

FREE AND HANSEATIC CITY OF HAMBURG
AGENCY FOR WORK, HEALTH AND SOCIAL AFFAIRS
OFFICE FOR HEALTH AND SAFETY
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BAZ 227

Hamburg, 27 August 1996

OFFICE FOR
HEALTH AND
SAFETY
Technical Supervi-
sory Office
Hamburg

Special Design

Certificate

According to art. 12 par. 10 of the *Verordnung über brennbare Flüssigkeiten* (Ordinance on Inflammable Liquids – VbF) in connection with art. 4 par. 1 VbF

Alvern – Norway (Deutschland) GmbH
Mexikoring 19
22297 Hamburg

is hereby authorised to use the following materials:

Alvern Norway PVC advertising badge for fuel nozzles
- **ZVA Slimline**
- **ZVA 200**
- **ZVA 8 GR**

Other rules:

1. The protective coating must only be used with ZVA 200, ZVA 8 GR and/or ZVA Slimline fuel nozzles (05/PTB III B/S 1080).
2. Transparent covers made from PVC (product specification GB 100.00.000.41) or polycarbonate (PC LEXAN 943A) may be used.
3. Modifications to the design approval valid for the fuel nozzles given under 1 are not required.

The reports by PTB (reference 016419-3.43/vPi) of 5th September 1995, by PTB (reference 011449-3.43/vPi) of 23rd August 1996, the expert opinion by TÜV Rheinland no. 934/375031, the test report by TÜV Nord no. 113 DV 29450 including the relating addendum 1 as well as the expert opinion by TÜV Rheinland no. 934/376028 form part of this approval.

All such other rules must be observed.

OFFICE FOR
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Physikalisch-Technische Bundesanstalt (German Metrology Institute) PTB
Brunswick and Berlin

[coat of arms]

Report

Object: Plastic advertising badge for fuel nozzles

Manufacturer: Alvern Norway AS

Type: Alvern Norway PVC advertising badge for ZVA Slimline
fuel nozzles, PTB no. III B/S 1080

Serial number: -

Applicant: Alvern GmbH, Peter H Platzer, Am Ochsenzoll 39, 22850
Norderstedt

Number of pages of the report: 3

Reference no.: 016419-3.43/vPi

Test mark: -

Date of test: 29th August 1995

By order

Brunswick, 5th September 1995

[signature]

(Dr Bothe)

seal



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Physikalisch-Technische Bundesanstalt PTB

Page 2 of the report of 5th September 1995, test mark: -

1. Objective of testing

The present report analyses whether Alvern Norway plastic advertising badges on fuel nozzles for fuelling ZVA Slimline motor vehicles by Hiby, PTB no. III B/S 1080, may cause hazardous electrostatic discharge when fixed to such nozzles.

2. Applicable Rules

The assessment of the advertising badges is based on the *Technische Regeln für brennbare Flüssigkeiten* (German Technical Rules for Inflammable Liquids – TRbF) no. 513 in connection with the “*Statische Elektrizität*” (static electricity) guidelines, ZH1/200, issued by the main association of industrial professional organisations.

3. Tests

Tests included the measuring of the surface resistance according to DIN 53482, electrode assembly A, in a 23/50-1 climate according to DIN 50014. Before measuring, the test specimens were air-conditioned for at least 24 hours in the above standardised climate.

Moreover, the advertising badge was charged by rubbing such against a felt cloth as well as by spraying charges onto the badge using a 70kV ioniser, and finally discharged by means of an earthed ball electrode. For this test, the advertising badge was fixed to the earthed fuel nozzle (as intended for normal use). The occurring discharges, if any, were recorded and assessed in view of safety.

5. Results

The green plastic support for the transparent advertising badge has a surface resistance of 5×10^{10} ohms. However, it was not possible to charge such support to a dangerous degree even after it was charged through spraying. Furthermore, the projected area only covers 55cm². The green plastic support is, thus, suitable, for use in zone 1 explosive areas.

The transparent cover of the advertising badge has a surface resistance of 8×10^{11} ohms. It was possible to achieve weak brush discharging, by rubbing the cover with a felt cloth, or stronger brush discharging by spraying on charges. The projected area of 85cm² is below the maximum of 100cm² required according to the “static electricity” guidelines (ZH1/200) for zone 1, class IIA. Thus, we can assume that the observed brush discharging will not cause ignition in air/fuel mixtures of explosion group IIA. Therefore, the transparent cover is also suitable for use in zone 1 areas, class IIA.

The black corrugated plastic elements used for protecting the ZVA Slimline fuel nozzle against cold temperatures have a surface resistance of more than 10^9 ohms. As this protective layer's thickness, however, comes to less than 2mm, such is deemed to be not hazardously chargeable according to the “static electricity” guidelines ZH1/200.

6. Conclusions

There are no electrostatic risks when using the advertising badges in question with ZVA Slimline fuel nozzles in zone 1 areas, class IIA. In an electrostatic context, the PVC advertising badges by Alvern Norway AS with ZVA Slimline fuel nozzles (PTB no. III B/S 1080) are, thus, suitable for use with fuels of the VbF dangerous materials classes AI, AII, AIII and B.

The advertising badge represents a modification of the design-approved fuel nozzle. For this reason, an addendum to the design approval of the ZVA Slimline fuel nozzle is required. To this end, TÜV Nord e.V. is to assess whether safe functioning of the fuel nozzle is still ensured.

Physikalisch-Technische Bundesanstalt PTB

Brunswick and Berlin

[coat of arms]

Report

Object: Plastic advertising badge for fuel nozzles
Manufacturer: Alvern Norway AS
Type: Alvern Norway PVC advertising badge for ZVA Slimline fuel nozzles, PTB no. III B/S 1080
Serial number: -
Applicant: Alvern GmbH, Peter H Platzler, Am Ochsenzoll 39, 22850 Norderstedt
Number of pages of the report: 3
Reference no.: 011449-3.43/vPi
Test mark: -
Date of test: 15th August 1996

By order Brunswick, 23rd August 1996

[signature]

(Dr H Bothe)

seal

Physikalisch-Technische Bundesanstalt PTB

Page 2 of the report of 23rd August 1996, test mark: -

1. Objective of testing

The present report supplements a previous test report on an Alvern advertising badge for the ZVA Slimline fuel nozzle (PTB report of 5th September 1995, reference 016419-3.43/vPi). This advertising badge was modified in the meantime. The transparent cover now consists of polycarbonate instead of PVC; the plastic badge's material too was changed. Furthermore, there have been some minor geometric modifications to the same projected surfaces. As a consequence of such modifications, it was necessary to verify whether the plastic advertising badge was still suitable for fuel nozzles to be used with fuels of the VbF dangerous materials classes AI, AII, AIII and B.

2. Documents

Test report 846010.60/96.211 of 24th May 1996 by SINTEF NBL, of N-7034 Trondheim
Alvern Product description of 11th July 1996.

3. Applicable Rules

The assessment of the advertising badges is based on the *Technische Regeln für brennbare Flüssigkeiten* (German Technical Rules for Inflammable Liquids – TRbF) no. 513 in connection with the “static electricity” guidelines, ZH1/200, issued by the main association of industrial professional organisations.

4. Tests

The size of the plastic surfaces in question was measured while the specimens were charged through spraying on charges using a 70kV ioniser, in an air-conditioned room with a temperature of 23°C and a relative humidity of approx. 15%. For this test, the advertising badge was fixed to the earthed fuel nozzle as intended for normal use. The occurring discharges, if any, were recorded and assessed in view of safety.

5. Results

It was not possible to charge the black plastic badge by spraying on charges to a hazardous degree. The projected surface comes to 55cm².

It was indeed possible to electrostatically charge the transparent cover by spraying on charges, however, its projected area of 85cm² is below the maximum of 100cm² required according to the “static electricity” guidelines (ZH1/200) for zone 1 areas, class IIA.

Both the black plastic badge as well as the new transparent cover are, thus, suitable to be used in explosive areas of zone 1 for substances of class (explosion group) IIA.

Physikalisch-Technische Bundesanstalt PTB

Page 3 of the report of 23rd August 1996, test mark: -

6. Conclusions

From an electrostatic point of view, there are no safety-related reservations as to using the tested advertising badge by Alvern Norway with ZVA fuel nozzles (PTB no. III B/S 1080) for use with fuels of the VbF dangerous materials classes AI, AII, AIII and B.

7. Remarks

The conclusions given under 5 only apply to the submitted advertising badge type and the used material. A statement by TÜV Nord on the safe functioning of the fuel nozzles with attached advertising badges is required before such badges may be used.

Physikalisch-Technische Bundesanstalt PTB

Brunswick and Berlin

[coat of arms]

Test Certificate

Issued to: Alvern ASA GmbH, Mexikoring 19, 22297 Hamburg

In accordance with: TRbF no. 513 and “static electricity” guidelines ZH1/200

Object: Z STD plastic advertising badges for ZVA Slimline fuel nozzles, PTB no. III B/S 1080

Serial number: -

Test certificate number: **D-3.33/vPi-003768/98**

Date of test: 31st March 1998

Number of pages: 3

Reference no.: 98/003768-333/vPi

Notified body: 0102

By order

Brunswick, 16th April 1998

[signature]

(Dr H Bothe)



For notes, see last page of the Annex which forms an integral part of the test certificate.

1. Objective of testing

The present test certificate supplements two previous test reports on an Alvern advertising badge for the ZVA Slimline fuel nozzle (PTB report of 5th September 1995, reference 95/016419-3.43/vPi; PTB report of 23rd August 1996, reference 96/011449-3.43/vPi). This advertising badge was modified in the meantime: the material of the plastic badge as well as its geometric shape was changed. As a consequence of such modifications, it was necessary to verify whether the plastic advertising badge was still suitable for fuel nozzles to be used for fuels of the VbF dangerous materials classes AI, AII, AIII and B.

2. Documents

PTB report of 5th September 1995, reference 95/016419-3.43/vPi; PTB report of 23rd August 1996, reference 96/011449-3.43/vPi; test report 846010.60/97.148 A of 30th April 1997 issued by SINTEF NBL of N-7034 Trondheim.

3. Applicable Rules

The assessment of the advertising badges is based on the *Technische Regeln für brennbare Flüssigkeiten* (German Technical Rules for Inflammable Liquids – TRbF) no. 513 in connection with the “static electricity” guidelines issued by the main association of industrial professional organisations ZH1/200.

4. Tests

The size of the plastic surfaces in question was measured while the specimens were charged by spraying on charges using a 70kV ioniser, in an air-conditioned room with a temperature of 23°C and a relative humidity of approx. 10%. For this test, the advertising badge was fixed to the earthed fuel nozzle as intended for normal use. The occurring discharges, if any, were recorded and assessed in view of safety.

5. Results

It was not possible to charge the green plastic badge by spraying on charges to a hazardous degree. The projected area came to just under 100cm².

It was indeed possible to electrostatically charge the transparent cover by spraying on charges, however, its projected area was slightly below the maximum of 100cm² required according to the “static electricity” guidelines (ZH1/200) for zone 1 areas, substances of class IIA. Also, the charge transferred during discharge was significantly lower than such of 100cm² PTFE plastic surfaces backed with non-metallic material, which would be permissible according to the above ZH1/200.

Both the black plastic badge as well as the new transparent cover are, thus, suitable to be used in explosive areas of zone 1 for substances of class (explosion group) IIA.

6. Conclusions

From an electrostatic point of view, there are no safety-related reservations as to using the tested advertising badge by Alvern Norway with ZVA fuel nozzles (PTB no. III B/S 1080) for use with fuels of the VbF dangerous materials classes AI, AII, AIII and B.

7. Remarks

The conclusions given under 6 only apply to the submitted advertising badge type and the used material. It is not possible to decide whether the advertising badge would still be suitable for use in explosive areas of zone 1 for substances of class (explosion group) AII if three-dimensional advertising materials were used instead of the transparent cover. Any assessment to this extent requires the provision of respective test specimens.

The present test certificate does not include an assessment as to the safe functioning of the fuel nozzles with affixed advertising badges.

Assignment no.: 934 / 375031
Applicant: ALVERN Norway

Page: 1
of: 6

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TÜV
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**Expert Opinion on the Elaflex ZVA
Fuel Nozzle with Vapour Recovery and ALVERN PVC Advertising Badge**

Applicant: ALVERN Norway

Assignment no.: 934 / 375031

Person in charge: Dipl.-Ing. D Hassel (reporting)
J Hunsinger (conduction of tests with vehicles)

Assignment of: 9th September 1995 (Peter H Platzer)

1 Tasks

ALVERN has developed a PVC advertising badge which can be fitted on the Elaflex fuel nozzle, type: Elaflex ZVA 200 GR with vapour suction apparatus 92, PTB no.: III B/S 2197. The task was to assess whether the advertising badge would impair vapour recovery.

2 Conduction of Tests

Modifications to the outer contours of the fuel nozzle may, in principle, have impact on the flow conditions near the annular gap used for recovering fuel vapours.

Furthermore, it needs to be verified whether the fuel nozzle with advertising badge can be inserted into the filler neck of the fuel tank as far as such would be possible with fuel nozzles without advertising badge. A reduced insertion depth of the fuel nozzle, attributable to the advertising badge, would result in decreased recovery efficiency at the filler neck of the vehicle's tank. Thus, it was deemed necessary to test the 100 most common car types of the reference year 1994, and to assess whether the insertion depth of the fuel nozzle is reduced due to the advertising badge.

3 Results

3.1 Assessment of Flow Conditions

Measuring was not deemed necessary. The advertising badge is located in sufficient distance to and behind the annular gap for recovering hydrocarbon vapours so that the flow of gases escaping from the filler neck during fuelling is not influenced. Thus, a reduction of the recovery efficiency attributable to the advertising badge and due to changed flow conditions in the recovery area of the fuel nozzle can be ruled out.

3.2 Assessment of Insertion Depth of the Tank Filler Neck

The tests included the major vehicle makes of 22 European and Japanese car manufacturers. For each vehicle make, it was tested whether it was possible to insert the fuel nozzle with advertising badge into the tank filler neck as far as would be possible with the fuel nozzle without advertising badge.

The test results for all tested vehicle makes are listed in table 1. Apart from the exact description of the vehicle make, it also shows whether the insertion depth of the fuel nozzle was objected to or not. It is generally decided that the insertion depth of the fuel nozzle with advertising badge was not reduced with the tested vehicle makes. For some types, there are remarks that contact with the body, the tank cover attached to the filler flap or the filler flap occurred. Such contact, however, does not hinder inserting the fuel nozzle into the tank filler neck, i.e. contact does not aggravate handling during fuelling the respective vehicle.

4 Conclusions

The flow conditions in the immediate suction area of the fuel nozzle, type: Elaflex ZVA 200 GR with vapour suction apparatus 92, PTB no.: III B/S 2197, are not impaired after the ALVERN PVC advertising badge was fitted on the nozzle. This means that a reduction of the recovery efficiency due to the badge can be ruled out.

100 vehicle makes of the 22 major European and Japanese car manufacturers were tested in order to establish whether the insertion depth of the fuel nozzle was reduced due to the advertising badge. This test neither gave rise to objections. Thus, it can be assumed that the recovery efficiency of the fuel nozzle, type: Elaflex ZVA 200 GR with vapour suction apparatus 92, is not impaired after the ALVERN PVC advertising badge was fitted on the nozzle.

Cologne, 3rd October 1995
934 hl-gü

Sign. Dipl.-Ing. D Hassel

Table 1: Assessment of insertion depth of fuel nozzles with advertising badge, in the tank filler neck of different vehicle makes

Cons. no.	Manufacturer	Type	Insertion depth of the advertising ZVA		Remarks
			No objections	Reduced	
1	ALFA ROMEO	33	X		
2		77	X		
3		145	X		
4		155	X		
5		164	X		
6	AUDI	80	X		
7		100/44	X		
8		100	X		
9		A 4	X		
10		A 6	X		
11		A 8	X		
12	BMW	316-328	X		With all BMW makes, the fuel nozzle touches the tank cover attached to the filler flap.
13		316 Comp.	X		
14		5 series	X		
15		7 series	X		
16	CITROEN	Ax	X		
17		Xantia	X		
18		Zx	X		
19		Xm	X		
20	DAIHATSU	Cuore	X		
21		Charade	X		
22	FIAT	Panda	X		
23		Uno	X		
24		Croma	X		
25		Tempra	X		
26		Tipo	X		
27		Cinquecento	X		Contact with body, see photo
28		Punto	X		
29	FORD	Fiesta	X		
30		Escort	X		
31		Sierra	X		
32		Mondeo	X		
33		Scorpio	X		
34	HONDA	Civic	X		
35		Accord	X		
36		Preleude	X		
37	HYUNDAI	Pony	X		
38		Lantra	X		

Table 1 continued

Cons. no.	Manufacturer	Type	Insertion depth of the advertising ZVA		Remarks
			No objections	Reduced	
39	MAZDA	121	X		
40		323	X		
41		626	X		
42		929	X		
43		MX 3	X		
44		MX 5	X		
45		MX 6	X		
46	MITSUBISHI	Colt	X		
47		Lancer	X		
48		Gallant	X		
49		Space W	X		Contact with filler flap
50		Pajero	X		
51	MERCEDES-B.	C180	X		
52		C200-280	X		
53		260S-420S	X		
54		180-190E	X		
55		300S-600S	X		
56	NISSAN	Micra	X		
57		Cherry	X		
58		Sunny	X		
59		Primera	X		
60		Patrol	X		
61		Terrano II	X		Slight contact with body
62	OPEL	Kadett E	X		
63		Vectra	X		
64		Corsa	X		
65		Tigra	X		
66		Astra	X		
67		Omega	X		
68		Calibra	X		
69		Senator	X		
70	PEUGEOT	106	X		
71		205	X		
72		305	X		
73		306	X		Slight contact
74		309	X		
75		405	X		
76		605	X		
77	PORSCHE	911-993	X		
78		924	X		
79		928	X		
80	ROVER	Mini	X		

Table 1 continued

Cons. no.	Manufacturer	Type	Insertion depth of the advertising ZVA		Remarks
			No objections	Reduced	
81	RENAULT	Twingo	X		
82		R5	X		
83		Clio	X		Body contact to the right
84		R19	X		
85		Laguna	X		
86	SEAT	Ibiza	X		
87		Toledo	X		
88	TOYOTA	Starlet	X		
89		Corolla	X		Contact with filler flap
90		Carina	X		
91		Celica	X		Contact with filler flap
92	VOLVO	340-360	X		
93		740-760	X		
94		940-960	X		
95	VW	Polo	X		
96		Golf II	X		
97		Golf III	X		
98		Passat	X		
99		Vento	X		
100		Corado	X		

**Expert Opinion on the Elaflex ZVA
Fuel Nozzle with outside Vapour Recovery Channel and ALVERN PVC Advertising
Badge**

Applicant: ALVERN Norway

Assignment no.: 934 / 376028

Person in charge: Dipl.-Ing. D Hassel (reporting)
J Hunsinger (conduction of tests with vehicles)

Assignment of: 27th June 1996 (Peter H Platzer)

1 Tasks

ALVERN has developed a PVC advertising badge which can be fitted on the Elaflex fuel nozzle, type: Elaflex ZVA 200 GR with vapour suction apparatus 92, PTB no.: III B/S 2197. Meanwhile, such badge was modified to be used with the Elaflex ZVA Slimline GR fuel nozzle with outside vapour recovery channel. The task was to assess whether the advertising badge would impair vapour recovery.

2 Conduction of Tests

Following the previous expert opinion of 3rd October 1995, it was assessed whether the insertion depth of the fuel nozzle is impaired due to the structural modifications to the advertising badge.

3 Results of Insertion Depth Assessment

The test results for all tested vehicle makes are listed in table 1. For this assessment, the same range of vehicles was used as applicable for the previous expert opinion. During assessment, the tests focused on vehicle makes with which contact with the car bodies was observed. The modified advertising badge causes contact with the bodies of certain vehicle makes, however, the insertion depth of the fuel nozzle is not reduced.

4 Conclusions

The flow conditions in the immediate suction area of the fuel nozzle, type: Elaflex ZVA Slimline GR with vapour suction apparatus 92 and outside vapour recovery, PTB no.: III B/S 2197, are not impaired after the ALVERN PVC advertising badge was fitted on the nozzle. This means that a reduction of the recovery efficiency due to the badge can be ruled out.

Assignment no.: 934 / 376028
Applicant: ALVERN Norway

Page: 3
of: 6

[logo]
TÜV
Rheinland

The vehicles, whose range was reduced as compared to the previous assessment, were tested as to establish whether the insertion depth of the fuel nozzle is reduced due to the advertising badge. This test neither gave rise to objections. Thus, it can be assumed that the recovery efficiency of the fuel nozzle, type: Elaflex Slimline GR with vapour suction apparatus 92 and outside vapour recovery, is not impaired after the ALVERN PVC advertising badge was fitted on the nozzle.

Cologne, 15th July 1996
934 hl-gü

Sign. Dipl.-Ing. D Hassel

Table 1: Assessment of insertion depth of fuel nozzles with advertising badge, in the tank filler neck of different vehicle makes

Cons. no.	Manufacturer	Type	Problems with the advertising ZVA		Remarks
			[yes]	[no]	
1	ALFA ROMEO	33		-	
2		77		-	
3		145		-	
4		155		-	
5		164		-	
6	AUDI	80		X	
7		100/44		X	
8		100		X	
9		A 4		X	
10		A 6		X	
11	A 8		X		
12	BMW	316-328		X	With all BMW makes, the fuel nozzle touches the tank cover attached to the filler flap.
13		316 Comp.		X	
14		5 series		X	
15		7 series		X	
16	CITROEN	Ax		X	
17		Xantia		X	
18		Zx		X	
19		Xm		X	
20	DAIHATSU	Cuore		X	
21		Charade		X	
22	FIAT	Panda		X	
23		Uno		X	
24		Croma		X	
25		Tempra		X	
26		Tipo		X	
27		Cinquecento		X	Contact with body
28		Punto		X	
29	FORD	Fiesta		X	
30		Escort		X	
31		Sierra		X	
32		Mondeo		X	
33		Scorpio		X	
34	HONDA	Civic		X	
35		Accord		X	
36		Preleude		-	
37	HYUNDAI	Pony		-	
38		Lantra		-	
39	MAZDA	121		X	
40		323		X	
41		626		-	
42		929		-	
43		MX 3		-	
44		MX 5		X	
45		MX 6		X	

Table 1 continued

Cons. no.	Manufacturer	Type	Problems with the advertising ZVA		Remarks
			[yes]	[no]	
46	MITSUBISHI	Colt		X	
47		Lancer		X	
48		Gallant		X	
49		Space W		X	Contact with filler flap
50		Pajero		X	
51		MERCEDES-B.	C180		X
52	C200-280			X	
53	260S-420S			X	
54	180-190E			X	
55	300S-600S			X	
56	NISSAN	Micra		X	
57		Cherry		X	
58		Sunny		X	
59		Primera		X	
60		Patrol		-	
61		Terrano II		-	Slight contact with body
62	OPEL	Kadett E		X	
63		Vectra		X	
64		Corsa		X	
65		Tigra		X	
66		Astra		X	
67		Omega		X	
68		Calibra		X	
69		Senator		X	
70		PEUGEOT	106		X
71	205			X	
72	305			X	
73	306			X	
74	309			X	
75	405			X	
76	605			X	
77	PORSCHE	911-993		X	
78		924		X	
79		928		X	
80	ROVER	Mini		X	
81	RENAULT	Twingo		X	
82		R5		X	
83		Clio		X	Body contact to the right
84		R19		X	
85		Laguna		X	
86	SEAT	Ibiza		X	
87		Toledo		X	
88	TOYOTA	Starlet		X	
89		Corolla		X	Contact with filler flap
90		Carina		X	
91		Celica		X	Contact with filler flap

Table 1 continued

Cons. no.	Manufacturer	Type	Problems with the advertising ZVA		Remarks
			[yes]	[no]	
92	VOLVO	340-360		X	
93		740-760		X	
94		940-960			X
95	VW	Polo		X	
96		Golf II		X	
97		Golf III		X	
98		Passat		X	
99		Vento		X	
100		Corado			X

**Expert Opinion on the Elaflex ZVA
Fuel Nozzle with ALVERN Duroplastic Advertising Badge**

Applicant: ALVERN Norway

Assignment of: 13th March 1998 (Michael Götze)

Assignment no.: 438 / 378013

Person in charge: Dipl.-Ing. D Hassel (reporting)
Techn. D Plettau (conduction of tests with vehicles and preparation
of reports)
J Hunsinger (conduction of tests with vehicles)

Competent body: TÜV Rheinland Sicherheit und Umweltschutz GmbH
Institut für Umweltschutz und Energietechnik (Institute for Envi-
ronmental Protection and Energy Technology)
Testzentrum Energietechnik
Phone: +49.221.806-2479
Fax: +49.221.806-1756

Date: 19th May 1998

Number of pages: 1 - 6

1 Tasks

The PVC advertising badge developed by ALVERN is to be replaced by a duroplastic version. The advertising badge is fixed to the Elaflex fuel nozzle, type: Elaflex ZVA 200 GR with vapour suction apparatus 92, PTB no.: III B/S 2197.

The task was to assess whether the advertising badge modified as regards its material would impair vapour recovery.

2 Conduction of Tests

Following the previous expert opinions of 3rd October 1995 and/or 27th June 1996, it was assessed whether the insertion depth of the fuel nozzle is impaired due to the structural modifications to the advertising badge.

3 Results of Insertion Depth Assessment

The test results for all tested vehicle makes are listed in table 1. For this assessment, the same range of vehicles was used as applicable for the previous expert opinions. Such vehicle range was complemented by additional new types. During assessment, the tests focused on vehicle makes with which contact with the car bodies was observed. The modified advertising badge touches the bodies of certain vehicle makes, however, the insertion depth of the fuel nozzle is not reduced.

4 Conclusions

The flow conditions in the immediate suction area of the fuel nozzle, type: Elaflex ZVA Slimline GR with vapour suction apparatus 92, PTB no.: III B/S 2197, are not impaired after the ALVERN duroplastic advertising badge was attached. This means that a reduction of the recovery efficiency due to the badge can be ruled out.

Assignment no.: 438 / 378013
Applicant: ALVERN Norway

Page: 3
of: 6

[logo]
TÜV
Rheinland

The vehicles, whose range was reduced as compared to the previous assessment, were tested as to establish whether the insertion depth of the fuel nozzle was reduced due to the advertising badge. This test neither gave rise to objections. Thus, it can be assumed that the recovery efficiency of the fuel nozzle, type: Elaflex Slimline GR with vapour suction apparatus 92, is not impaired when the ALVERN duroplastic advertising badge is attached.

Cologne, 19th May 1998
438 hl-pl

Sign. Dipl.-Ing. D Hassel

Table 1: Assessment of insertion depth of fuel nozzles with advertising badge, in the tank filler neck of different vehicle makes

Cons. no.	Manufacturer	Type	Insertion depth of the advertising ZVA No objections	Remarks
1	ALFA ROMEO	33	X	
2		77	X	
3		145	X	
4		155	X	
5		164	X	
6	AUDI	80	X	
7		100/44	X	
8		100	X	
9		A 4	X	
10		A 6	X	
11		A 8	X	
12	BMW	316-328	X	With all BMW makes, the fuel nozzle touches the tank cover attached to the filler flap.
13		316 Comp.	X	
New		New 3 series	X	
New		Z3	X	
14		5 series	X	
15		7 series	X	
New		New 5 series	X	
New		New 7 series	X	
16	CITROEN	Ax	X	
17		Xantia	X	
18		Zx	X	
19		Xm	X	
20	DAIHATSU	Cuore	X	
21		Charade	X	
22	FIAT	Panda	X	
23		Uno	X	
24		Croma	X	
25		Tempra	X	
26		Tipo	X	
27		Cinquecento	X	Contact with body
28		Punto	X	
29		FORD	Fiesta	X
30	Escort		X	
31	Sierra		X	
32	Mondeo		X	
33	Scorpio		X	
34	HONDA	Civic	X	
35		Accord	X	
36		Preleude	X	
37	HYUNDAI	Pony	X	
38		Lantra	X	

Table 1 continued

Cons. no.	Manufacturer	Type	Insertion depth of the advertising ZVA No objections	Remarks
39	MAZDA	121	X	
40		323	X	
41		626	X	
42		929	X	
43		MX 3	X	
44		MX 5	X	
45		MX 6	X	
46		MITSUBISHI	Colt	X
47	Lancer		X	
48	Gallant		X	
New	Carisma		X	
49	Space W		X	Contact with filler flap
50	Pajero		X	
51	MERCEDES-B.		C180	X
52		C200-280	X	
53		260S-420S	X	
54		180-190E	X	
55		300S-600S	X	
56	NISSAN	Micra	X	
57		Cherry	X	
58		Sunny	X	
New		Almera	X	
59		Primera	X	
60		Patrol	X	
61		Terrano II	X	Slight contact with body
62	OPEL	Kadett E	X	
63		Vectra	X	
64		Corsa	X	
65		Tigra	X	
66		Astra	X	
67		Omega	X	
68		Calibra	X	
69		Senator	X	
70	PEUGEOT	106	X	
71		205	X	
72		305	X	
73		306	X	Slight contact
74		309	X	
75		405	X	
76		605	X	
77	PORSCHE	911-993	X	
78		924	X	
79		928	X	
80	ROVER	Mini	X	

Table 1 continued

Cons. no.	Manufacturer	Type	Insertion depth of the advertising ZVA No objections	Remarks
81	RENAULT	Twingo	X	
82		R5	X	
83		Clio	X	Body contact to the right
84		R19	X	
New		Megane	X	
85		Laguna	X	
86	SEAT	Ibiza	X	
87		Toledo	X	
88	TOYOTA	Starlet	X	
89		Corolla	X	Contact with filler flap
90		Carina	X	
91		Celica	X	Contact with filler flap
92	VOLVO	340-360	X	
New		V40	X	
93		740-760	X	
New		V70	X	
94		940-960	X	
95	VW	Polo	X	
96		Golf II	X	
97		Golf III	X	
New		Golf IV	X	
98		Passat	X	
99		Vento	X	
100		Corado	X	

Hamburg, 6th October 1995
2543 ru
File: 113 BM Alvern
Assign. no.: 113 DV 29450

Report
**on the Assessment of Protective PVC Coatings with Advertising Badge for
Self-Shutting Fuel Nozzles**

<u>1. Object:</u>	Protective PVC coating with advertising badge for fuel nozzles
<u>2. Manufacturer and applicant:</u>	Alvern-Norway AS
<u>3. Test assignment and test documents:</u>	Letter by the applicant of 6 th September 1995 Protective coating specimens Documents in writing
<u>4. In accordance with:</u>	<i>Technische Regel für brennbare Flüssigkeiten</i> (German Technical Rule for Inflammable Liquids – TRbF) no. 513
<u>5. Intended use:</u>	The manufacturer intends to use the protective coatings with the ZVA-Slimline and ZVA 200 GR fuel nozzles by Hiby, which carry design approval.

6. Tests:

The tests aimed at establishing whether the safe functioning of the fuel nozzles, when used with protective coating, was still ensured, and whether the requirements according to TRbF 513 were complied with.

To this end, tests were conducted at the test rig on 12th September 1995. Two ZVA fuel nozzles with protective coating by ALVERN were tested.

7. Results:

The conducted drop tests revealed that the fuel nozzles remain securely shut when hitting the concrete ground from a height of 1m. The following test for the functioning of the fuel nozzles gave no rise to objections.

The fuel nozzles with the protective coating are easy to use and, when doing so, pose no risk of injury. The nozzles retained all control functions.

8. Conclusions

Based on the test results gained at the test rig and the submitted documents, no safety-related concerns were established as to using the PVC protective coating with advertising badges for trials at petrol stations if the following conditions are complied with:

- The protective coating must only be used with the ZVA 200 GR and/or the ZVA-Slimline fuel nozzles.
- Only PVC material must be used for transparent covers (product specification GB 100.00.000.41).

9. Remarks:

The present report only deals with the safety-related aspects for using the protective coating. Any decision as regards the formal aspects of use (modification of a fuel nozzle with design approval) requires consultation between the manufacturer and the Physikalisch-Technische Bundesanstalt.

[signature]
Russnak
Authorised expert of the
Technischer Überwachungs-Verein Nord e.V.
Test centre for self-shutting fuel nozzles

Hamburg, 21st August 1996
2543 ru
File: 113 BM Alvern

Addendum 1
**to the Report on the Assessment of Protective PVC Coatings with Advertising Badge for
Self-Shutting Fuel Nozzles, issued on 6th October 1995**

1. Object:

PVC protective coating with advertising badge for fuel nozzles

2. Manufacturer and applicant:

Alvern-Norway A/S

3. Test assignment and test documents:

Assignment of 15th July 1996 (Mr Plazer)
Protective coating test specimens
Documents in writing

4. In accordance with:

Technische Regel für brennbare Flüssigkeiten (German Technical Rule for Inflammable Liquids – TRbF) no. 513

5. Intended use:

The manufacturer intends to use the PVC protective coating also with „ZVA-Slimline GR“ (with outside recovery channel, design approval no. 08/PTB III B/S 1080, addendum 5) fuel nozzles by Hiby.

6. Modifications with regard to previous designs:

As compared to previous designs (ZVA-Slimline and ZVA 200 GR), the protective coating is not to replace the existing protective coating with the "ZVA-Slimline GR" but to be fitted on the existing protective coating.

Furthermore, it is intended to use transparent covers made from polycarbonate (PC LEXAN 943 A).

7. Tests:

The tests aimed at establishing whether the safe functioning of the fuel nozzles, when used with protective coating, was still ensured, and whether the requirements according to TRbF 513 were complied with.

To this end, tests were conducted at the test rig on 21st August 1996. A ZVA-Slimline GR fuel nozzle with protective coating by ALVERN was tested.

8. Results:

The fuel nozzles with the protective coating are easy to use and, when doing so, pose no risk of injury. The nozzles retained all control functions. The conducted drop tests revealed that the fuel nozzles remain securely shut when hitting the concrete ground from a height of 1m.

The positive results from the test report by SINTEF (No. 846010.60/96.211) concerning fire tests with the transparent cover are accepted.

9. Conclusions

Based on the test results gained at the test rig and the submitted documents, TÜV Nord acknowledges that no safety-related concerns were raised as to using the current PVC protective coating with advertising badges as well as to using the modified "ZVA-Slimline GR" version and the new transparent polycarbonate covers. However, such use requires tests to be conducted by the Physikalisch-Technische Bundesanstalt in order to verify that no hazardous electrostatic discharge occurs.

[signature]

Russnak

Authorised expert of the

Technischer Überwachungs-Verein Nord e.V.

Test centre for self-shutting fuel nozzles

SYSTEMS ENGINEERING

Hamburg, 26th June 1998
2543 ru
File: 113 BM Alvern
Assign. no.: 0111 BM 02080

Report
**on the Assessment of Protective PVC Coatings with Advertising Badge for
Self-Shutting Fuel Nozzles**

1 Object

Protective PVC coating with advertising badge for fuel nozzles

2 Importing Company

Alvern GmbH
Europe Headquarter
Mexikoring 19
22297 Hamburg

3 Test assignment and test documents

Letter by the manufacturer of 26th March 1998
Protective coating specimens
Documents in writing (incl. test report on flammability dated 30th April 1997, materials specifications, engineering drawings)

4 In accordance with

Technische Regel für brennbare Flüssigkeiten (German Technical Rule for Inflammable Liquids – TRbF) no. 513

5 Intended use

In the future, Alvern GmbH intends to use protective coatings of a different material and design instead of the PVC coating used since 1995.

6 Description of Modifications

The protective coating is made from Xenoy CL 100 and consists of two components which are, as one unit, attached to the fuel nozzle.

Then, the transparent cover (same material as with the previous designs) is attached. Contrary to the flexible protective coating made from soft PVC, the new protective coating is made from “hard” Xenoy CL 100 and accordingly is hard and can be removed for repairs from the fuel nozzles if such are required.

7 Tests and Test Results

The tests aimed at establishing whether the safe functioning of the fuel nozzles, with the modified protective coating, is still ensured, and whether the requirements according to TRbF 513 were complied with.

To this end, tests were conducted at the test rig on 15th April 1998. Two ZVA fuel nozzles (type. ZVA 200 GR, PTB no. III B/S 2197) with modified protective coating were tested at room temperature. The conducted drop tests revealed that the fuel nozzles remain securely shut when hitting the concrete ground from a height of 1m. Apart from inevitable scratches and dents to the protective coating, no damages to the fuel nozzle or the protective coating occurred.

The fuel nozzles with the protective coating are easy to use and, when doing so, pose no risk of injury. The nozzles retain all control functions.

8 Conclusions

Based on the test results gained at the test rig and the submitted documents, TÜV Nord, test centre for self-shutting fuel nozzles, acknowledges that no safety-related concerns were raised as to using the modified protective coating with advertising badges for use at petrol stations with ZVA 200 GR fuel nozzles (PTB no. III B/S 2197).

9 Remarks:

PTB Brunswick will conduct tests for the electrostatic discharge capacity while TÜV Rheinland Cologne is responsible for conducting vapour recovery tests.

[signature]
Russnak
Authorised expert of the
Technischer Überwachungs-Verein Nord e.V.
Test centre for self-shutting fuel nozzles

