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## Test Report

**Order No.:** 55280067  
**Test Report No.:** PB2342255  
**Version 2 replaces report version 1**

**Client:** Autoland Prosta Spółka Akcyjna  
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**Date of order:** Sep 15, 2023  
**Sample received:** Sep 29, 2023  
**Number of samples:** 1 sample(s)  
**Scope of investigation:** Testing of windscreen cleaners  
**Testing period:** Sep 29, 2023 - Dec 01, 2023


### Test result:

- see following pages -

Accredited Analytical Laboratory D-PL-11060-03-00 in Stuttgart and Halle (Saale)

**1 Sample designation**

Sample no.	Designation
55280067001	Winter Screen Wash Concentrate, Product No.: 95/09/23

Sample no.	Sample picture
55280067001	

## 2 Polycarbonate compatibility

### Test method:

An uncoated polycarbonate bar is mounted into the test gadget, tempered to 80 °C and covered with the tested sample. The testing is performed in three replicates.

### Conditions:

- strain of the outer fibre: each 1 %
- sample amount: approx. 0,5 ml
- test duration: 48 hours at 80 °C

### Test result:

Sample no.	Assessment	Test method
55280067001	no stress cracking	DIN EN ISO 22088-3:2006-11 <sup>(a)</sup>

## 3 Rubber compatibility according to DEKRA test specification

### Test method:

Wiper materials and rubber seals for automotive applications are tempered at room temperature and covered with the test sample for 24 hours. Afterwards a visual examination of surface changes is carried out.

### Test result:

Sample no.	Assessment	Test method
55280067001	no change	QMA 1425:2010-05 <sup>(n)</sup>

#### 4 Lacquer compatibility according to DEKRA test specification

##### Test method:

Lacquered plates with 2-K-lacquering (moonland grey metallic (OPEL) and black metallic (MB 189)) and Uni lacquering (dark blue (VW Y5L) and imola red II (BMW)) are covered with the test sample and tempered at room temperature and also at 50°C for 24 hours. Afterwards a visual examination of surface changes is carried out.

##### Test results:

##### 4.1 grey, metallic (OPEL moonland grey)

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	QMA 1400:2023-01 <sup>(n)</sup>

##### 4.2 black, metallic (MB 189)

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	QMA 1400:2023-01 <sup>(n)</sup>

##### 4.3 dark blue, uni (VW Y5L)

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	QMA 1400:2023-01 <sup>(n)</sup>

##### 4.4 red, uni (BMW imolared II)

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	QMA 1400:2023-01 <sup>(n)</sup>

## 5 Metal compatibility according to DEKRA test specification

### Test method:

Metals for automotive applications are tempered at room temperature and at 50°C and covered with the test sample for 24 hours.  
Afterwards a visual examination of surface changes is carried out.

### Test results:

#### 5.1 Aluminium compatibility (anodized)

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	QMA 1443:2012-02 <sup>(n)</sup>

#### 5.2 Aluminium compatibility (raw)

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	QMA 1443:2012-02 <sup>(n)</sup>

#### 5.3 Material compatibility with copper

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	slight discoloration <sup>1</sup>	slight discoloration <sup>1</sup>	QMA 1443:2012-02 <sup>(n)</sup>

<sup>1</sup> not negatively evaluated yet

#### 5.4 Material compatibility with brass

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	slight discoloration <sup>1</sup>	slight discoloration <sup>1</sup>	QMA 1443:2012-02 <sup>(n)</sup>

<sup>1</sup> not negatively evaluated yet

#### 5.5 Material compatibility with steel

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	discoloration <sup>1</sup>	slight discoloration <sup>1</sup>	QMA 1443:2012-02 <sup>(n)</sup>

<sup>1</sup> not negatively evaluated yet

**5.6 Material compatibility with stainless steel**

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	QMA 1443:2012-02 <sup>(n)</sup>

**5.7 Material compatibility with chromed steel**

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	QMA 1443:2012-02 <sup>(n)</sup>

## 6 Plastics compatibility according to DEKRA test specification

### Test method:

Various plastics and copolymeres are tempered at room temperature and also at 50°C and covered with the tested sample for 24 hours.  
Afterwards a visual examination of surface changes is carried out.

### Test results:

#### 6.1 Polyethylene (PE-HD)

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	Lab-AA-1478:2019-01 <sup>(n)</sup>

#### 6.2 Polypropylene (PP)

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	Lab-AA-1478:2019-01 <sup>(n)</sup>

#### 6.3 Polystyrene (PS)

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	Lab-AA-1478:2019-01 <sup>(n)</sup>

#### 6.4 Polymethyl methacrylate (PMMA)

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	Lab-AA-1478:2019-01 <sup>(n)</sup>

#### 6.5 Acrylonitril-Butadiene-Styrene (ABS)

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	Lab-AA-1478:2019-01 <sup>(n)</sup>

#### 6.6 Polyoxymethylene (POM)

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	Lab-AA-1478:2019-01 <sup>(n)</sup>

**6.7 Polyvinyl chloride (PVC)**

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	no change	no change	Lab-AA-1478:2019-01 <sup>(n)</sup>

**6.8 Polyamide (PA)**

Sample no.	Assessment		Test method
	room temperature	50°C	
55280067001	swelling <sup>1</sup>	swelling <sup>1</sup>	Lab-AA-1478:2019-01 <sup>(n)</sup>

<sup>1</sup> not negatively evaluated yet



## 7 Flash point measurement

Sample no.	Result [°C]	Test method
55280067001	22.0	DIN EN ISO 13736:2022-12 <sup>(a)</sup>

### Annotation:

Measuring tolerance of the determination:  $\pm 1$  °C. The uncertainty of measurement given in the standard is fulfilled.

## 8 Freezing point measurements

Sample no.	Dilution	Result [°C]	Test method
55280067001	Concentrate	<-60	ASTM D 1177:2017 <sup>(a)</sup>
	2:1	<-35	
	1:1	-22	
	1:2	-13	

### Annotation:

Measuring tolerance of the determination about  $\pm 1$  °C.

## 9 Measurement of pH value (20 °C)

Sample no.	Result	Test method
55280067001	8.4	DIN EN ISO 10523:2012-04 <sup>(a)</sup>

## 10 Measurement of density

Sample no.	Result [g/cm <sup>3</sup> ]	Test method
55280067001	0.906	DIN 51757:2011-01 <sup>(a)</sup>

## 11 Measurement of refraction index

Sample no.	Result	Test method
55280067001	1.3734	DIN 51423-2:2010-02 <sup>(n)</sup>

**12 Measurement of cinematic viscosity**

Sample no.	Dilution	Result [mm <sup>2</sup> /s]	Requirement [mm <sup>2</sup> /s]	Test method
55280067001	1:1	13.3	14.5	ASTM D 7042:2020 <sup>(Pa)</sup>

**Assessment:**

According to ÖNORM V 5124 the sample is applicable for fan nozzles.

### 13 Solvent Screening

#### 13.1 Content of aromatics (BTEX) with GC/FID

Sample no.	Substance	Result [% by weight]	Requirement [% by weight]	Test method
55280067001	Benzene	< 0.1	< 0.1	QMA 1416:2014-08 <sup>(a)</sup>
	Toluene	< 0.1	< 0.1	
	Ethylbenzene	< 0,1	< 0.1	
	Xylene	< 0,1	< 0.1	

#### 13.2 Content of chlorinated hydrocarbons (CHC) with GC/FID

Sample no.	Substance	Result [% by weight]	Requirement [% by weight]	Test method
55280067001	Dichloro-methane	< 0,1	< 0.1	QMA 1416:2014-08 <sup>(a)</sup>
	Trichloro-methane (Chloroform)	< 0,1	< 0.1	
	1,1,1-Trichloroethane	< 0,1	< 0.1	
	Trichloroethene	< 0,1	< 0.1	
	Tetrachloroethylene (PER)	< 0,1	< 0.1	
	1,2-Dichlorobenzene	< 0,1	< 0.1	

#### 13.3 Content of methanol with GC/FID

Sample no.	Substance	Result [% by weight]	Requirement [% by weight]	Test method
55280067001	Methanol	< 0.1	< 0.1	DEKRA test method (GC-MS) <sup>(n)</sup>

## 14 Notifiable fragrances

### Test results:

Parameter	CAS-Nr.	Unit	Result	Limit value <sup>1</sup>	Test method
d-Limonene	5989-27-5	%	< 0.0015	0.01	QMA 1426:2014-01 <sup>(n)</sup>
Linalool	78-70-6		< 0.0015		
Benzyl alcohol	100-51-6		< 0.0015		
Methylheptincarbonat / Methyl-2-ocynoate	111-12-6		< 0.0015		
Citronellol	106-22-9		< 0.0015		
Geraniol	106-24-1		< 0.0015		
Citral	5392-40-5		< 0.0015		
Cinnamalaldehyde	122-40-7		< 0.0015		
Hydroxycitronellal	107-75-5		< 0.0015		
Anise alcohol	105-13-5		< 0.0015		
Cinnamyl alcohol	104-55-2		< 0.0015		
Eugenol	97-53-0		< 0.0015		
Alpha-isomethyl-ionone	127-51-5		< 0.0015		
Isoeugenol	97-54-1		< 0.0015		
2-(4-tert-Butylbenzyl)propionaldehyde	80-54-6		< 0.0015		
Coumarin	91-64-5		< 0.0015		
Evernia prunastri extract	90028-68-5		< 0.0015		
Amyl cinnamal	101-85-9		< 0.0015		
Farnesol	4602-84-0		< 0.0015		
Amylcinnamyl alcohol	104-54-1		< 0.0015		
Hydroxyisohexyl-3-cyclohexene carboxaldehyde	31906-04-4	< 0.0015			
Hexyl Cinnamal	101-86-0	< 0.0015			
Benzyl benzoate	120-51-4	< 0.0015			
Benzyl salicylate	118-58-1	< 0.0015			
Evernia furfuracea extract	90028-67-4	< 0.0015			
Benzyl cinnamate	103-41-3	< 0.0015			

<sup>1</sup> If added at concentrations exceeding 0.01 % by weight, the allergenic fragrances must be indicated on the contents list of cleaning products

### Assessment:

There were no substances detected with a content of  $\geq 0.01$  % w/w.

## 15 Cleaning performance according to DEKRA test specification

### Test method:

The front screen of a VW Golf VI was prepared with a specific hydrophobic test dirt mixture according to "IKW recommendation for the quality evaluation of winter screen cleaners for the windscreen washer system" from 2005.

The performance of the cleaner was assessed by counting the „cleaning cycles“ to remove residues of the dirt mixture to get a „free sight“ through the front screen and to wash the front screen totally clean. A „cleaning cycle“ is defined as one turn of the wiper while the cleaner is added, followed by three further turns of the wiper alone.

The test is performed three times (a to c) in a climate chamber in comparison to a standard product.

### Test conditions:

Relative humidity [%]:	approx. 55
Temperature:	approx. +4 °C
Sample dilution:	1:2

### 15.1 Test results

Sample no.	Cleaning Performance Number of cleaning cycles								Test method
	„free sight“				„clean“				
	a	b	c	Æ	a	b	c	Æ	
55280067001 (1:2)	4	4	4	4.0	5	5	5	5.0	QMA 1475:2012-04 <sup>(a)</sup>
Reference	6	6	6	6.0	7	7	7	7.0	

### 15.2 Set of criteria („clean“)

very good cleaning performance:	≤ 7 cycles
good cleaning performance:	8-9 cycles
adequate cleaning performance:	10-11 cycles
inadequate cleaning performance:	> 11 cycles

### 15.3 Assessment

The tested sample showed "very good" cleaning performance on "hydrophobic test dirt mixture".

## 16 Behaviour during the continuous application of salt test dirt

### Test method:

The glass screen inside of a special climate chamber is properly cleaned. The glass screen and the sample are afterwards conditioned to an ambient air temperature which is below -5 °C.

Salt test dirt according to IKW recommendation for the quality assessment of winter windscreen cleaners for the windscreen washer system from 2005 is applied subsequently and spread across the glass screen with a wiper. Then the windscreen washer system with the temperate sample to be tested is exerted under a continuous salt test dirt spraying (drizzle rain simulation at minus temperatures). The behaviour of the sample on the windscreen is evaluated looking against a source of light.

### Test conditions:

Temperature: approx. -10 °C

### 16.1 Test results

Sample no.	Dilution	Assessment
55280067001	2:1	no noticeable problems / free sight
55280067001	1:1	no noticeable problems / free sight
Reference	2:1	no noticeable problems / free sight

### 16.2 Assessment

Some winter screen cleaners lead to the formation of a white film on the windscreen at low temperatures and continuous salt test dirt spraying. Regarding safety concerns this may cause a decrease of visibility under winterly traffic conditions (continuous salt-containing drizzle rain at minus temperatures).

The tested sample showed no noticeable problems.

## 17 Hard water stability according DEKRA criteria

### Test method:

50 mL or 100 mL of the sample to be examined are mixed with demineralised water and synthetic hard water.

Composition of the synthetic hard water:

Sodium sulphate:	148 mg/L
Sodium chloride:	165 mg/L
Sodium hydrogencarbonate:	138 mg/L
Calcium chloride:	275 mg/L

The mixtures are tempered at +60 °C for 10 days. Afterwards a visual examination of precipitates is carried out at +60 °C, at room temperature and at +4 °C.

### Test results:

#### 17.1 Mixture with demineralised water

Sample no.	Dilution	Assessment
55280067001	100 mL sample + 100 mL demineralised water	no precipitate
	50 mL sample + 100 mL demineralised water	no precipitate

#### 17.2 Mixture with synthetic hard water

Sample no.	Dilution	Assessment
55280067001	100 mL sample + 100 mL Hard water	no precipitate
	50 mL sample + 100 mL Hard water	no precipitate

#### 17.3 Assessment

The tested sample showed no noticeable problems.

**18 Evaluation of handling, labelling and consumer protection**

Sample no.	Assessment	
55280067001	Safety data sheet	complete and correct
	Address	complete and correct
	Labelling CLP 1272/2008	complete and correct
	Package instructions	complete and correct
	Recycling information	complete and correct
	Childproofness <sup>1</sup>	sufficient content of bittern
	Closeness	complete and correct

<sup>1</sup> Requirement DEKRA product label: childproof closure or adequate content of bittern

The evaluation of handling, labelling and consumer protection may only be carried out when the retail package and safety data sheet are provided.

**19 Assessment**

Requirements for obtaining a DEKRA product label are **fulfilled**.

**Remarks:**

**Change to report version 1: Company name and address revised.**

The test results refer exclusively to the samples specified. The decision rule for the evaluation of conformity of test results can be found at <https://www.dekra.de/media/entscheidungsregel-bewertung-konformitaet-pruefergebnisse-d-v3-pdf-pdf.pdf> <https://www.dekra.de/media/entscheidungsregel-bewertung-konformitaet-pruefergebnisse-gb-v3-pdf.pdf>

A reproduction in excerpts of the test report must not be made without the written consent of the test laboratory. Chemical and material blanks are taken into account when determining the results. Samples will be stored for max. 6 months (for exceptions and specific storage times see QMH).

Declaration:

a = accredited test method, n = not accredited test method,

Pa = Analysis carried out by partner laboratory (accredited test method), Pn = Analysis carried out by partner laboratory (not accredited test method),

Ha = Analysis carried out by DEKRA lab Halle (accredited test method), Hn = Analysis carried out by DEKRA lab Halle (not accredited test method),

SBa = Analysis carried out by DEKRA lab Saarbrücken (accredited test method), SBn = Analysis carried out by DEKRA lab Saarbrücken (not accredited test method),

Ba = Analysis carried out by DEKRA lab Bretten (accredited test method), Bn = Analysis carried out by DEKRA lab Bretten (not accredited test method)

Stuttgart, Jan 11, 2024

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