



Product Service

**Mehr Wert.
Mehr Vertrauen.**

Technical Report No. 713368189

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Applicant:	SGH Schüttguthandling GmbH & Co. KG Daimler-Straße 3 78256 Steißlingen Germany
Test Object	Discharge Aids
Test Specifications:	EN IEC 60079-0: 2018, Abs. 26.17 IEC TS 60079-32-1:2017 Table 4
Testing Laboratory	TÜV SÜD Product Service GmbH, Ridlerstraße 65, 80339 Munich.
Test Sample:	10 different test samples were submitted.
Order Description	Charge transfer measurement of discharge aids made from different materials according to the test specification, including a technical report.
Test Result:	A discharge was measured in two out of ten test samples. See the following sections for details. The test result applies only to the specified test samples.
Safety-relevant Information	Not applicable

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1 TEST OBJECT SPECIFICATION

1.1 Description

The test object comprises discharge aids manufactured from various materials. These components are integrated into containers (such as silos, small bins, filters, bag dump stations, etc.) and pipelines to promote the flowability of bulk solids and to ensure their continued movement.

1.2 Product Image of Test Sample



1.1 Silicone



1.2 SAN



1.3 detectable



1.4 Silicone hot



1.5 EPDM-FDA



1.6 EPDM-FDA



1.7 FKM-FDA



1.8 FKM



1.9 TPE-FDA/EU 1935-2004



1.0 VibraPad weiß



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1.3 Technical Deta

Table 1 Material Data Sheet VibraPad 100 1.1 SiW SB

Characteristic	Value
Nominal Diameter	100
Material	Silicone
Temperature Range	-40 °C to 200 °C
Colour	White

Table 2 Material Data Sheet VibraPad 100 1.2 SAN

Characteristic	Value
Nominal Diameter	100
Material	Silicone
Temperature Range	-30 °C to 180 °C
Colour	Blue

Table 3 Material Data Sheet VibraPad 100 1.3 Detect

Characteristic	Value
Nominal Diameter	100
Material	Silicone
Temperature Range	-40 °C to 200 °C
Colour	Blue

Table 4 Material Data Sheet VibraPad 100 1.4 hot

Characteristic	Value
Nominal Diameter	100
Material	Silicone
Temperature Range	-40 °C to 300 °C
Colour	Red-orange

Table 5 Material Data Sheet VibraPad 100 1.5 EPDMs

Characteristic	Value
Nominal Diameter	100
Material	EPDM
Temperature Range	150 °C
Colour	Black



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Table 6 Material Data Sheet VibraPad 100 1.6 EPDMw

Characteristic	Value
Nominal Diameter	100
Material	EPDM
Temperature Range	100 °C
Colour	White

Table 7 Material Data Sheet VibraPad 100 1.7 FKM

Characteristic	Value
Nominal Diameter	100
Material	FKM
Temperature Range	220 °C
Colour	Green

Table 8 Material Data Sheet VibraPad 100 1.8 FKM

Characteristic	Value
Nominal Diameter	100
Material	FKM
Temperature Range	220 °C
Colour	Black

Table 9 Material Data Sheet VibraPad 100 1.9 TPE

Characteristic	Value
Nominal Diameter	100
Material	TPE
Temperature Range	-40 to 120 °C
Colour	White

Table 10 Material Data Sheet VibraPad 100 SIB SB (comparable to 1.1)

Characteristic	Value
Nominal Diameter	100
Material	Silicone
Temperature Range	-60 to 200 °C
Colour	Blue

This information was provided by the client, and the material properties have not been verified

2 TEST SETUP

2.1 Conditioning

The test sample is cleaned with isopropyl alcohol, rinsed with distilled water, and dried. Then, the test sample is stored in a walk-in climate chamber for 24 hours at 21 °C and 26% relative humidity.

2.2 Used Measuring Instruments and Testing Devices

The following measuring instruments were used for the test:

Table 11 measuring devices

Instrument	TM ID	Calibrated Until
Coulomb meter	5965	06.09.2026
High Voltage Generator with Corona Discharge Tip	5974	Not applicable (Supplementary)
Grounded Metal Plate	Not applicable	Not applicable
PTFE-Disc 200 cm ²	52622	Not applicable (Supplementary)
Polyamide Cloth	Not applicable	Not applicable
Cotton Cloth	Not applicable	Not applicable
Climate Chamber	42	06.11.2025



1 Metal plate grounded and reference disc made of PTFE



2 High voltage generator with corona charging tip

2.3 Execution

The test is conducted in a room with a temperature of 22 °C and 27 % relative humidity.

The measurement of the transferred charge of the test sample is carried out using three methods:

- Charging by rubbing with a cloth made of pure polyamide
- Charging by rubbing with a cotton cloth
- Charging with a DC high-voltage source

The test sample is placed on a grounded metal plate.

The charging of the test material by friction is done by rubbing ten times with the polyamide or cotton cloth.

The charging with the DC high-voltage source is done with a spray electrode, which is positioned 30 mm above the test sample's surface and is charged with a voltage of 70 kV between the negative electrode and ground. The spray electrode is moved for 30 seconds.

The test sample is then carefully removed from the table without discharging it. The test sample is tested by slowly approaching the spherical electrode (25 mm diameter) of the Coulomb meter until a discharge occurs.

For each method of charging, 10 tests are carried out.

Before the measurement, a reference measurement is performed using a PTFE disc with a diameter of 160 mm and a thickness of 2 mm. The transferred charge of the comparison material must be greater than 60 nC.

The test sample is then moved using a PTFE handle.

Table 12 Reference Measurement Values

Reference Measurement	Charging with Spray Electrode	Charging with Polyamide Cloth	Charging with Cotton Cloth
[#]	[nC]	[nC]	[nC]
1	118,5	88,6	87,9
2	111,8	94,7	67,9
3	198,5	77,6	85,4
4	188,7	75,3	76,4
5	145,4	67,2	96,2
6	157,4	81,3	75,1
7	160,4	83,5	80,4
8	109,3	79,4	66,5
9	114,2	74,6	72,5
10	109,8	67,3	76,1

3 TEST RESULT

Ten charging attempts were conducted for each variant. The highest measured charging value is listed in the following Table 4

Table 13 Test Sample Measurement Values

Test Sample [Nr.]	Charging with Spray Electrode [nC]	Charging with Cotton Cloth * [nC]	Charging with Po- lyamide Cloth [nC]
1.1	No Discharge	No Discharge	No Discharge
1.2	127,6	No Discharge	18,1
1.3	No Discharge	No Discharge	No Discharge
1.4	No Discharge	No Discharge	No Discharge
1.5	18,8	No Discharge	No Discharge
1.6	No Discharge	No Discharge	No Discharge
1.7	No Discharge	No Discharge	No Discharge
1.8	No Discharge	No Discharge	No Discharge
1.9	No Discharge	No Discharge	No Discharge
1.0	No Discharge	No Discharge	No Discharge

** Due to the design, the friction did not occur with consistent force.*



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4 SUMMARY

Charging processes simulating high charge-generating processes were performed on the mentioned samples according to the test specification. During this, a discharge was measured for test samples 1.2 and 1.5.

The limit values are specified in Table 4 of IEC TS 60079 32 1:2017 as follows.

Explosion-group	EPL Da Zone 20	EPL Db Zone 21	EPL Dc Zone 22
III	60 nC ^a	200 nC ^a	200 nC ^a
^a Values only valid for spark discharges from unearthed conductive or dissipative parts.			

According to the limit values in Table 4 of IEC TS 60079 32 1:2017, the discharge aids 1.1, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, and 1.0 can be used in Zones 20, 21, and 22 (Group III, Dust). Test sample 1.2 can be used in Zones 21 and 22.

Note: The question of application in areas at risk from gas atmospheres is irrelevant, as a critical discharge – due to the process – cannot be excluded.

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Explosion protection

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