

Report on type test

for the certification of the sealing material
VB70AT53 according to DVGW CERT GmbH ZP
5101:2021-12

Report identification

Date of issue: 26.06.2023
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PIN: DG-5112CM0414
Ref. no. DVGW CERT: -

Approval Manager

Andreas Strauß
+49 721 608 – 41285
strauss@dvgw-ebi.de
Sign: MP-AS-SR

Applicant

BER-PA s.r.l.
Via Faletti, 16
I - 25031 Capriolo (BS)

This report consists of 7 pages and the enclosures mentioned in Section V.

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I. General

Contact	Bertazzoli, Alessandro	alessandro.bertazzoli@ber-pa.it
Product name	VB70AT53	
Product group	Elastomer material for seals in gas appliances	
Material group	FKM	
Nominal hardness	70 IRHD	
Test reference	DVGW CERT ZP 5101:2021	

Samples received	17.04.2023	
Samples / batch	3 slabs 200 x 200 x 2	batch: --
	--	batch: --
	--	batch: --

Test duration	June 2023
Tested by	Lutz

Test order:

Type test (new)

Type test to renew DIN DVGW certification
Certificate no. --

X Type test as supplemental to
~~Certificate no. --, report no. -- issued --~~

Basic certification according

standard	PIN (certificate)	class
DIN EN 549	DG-5112CM0414	H3/E1 without Ozon

II. Test references

The tests are performed based on and considering the following standards – as far as applicable

DVGW CERT ZP 5101 :2021-12	Certification program Compatibility and permeation properties of elastomer materials for seals and diaphragms in gas appliances and installations against hydrogen for a content of up to 100 vol. % H2 ZP 5101
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III. Description of the device under test

Elastome rmaterial for sealing and/or diaphragm application

	5101	Elastomerwerkstoff für Dichtungen in Gasgeräten und -anlagen mit Lebensdauerbeurteilung	Elastomer material for seals in gas appliances and equipments with life assessment
	5102	Elastomerwerkstoff für Dichtungen/ Membranen in Gasgeräten,-anlagen mit Lebensdauerbeurteilung	Elastomer material for diaphragm and seals in gas appliances and equipments with life assessment
	5104	Elastomerwerkstoff für Dichtungen in Gasversorgungs/ -fernleitungen mit Lebensdauerbeurteilung	Elastomer material for seals in gas supply mains and pipelines with life assessment
	5105	Membranwerkstoff in Gasgeräten und Gasanlagen, unverstärkt, mit Lebensdauerbeurteilung	Materials for diaphragm in gas appliances and equipment, not reinforced, with life assessment
	5106	Membranwerkstoff in Gasgeräten und Gasanlagen, verstärkt, mit Lebensdauerbeurteilung	Materials for diaphragm in gas appliances and equipment, reinforced, with life assessment

	5111	Elastomerwerkstoff für Dichtungen in der Gasinstallation	Elastomer material for seals in gas installations
x	5112	Elastomerwerkstoff für Dichtungen in Gasgeräten und -anlagen	Elastomer material for seals in gas appliances
	5113	Elastomerwerkstoff für Dichtungen in Gasversorgungs- und Gasfernleitungen	Elastomer material for seals in gas supply mains and pipelines
	5131	Membranwerkstoff für Gasgeräte und Gasanlagen, unverstärkt	Materials for membranes for gas appliances and equipment, not reinforced
	5132	Membranwerkstoff für Gasgeräte und Gasanlagen, verstärkt	Materials for membranes for gas appliances and equipments, reinforced
	5133	Membranwerkstoff für Gasanlagen	Materials for diaphragms for gas equipment
	5134	Membranwerkstoff für Gaszähler/-anlagen	Materials for diaphragms for gas meters and their equipment
	5139	Elastomerwerkstoff für Dichtungen und Membranen in Gasgeräten und -anlagen	Elastomer material for diaphragm and seals for gas appliances and equipments

IV. Testing

Unless otherwise indicated, the tests and evaluations were carried out on the basis of the standards listed in Section II.

The results are documented in the attached test certificates and measured values and compared to the target values (see Enclosure 1).

Remark: ---

The results of the test relate exclusively to the test samples selected and presented by the manufacturer.

Unless otherwise indicated, the decision rule according to the ILAC Guide G8: 2019 applies to the evaluation of the test results.

V. Enclosures

No.	Content	Pages^{*1}
1	Test results	
1.1	Measured values	1
1.2	Measurement equipment	1
	others	
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*1 printed pages

VI. Summary

Applicant: BER-PA s.r.l.
Via Faletti, 16
I - 25031 Capriolo (BS)

Test reference: DVGW CERT ZP 5101

Aim of test: supplement to DIN-DVGW-certification

Monitoring:

Production site: BER-PA s.r.l.
Via Faletti, 16
I - 25031 Capriolo (BS)

Product: Elastomer material for seals in gas appliances

Product code: 5112

Product name: VB70AT53

classification: elastomer material H₂ tested

The requirements of the standards according to section II are - as far as applicable – fulfilled.

DVGW-Forschungsstelle
- Prüflaboratorium Gas -

Karlsruhe, 26.06.2023



for the Head of Test Laboratory



Approval Manager

Anlage 1.1: Messwerte zum Baumuster-Prüfbericht / Attachment 1.1: test results to type test report

Typbezeichnung / type	VB70AT53	Referenz / reference	23-00153-AB01
Norm / standard	DVGW CERT ZP 5101	Material / material	FKM

Vorbehandlung / *Preconditioning*:

Entgasung der Probe bei < 6 mbar_{abs} bei 23 +/- 5 °C für > 48 h
Degassing of specimens at < 6 mbar_{abs} at 23 +/- 5 °C at > 48 h

Prüfung / *Test*:

Entgasung der Probe im Prüfgerät-Gerät bei < 6 mbar_{abs} bei Prüftemperatur ± 1 °C für > 5 h, Vakuum beidseitig angelegt
 Start Messung: Feed-Seite mit Gas-Strom > 50 cm³/min, Druck permeatseitig < 6 mbar_{abs}, Differenzdruck 1±0,1 bar,
 Messvolumen ca. 0,8 cm³, Messfläche ca. 78,4 cm²
Degassing of specimen in test device at < 6 mbar_{abs} at test temperature ± 1 °C for > 5 h, vacuum on both sides applied
Start of measurement: gas flow at feed-side > 50 cm³/min, pressure at permeate-side < 6 mbar_{abs}, differential pressure
1±0,1 bar, test volume ca. 0,8 cm³, test surface area ca. 78,4 cm²

Eigenschaft / property (DVGW CERT ZP 5101:2021)	Einheit / unit	Istwert / actual value
Dicke / <i>thickness</i>	mm	2,136 / 2,139
Gas / <i>gas</i>	--	H ₂
Evakuierungsdauer (Entgasung) / <i>duration of evacuation (degassing)</i>	h	> 15
Probentemperatur / <i>specimen temperature</i>	°C	23
permeatseitig ausgewerteter Druckbereich / <i>assessed pressure range permeate-sided</i>	mbar _{abs}	200 - 300 / 150 - 250
Durchbruchzeit / <i>delay time</i>	s	6722 / 7568
Permeabilität / <i>permeability</i>	(cm ³ x mm) / (m ² x 24 h x bar)	150 / 173
mittlere Permeabilität / <i>mean permeability</i>	(cm ³ x mm) / (m ² x 24 h x bar)	161

Anmerkung / *note*:

Die Permeabilität ist ein gas- und temperaturabhängiger Materialkennwert. Die Messungen zur Ermittlung der Permeabilität erfolgten an homogenen Platten bei den o.g. Temperaturen. Das berechnete Permeatvolumen wurde auf Standardbedingungen (0 °C und 1013 mbar) umgerechnet. Die Übertragbarkeit von Permeabilitäten auf Formteile und Einsatzbedingungen zur Abschätzung von Leckagen ist nur eingeschränkt möglich.
Permeability is a gas- and temperature-dependent material parameter. The measurements to determine the permeability were carried out on homogeneous slabs at the above-mentioned temperatures. The calculated permeate volume was converted to standard conditions (0 °C and 1013 mbar). The transferability of permeabilities to molded parts and application conditions for estimating leakage is only possible to a limited extent.

Bemerkung / *remark*:

Anlage 1.2: Prüfmittel zum Baumuster-Prüfbericht / Attachment 1.2 test equipment to type test report

Prüfmittel / test equipment

IIG/7001	Permeationsprüfgerät; permeance test device
IIG/7002	Permeationsprüfgerät; permeance test device
IIG/7008	Kälte-Umwälzthermostat; cryostat
IIG/2703	Messtaster digital; Thickness guage
IIG/7003	Vakuum-Exsikkator; vacuum desiccator
IIG/7005	Vakuum-Exsikkator; vacuum desiccator
IIG/6702	Schneidepresse; punching press
IIG/7004	Vakuumpumpe; vacuum pump
IIG/7006	Vakuumpumpe; vacuum pump

Prüfzeitraum / *test period*: 23.06.-26.06.2023

Prüfung durch / *tested by*: Lutz

End of report