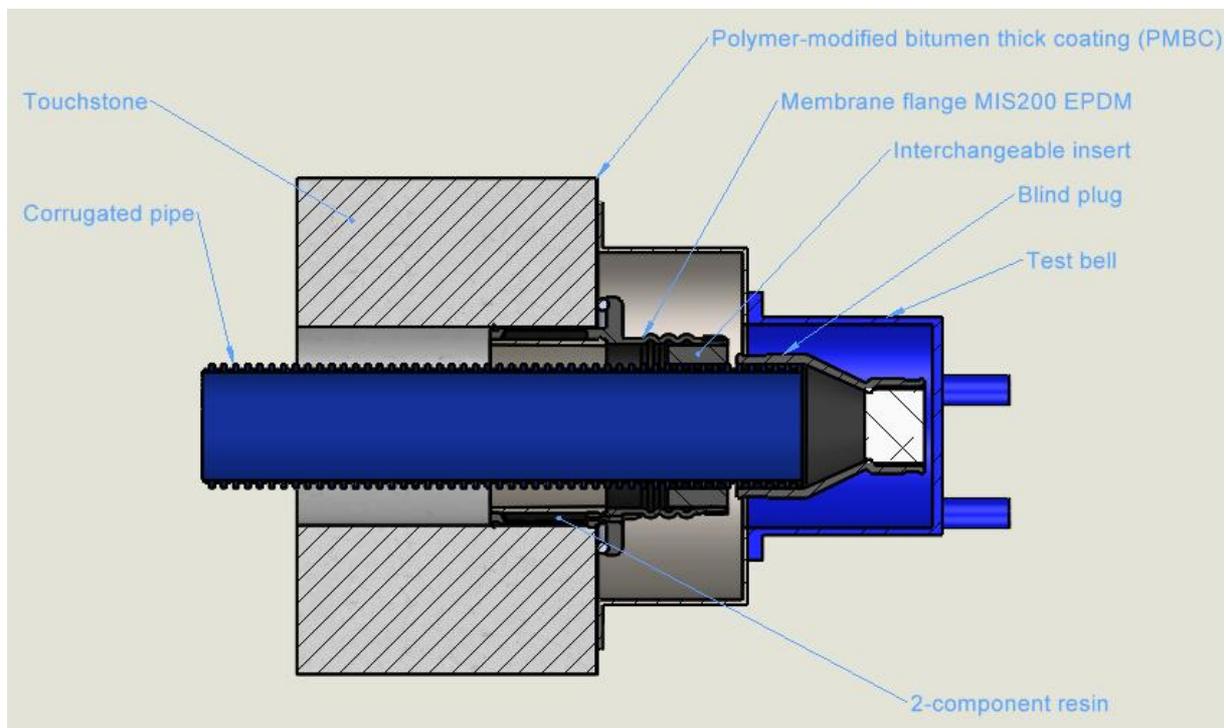


Figure 3. Schematic representation of the test setup

3.2 Water tightness test (Kiwa GmbH)

A calibration of the assembled manometer (serial no. 8976K7NP) was performed by WIKA Alexander Wiegand SE & Co. KG (see Section 6).

After prior consultation with the manufacturer the test of the water tightness with permanently attached water pressure was performed with $\geq 1,0$ bar for 72 hours.

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4. Test results

There were repeated slight pressure drops in the manometer during the test, which were compensated by the constant water pressure applied. No leakage could be detected at the end of the test (see Tabelle 1). Before the test, paper towels were placed underneath the setup. These showed no visible drip marks at the end.

Tabelle 1. Results water tightness tests.

Test specimen	Waterpressure at the beginning of the test [bar]	Waterpressure at the end of the test [bar]	Testing peropd [h]	Remark
MIS200	≥ 1,0	≥ 1,0	72	No leakage could be detected.

5. Summary

During the water tightness test of the universal building entry Hauff MIS200 which was installed in a concrete test block with a core drill 200mm no leakages was detected during the testing period of 72 hours with a permanent attached water pressure of ≥ 1,0 bar.

6. Calibration certificate

Kalibrierschein / Calibration Certificate

gem. DIN EN ISO/IEC 17025:2018 / acc. DIN EN ISO/IEC 17025:2018

erstellt durch das Kalibrierlaboratorium
issued by the calibration laboratory



WIKA Alexander Wiegand SE & Co. KG

Alexander-Wiegand-Straße 30
63911 Klingenberg



Mitglied im Deutschen Kalibrierdienst
Member of the Deutscher Kalibrierdienst



Kalibrierzeichen
Calibration mark

C01108227225
D-K-15105-01-00
2025-02

Gegenstand <i>Object</i>	Mechanisches Druckmessgerät Mechanical pressure gauge
Hersteller <i>Manufacturer</i>	WIKA Alexander-Wiegand-Straße 30 DE-63911 Klingenberg
Typ <i>Type</i>	232.50.063
Fabrikat/Serien-Nr. <i>Serial number</i>	8976K7NP
Auftraggeber <i>Customer</i>	MITEC Münchner Industrietechnik GmbH Lindberghstrasse 7 82178 Puchheim Deutschland

Dieser Kalibrierschein dokumentiert die metrologische Rückführbarkeit auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI). Die DAkkS ist Unterzeichner der multilateralen Übereinkommen der European co-operation for Accreditation (EA) und der International Laboratory Accreditation Cooperation (ILAC) zur gegenseitigen Anerkennung der Kalibrierscheine. Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

This calibration certificate documents the metrological traceability to national standards, which realize the units of measurement according to the International System of Units (SI). The DAkkS is signatory to the multilateral agreements of the European co-operation for Accreditation (EA) and of the International Laboratory Accreditation Cooperation (ILAC) for the mutual recognition of calibration certificates. The user is obliged to have the object recalibrated at appropriate intervals.

Auftragsnummer <i>Order No.</i>	S110298591/3
Anzahl der Seiten des Kalibrierscheines <i>Number of pages of the certificate</i>	4
Datum der Kalibrierung <i>Date of calibration</i>	10.02.2025

Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung des ausstellenden Kalibrierlaboratoriums. Kalibrierscheine ohne Unterschrift haben keine Gültigkeit.

This calibration certificate may not be reproduced other than in full except with the permission of the issuing laboratory. Calibration certificates without signature are not valid.

Datum <i>Date</i>	Stellv. Leiter des Kalibrierlaboratoriums <i>Ass. head of calibration laboratory</i>	Bearbeiter <i>Person in charge</i>
10.02.2025	Roland Schüßler	Taskin Aktürk

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WIKA Alexander Wiegand SE & Co. KG

Seite 2 von 4 Seiten zum Kalibrierschein vom 10.02.2025
 Page 2 of 4 pages for certificate from 10.02.2025

C01108227225
D-K- 15105-01-00
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Kalibriergegenstand (KG)

Device under test (DUT)

Mechanisches Druckmessgerät <i>Mechanical pressure gauge</i>	
Typ <i>Model</i>	232.50.063
Seriennummer <i>Serial number</i>	8976K7NP
Anzeigebereich <i>Scale range</i>	(0 ... 2,5) bar g
Genauigkeit <i>Accuracy</i>	1,6 % FS
Auflösung (Skalenwert) <i>Resolution (scale division)</i>	0,1 bar
Messstellen-Nr. <i>Tag number</i>	

Kalibrierverfahren

Calibration procedure

Die Kalibrierung erfolgte nach der Richtlinie DKD-R 6-1 "Kalibrierung von Druckmessgeräten" (Ausgabe 03/2014) Ablauf C, durch direkten Vergleich der Messwerte des Kalibriergegenstandes mit denen des Bezugs- oder Gebrauchsnormales. Der Kalibrierschein wurde mit WIKA-Cal Version 2.13.0.216 erstellt.
 Calibration was carried out according to DKD-R 6-1 "Kalibrierung von Druckmessgeräten" (Ausgabe 03/2014) procedure C, by comparing the measured values of the calibration item with those of the reference or working standard. The calibration certificate has been created with WIKA-Cal version 2.13.0.216.

Ort der Kalibrierung

Place of calibration

Klingenberg Kalibrierlabor 4 $g = (9,8100531 \pm 0,00002) \text{ m/s}^2$
 Klingenberg calibration laboratory 4

Messbedingungen

Measurement conditions

Gebrauchsnorm (GN) Druckcontroller <i>Working standard (WS) Pressure controller</i>	
Typ <i>Model</i>	CPC6050
Kalibrierzeichen <i>Calibration mark</i>	C01107501191
Anzeigebereich <i>Scale range</i>	(-1 ... 6) bar g
Genauigkeit <i>Accuracy</i>	0,01 % IS-50

WIKA Alexander Wiegand SE & Co. KG

Seite 3 von 4 Seiten zum Kalibrierschein vom 10.02.2025
 Page 3 of 4 pages for certificate from 10.02.2025

C01108227225
D-K- 15105-01-00
2025-02

Aufbau <i>Assembly</i>	
Druckübertragungsmedium <i>Pressure transmission medium</i>	trockene Luft <i>dry air</i>
Bezugsebene (für Referenzwert) <i>Reference height (for reference value)</i>	Dichtfläche KG <i>Sealing face DUT</i>
Lage bei der Kalibrierung <i>Position during calibration</i>	senkrecht <i>vertical</i>

Umgebungsbedingungen

Ambient conditions

Temperatur <i>Temperature</i>	(22,6 ± 0,5) °C
Atmosphärischer Luftdruck <i>Atmospheric pressure</i>	(1008,5 ± 0,5) hPa
rel. Luftfeuchte <i>rel. humidity</i>	(30 ± 5) %

Messergebnisse

Measurement results

Ablesung KG <i>Reading DUT</i> bar	Referenzwert GN <i>Reference value WS</i> bar	
	↑	↓
0,1	0,100	0,100
0,6	0,600	0,600
1,3	1,310	1,309
1,9	1,918	1,918
2,5	2,520	2,520

Messunsicherheit

Measurement uncertainty

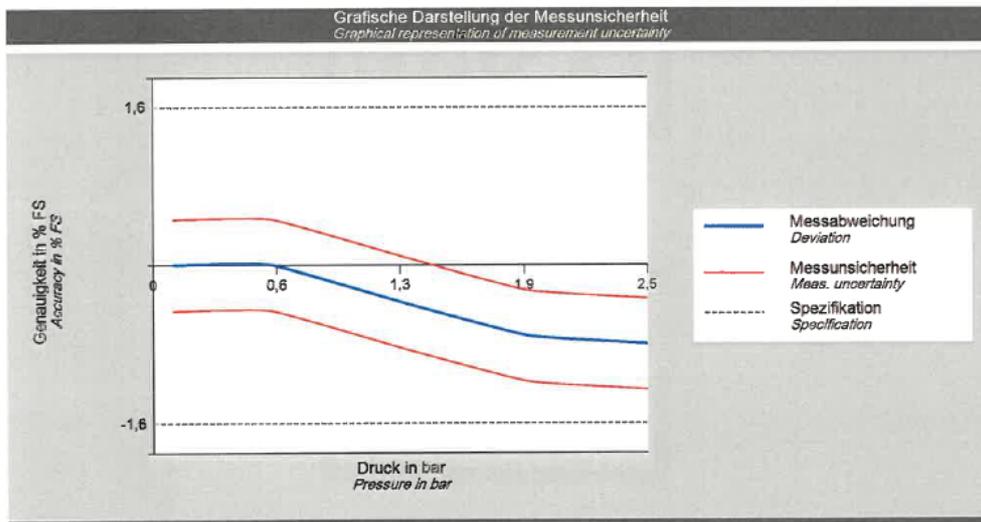
Referenzwert KG <i>Reference value DUT</i> bar	Mittelwert <i>Mean value</i> bar	Messabweichung <i>Deviation</i> bar	Hysterese <i>Hysteresis</i> bar	Messunsicherheit <i>Meas. uncertainty</i> bar
0,1	0,100	0,000	0,000	0,012
0,6	0,600	0,000	0,000	0,012
1,3	1,310	-0,010	0,001	0,012
1,9	1,918	-0,018	0,000	0,012
2,5	2,520	-0,020	0,000	0,012

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Seite 4 von 4 Seiten zum Kalibrierschein vom 10.02.2025
 Page 4 of 4 pages for certificate from 10.02.2025

C01108227225
D-K- 15105-01-00
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Angegeben ist die erweiterte Messunsicherheit, die sich aus der Standardmessunsicherheit durch Multiplikation mit dem Erweiterungsfaktor $k = 2$ ergibt. Sie wurde gemäß EA-4/02 M: 2022 ermittelt. Der Wert der Messgröße liegt mit einer Wahrscheinlichkeit von etwa 95 % im zugeordneten Werteintervall.
 The uncertainty stated is the expanded uncertainty obtained by multiplying the standard uncertainty by the coverage factor $k = 2$. It has been determined in accordance with EA-4/02 M: 2022. The value of the measurand lies within the assigned range of values with a probability of approx. 95 %.



Die Genauigkeit des KG beträgt 0,032 bar
 The accuracy of the DUT is 0.032 bar

Konformitätsaussage

Statement of compliance

Der Kalibrierggegenstand hält die geforderte Spezifikation ein!
 The calibration item keeps the required specification!

Form T Reporting A 0012_R.7.0

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Gersthofen, 13 January 2026

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