Gibitre Instruments S.r.l.
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CER_RCO_001	Rev: 02	IN

Calibration Report n° RCOXXXXXX_52725

Issued 15/04/2026

Customer

Name	CUSTOMER
Address	ADDRESS
	ADDRESS
Country	COUNTRY

Order

Number

Instrument

Type	MD RHEOMETER
Model	RHEOCHECK MD - Drive
Producer	GIBITRE INSTRUMENTS SRL
Serial Number	RCOXXXXXXX

Calibration

Date of the measures	**15/04/2026**	
Technician	**Mario Lodato**	Habilitation for Calibration
Activity	**Periodical Calibration**	

Reference Standard

The calibration is made in accordance to the requirements of the following standards:

ISO/DIS 6502-3: Rubber — Measurement of vulcanization characteristics using curemeters — Part 3: Rotorless curemeter

The measurement uncertainties stated in this document have been determined according to the ISO/IEC Guide 98 and to EA-4/02. Usually they have been estimated as expanded uncertainty obtained multiplying the standard uncertainty by the coverage factor k corresponding to a confidence level of about 95%. Normally, this factor k is 2.

Calibration made by:

Mario Lodato

Calibration Report approved by:

Ivan Locatelli

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The measurement results reported in this Calibration Report were obtained following the procedures given in the following pages, where the reference standards or instruments are indicated which garantee the traceability chain of the laboratory, and the related calibration certificates in the course of validity are indicated as well. They relate only to the calibrated item and they are valid for the time and conditions of calibration, unless otherwise specified.

Reference Instruments	Producer	Serial N.	Gibitre Code	Certificate N.	Calibration Laboratory	Issue Date	Due Date	Uncertainty	Unit
Torque cell with digital reader	Cct / Gibitre	9381	CAL05-TOR01 [0 - 200 dN*m]	LAT 093 105225M	AEP Transducers srl	03/04/25	03/04/2030	0,03	dN*m
PT100 Thermoresistance + Calibrator	Gibitre Instruments srl	C1-T-PTA	C1-GB3-CAL-1 + C1-T-PTA	LAT_128T_1417_22	ELLAB S.r.l.	25/09/22	25/09/2027	0,05	°C
Chronometer	RS COMPONENTS	GBT.CN.01/13	CRO02 [0-60 s]	LAT 056 23-0199_2023	GAMMA MISURE	09/02/23	09/02/2028	0,10	s
Calibrator + Load Cell 20 kN-Compression	Interface + Gibitre Instruments	784097	C1-GB3-CAL-1+C1-F-N20000-Co	LAT 044 F240253	SOCIETA COOPERATIVA BILANCIAI	02/12/24	02/12/2026	0,04	N
Digital Thickness Meter 13,5 mm.	Mitutoyo	16005914	COM02 [0.41-13.5 mm]	LAT 051 C12126B680	TRESCAL	29/08/21	29/08/2026	0,00	mm
Calibrator + 20 kN Load Cell	Interface + Gibitre Instruments	783399	C9-GB3-CAL-1 + C9-F-KN20-Comp	CAL109_32049	GIBITRE INSTRUMENTS	02/09/25	02/09/2026	4,56	N
PT100 Thermoresistance + Calibrator	Gibitre Instruments srl	C9-T-PTA	C9-GB3-CAL-1 + C9-T-PTA	CAL109_32049	GIBITRE INSTRUMENTS	02/09/25	02/09/2026	0,06	°C
Chronometer + Calibrator	Gibitre Instruments srl	C9-CH-1	C9-GB3-CAL-1 + C9-CH-1	CAL109_32049	GIBITRE INSTRUMENTS	02/09/25	02/09/2026	0,16	s
Torque calibrator MD Rheometer	Gibitre Instruments srl	C9-MD-1	C9-MD-1	CAL109_32049	GIBITRE INSTRUMENTS	02/09/25	02/09/2026	0,03	dN*m
Calibrator + Encoder	Gibitre Instruments srl	160405-1004571	C9-GB3-CAL-1 + C9-EN-1	CAL109_32049	GIBITRE INSTRUMENTS	02/09/25	02/09/2026	0,01	°
Torque calibrator MD Rheometer	Gibitre Instruments srl	C9-MD-2	C9-MD-2	CAL109_32049	GIBITRE INSTRUMENTS	02/09/25	02/09/2026	0,03	dN*m

ENVIRONMENTAL CONDITIONS

Room Temperature	(23 ± 2) °C
Relative Humidity	(50 ± 10) %

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Calibration of: **Temperature Measurement**

Sensor Type: **PT 100 Thermoresistance**
Resolution: 0,1 °C

Procedure: The test temerature is set on the instrument. After an adecuate conditioning time, the actual temperature is measured with the reference thermometer. The test is repeated 3 times for each temperature tested.

Reference Standard: **ISO 6502-3 Par. 5.7**

Reference Instruments:
C9-GB3-CAL-1 + C9-T-PTA Uncertanty: 0,06 °C Deviation 0,29 °C

Upper Die

Set Value °C	Minimum Allowed °C	Maximum Allowed °C	Calibrator Reading 1 °C	Calibrator Reading 2 °C	Calibrator Reading 3 °C	Mean °C	Accuracy °C	Uncertanty U_ext_95% °C	Outcome
177	176,7	177,3	177,11	177,05	177,09	177,08	0,08	0,347	ok
190	189,7	190,3	189,93	189,99	189,91	189,94	-0,06	0,348	ok

Lower Die

Set Value °C	Minimum Allowed °C	Maximum Allowed °C	Calibrator Reading 1 °C	Calibrator Reading 2 °C	Calibrator Reading 3 °C	Mean °C	Accuracy °C	Uncertanty U_ext_95% °C	Outcome
177	176,7	177,3	177,20	177,11	177,15	177,15	0,15	0,349	ok
190	189,7	190,3	190,03	190,09	190,10	190,07	0,07	0,348	ok

Calibration of: **Temperature Recovery time at test start**

Procedure: After insertion of a test piece at 23 °C ± 5 °C, the temperature of the dies shall recover to within 0,3 °C of the test temperature within 3 min. The reading of the instrument under calibration is recorded.

Reference Standard: **ISO 6502-3 Par. 5.7**

Reference Instruments:
C9-GB3-CAL-1 + C9-CH-1 Uncertanty: 0,16 s Deviation 0,00 s

Die	Set Value °C	Minimum Allowed °C	Maximum Allowed °C	Instrument Reading after 3 min °C	Outcome
Upper	180	179,7	180,3	180,2	ok
Lower	180	179,7	180,3	180,0	ok

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Calibration of: **Torque Mesuring system**

Sensor Type: **Force Sensor**
Resolution: 0,01
Oscill. angle: 0,5 °
Unit of Measure dN*m

Procedure: The torque reading of the instrument is compared with the reference torque spring which is inserted in the instrument enstead of the rotor. The calibration is made with 0.5° Oscillation angle and 177°C Temperature

Reference Standard: **ISO 6502-3 Par. 5.5**

C9-MD-2 Uncertanty: 0,03 dN*m Torque: 15,90 dN*m

Reference Value	Minimum Allowed	Maximum Allowed	Calibrator Reading 1	Calibrator Reading 2	Calibrator Reading 3	Mean	Accuracy	Uncertanty U_ext_95%
dN*m	dN*m	dN*m	dN*m	dN*m	dN*m	dN*m	dN*m	dN*m
15,90	15,74	16,06	16,00	15,99	15,97	15,99	0,09	0,035

Reference Value	Minimum Allowed	Maximum Allowed	Calibrator Reading 1	Calibrator Reading 2	Calibrator Reading 3	Mean	Accuracy	Uncertanty U_ext_95%
Lbf*in	Lbf*in	Lbf*in	Lbf*in	Lbf*in	Lbf*in	Lbf*in	Lbf*in	Lbf*in
14,08	13,94	14,22	14,16	14,16	14,14	14,15	0,08	0,03

Verification with standard rubber

Procedure: At the end of the calibration, 3 tests are performed using Gibitre Standard Rubber to check the working conditions of the instrument. The Results obtained are compared with the reference ones.

Reference Instruments:
5.040.875-A

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Test Conditions:

Temperature 180 °C Oscill. Angle 0,5° Test Time 10 min

Result	Unit	Minimum Allowed	Maximum Allowed	Instrument Reading 1	Instrument Reading 2	Instrument Reading 3	Mean	Standard Deviation
ML	dN*m	1,51	1,89	1,58	1,62	1,63	1,61	0,03
Ts1	mm:cc	0,32	0,48	0,45	0,46	0,45	0,45	0,01
Ts2	mm:cc	0,40	0,60	0,55	0,56	0,54	0,55	0,01
t'50	mm:cc	1,13	1,67	1,38	1,35	1,33	1,35	0,03
t'90	mm:cc	3,32	4,68	3,95	3,94	3,81	3,90	0,08
MH	dN*m	23,76	30,24	25,26	25,17	25,58	25,34	0,22

Verification of instrument safety devices

√	Verification that the instrument's safety devices are working properly

√	Final verification that the instrument is functioning properly with safety devices active