

Physikalisch-Technische Bundesanstalt

Braunschweig and Berlin

Bewertungs- und Prüfbericht

Assessment and Test Report

PTB Ex 09-59168

Gegenstand: Advertising media for the new generation of pump nozzles, ZVA Slimline2
Object

Hersteller: ALVERN Media GmbH
Manufacturer

Anschrift: Heimhuder Straße 70, 20148 Hamburg, Deutschland
Address

Eingangsdatum: September 10, 2009
Date of application

Prüfspezifikation: TRBS 2153, EN 13463-1
Test specification

Explosion Protection Test Lab

p.p.

Braunschweig, October 2, 2009

[Signature/Stamp]

Dr. Ulrich von Pidol Oberregierungsrat
(Senior Administrative Councilor)

Page 1/6

The results listed in this assessment and test report exclusively refer to the tested specimen(s) and the available technical documentation. Assessment and test reports are not valid without signature and seal. This assessment and test report may only be disseminated if unchanged and unmodified. Excerpts or changes must be approved by the Physikalisch-Technischen Bundesanstalt.

Physikalisch-Technische Bundesanstalt

Braunschweig and Berlin

Assessment and Test Report PTB Ex 09-59168 Summary

The Alvern advertisement caps (610-101 black and 610-102 green) were submitted to an electrostatic charging test according to EN 13463-1:2009. The result of this test was that Alvern advertisement caps (610-101 black and 610-102 green) are not chargeable by manual rubbing (no discharge detected). If only manual rubbing is expected to occur they are, therefore, suitable as advertisement caps for ZVA slimline2 nozzles at filling stations.

1. Test Specimen Details

The test was conducted on the following test specimens: Advertising media, type ZVA fillboard, item number 610-102 (green, gasoline) and 610-101 (black, Diesel), consisting of plastic, to be mounted on pump nozzles type ZVA slimline2.



Fig. 1: Green advertising medium 610-102, finished and mounted on ZVA SL2 GR

Physikalisch-Technische Bundesanstalt

Braunschweig and Berlin

Assessment and Test Report PTB Ex 09-59168



Fig. 2: Black advertising medium 610-101, finished and mounted on ZVA SL2

2. Test Specification Details

The following limit values apply:

Max. transferable charge and chargeable area for zone 0:

Explosion group I	max. 60 nC,	limit value	100 cm ²
Explosion group IIA	max. 60 nC,	limit value	50 cm ²
Explosion group IIB	max. 30 nC,	limit value	25 cm ²
Explosion group IIC	max. 10 nC,	limit value	4 cm ²

Max. transferable charge and chargeable area for zone 1, zone 2:

Explosion group I	max. 60 nC,	limit value	100 cm ²
Explosion group IIA	max. 60 nC,	limit value	100 cm ²
Explosion group IIB	max. 30 nC,	limit value	100 cm ²
Explosion group IIC	max. 10 nC,	limit value	20 cm ²

Brush discharges are considered incapable of igniting dust/air atmospheres (see Draft IEC R60079-32:2009; TRBS 2153:2009, Section 3.2).

Max. transferred charge in zone 20, 21, and 22 amounts to 200 nC.

Max. ungrounded capacity in zone 0, zone 1:

Explosion group I	max. 10 pF
Explosion group IIA	max. 10 pF
Explosion group IIB	max. 10 pF
Explosion group IIC	max. 3 pF

Physikalisch-Technische Bundesanstalt

Braunschweig and Berlin

Assessment and Test Report PTB Ex 09-59168

Max. ungrounded capacity in zone 2:

Explosion group I	max. 10 pF
Explosion group IIA	max. 10 pF
Explosion group IIB	max. 10 pF
Explosion group IIC	max. 10 pF

Max. capacity in zone 20, 21, and 22 amounts to 10 pF (see TRBS 2153:2009, Section 8.3.5).

3. Test Results

- a) List of technical documentation, test records, specimens, and other documents: Order dated August 17, 2009
- b) Ambient conditions were determined with the alarm hygrometer testo 608-H2, test equipment number PL-Ex-5-71313.
- c) The experimental measurements were taken 24 h after storage in a standard climate (rel. humidity < 30% and $T = 23^{\circ}\text{C} \pm 2 \text{ K}$).
- d) The test was conducted on September 25, 2009.
- e) Ambient conditions: Rel. humidity = $16 \% \pm 2\%$, $T = 24^{\circ}\text{C} \pm 2 \text{ K}$
- f) The measurement of the transferred charge was conducted with the "SCHNIER" coulombmeter HMG 11/02, test equipment number PL-Ex-5-61539 (measuring range 0 nC to 200 nC, range of indication 8 nC to 200 nC, uncertainty of measurement $\pm 3 \text{ nC}$).
- g) Notes concerning Table 1:
 - "b.d.l." means that discharges were audible but below the detection limit of the coulombmeter of 8 nC.
 - "n. d." means no discharges were detected.
 - "-" means that it is not possible to test this item.
- h) The following charge-generating processes were carried out to determine the transferred charge.
 - I. The test specimen is charged ten times by rubbing with a cloth made from felted sheep hair (long).
 - II. The test specimen is charged ten times by rubbing with a cloth made from polyester.
 - III. The test specimen is charged ten times by rubbing with a cloth made from polyester.
- i) The test specimen was not charged with the ERO-FLOCK -70 kV "Fakir electrode" and by beating with the leather glove since all plastic surfaces were backed with a conductive layer so that slip ring brush discharges are expected.

Physikalisch-Technische Bundesanstalt

Braunschweig and Berlin

Assessment and Test Report PTB Ex 09-59168

j) Table 1 - Transferred charge after various charge-generating processes

Advertising medium	Pump nozzle	Felted sheep hair nC	PA cloth nC	Polyester cloth nC	Leather glove nC	Fakir electrode nC
610-102 green	ZVA SL2 GR	n.d.	n.d.	n.d.	-	-
610-101 black	ZVA SL2	n.d.	n.d.	n.d.	-	-
610-102 green	ZVA 200 GR	n.d.	n.d.	n.d.	-	-
8GR black	ZVA slimline 8 GR	n.d.	n.d.	n.d.	-	-
610-101 black	ZVA slimline	n.d.	n.d.	n.d.	-	-

- k) The surface resistance was measured with the tera ohmmeter Megger MIT 1020, test equipment number PL-Ex-5-61551 (meas. range: 0 Ω to (infinite) 0; range of indication: 10 k Ω to 3 T Ω) and a strip electrode 10 mm x 100 mm acc. to DIN IEC 60167.
- l) The surface resistance was determined at three different points of the test specimen. Since the test specimen does not have a continuous area of 10 cm in length, the resistance value determined at the area 5 cm in length was divided by 2.
- m) The median value of the surface resistance amounted to 15 G Ω (17 G Ω , 10 G Ω , 15 G Ω) for the 610-101 black and 19 G Ω (15 G Ω , 24 G Ω , 19 G Ω) for the 610-102 green, each measured with a test voltage of 1000V and a measuring duration of > 1 min.
- n) The uncertainty of measurement of the Megger MIT 1020 is negligible concerning the fluctuations of the surface resistance. The total uncertainty of measurement is for the great part derived from the different resistance values of the product.

4. Notes on Design and Production Preparation

Changes of the utilized raw materials and/or the manufacturing process, as well as environmental effects may result in product property changes.

5. Technical Evaluation and Assessment

The described results refer only to the respectively submitted test specimen at the time the test was conducted.

These tests refer only to electrostatic ignition hazards. No statements are made concerning other ignition sources.

Brush discharges could not be provoked under worst case conditions with manual friction for the advertising media 610-101, 610-102 and 8 GR mounted on the ZVA SL2, ZVA SL2 GR, ZVA slimline, ZVA 200 GR, ZVA slimline 8 GR pump nozzles.

Physikalisch-Technische Bundesanstalt

Braunschweig and Berlin

Assessment and Test Report PTB Ex 09-59168

Processes generating strong charges are not expected on a metal nozzle of a gas pump .

From an electrostatic viewpoint, the Alvern advertising medium 610-101 black is therefore suitable for nozzles ZVA slimline as well as nozzles SL2.

From an electrostatic viewpoint, the Alvern advertising medium 610-102 green is therefore suitable for nozzles ZVA 200 GR as well as nozzles SL2 GR.

From an electrostatic viewpoint, the Alvern advertising medium 8 GR black is therefore suitable for nozzles ZVA 8 GR.