

DEKRA Automobil GmbH Handwerkstr. 15 D-70565 Stuttgart

AUTOLAND
J. Kisielewski & J Moranski Sp.j.
ul: Mickiewicza 28
43-250 PAWLOWICE
POLEN

DEKRA Automobil GmbH
Labor für Umwelt- und Produktanalytik
Handwerkstr. 15
70565 Stuttgart
Tel. +49.711.7861-3548
Fax +49.711.7861-3534

Contact Thilo Kunst
Tel. direct +49.711.7861-3550
E-Mail thilo.kunst@dekra.com
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Test Report: 55179277/13

Project Number: 55179277

Client: DEKRA Certification Sp. z.o.o.
Miroslaw Hanc
Plac Solny 20
50-063 WROCLAW
POLEN

Date of order: 17.01.2013

Sampled by: Mieczyslaw Franc, Jolanta Rygol, Gabriela Lukasek

Date of sampling: 04.01.2013 (green version), 17.01.2013 (colourless version)

Sample received: 01.02.2013

Number of samples 1

Scope of investigation: Testing of screen cleaner summer according to DEKRA criteria

Project / reference: Letni plyn do spryskiwaczy

Testing period: 01.02.2013 – 22.02.2013

Test result:

- following pages -

Akkreditiertes Analyselabor D-PL-11060-03-00 in Stuttgart und Halle (Saale).

1 Sample designation

No. of sample	Designation
55179277-1	Screen cleaner summer Readymix, green colour "Letni plyn do spryskiwaczy" (formulation identical to colourless version, sample nr. 55179277-2, except colourant)

2 Polycarbonate compatibility (QMA 2001.1428)

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

Test result:

No. of sample	Evaluation	Test method
55179277-1	no stress crackings	QMA 2001.1428

3 Rubber compatibility according to DEKRA test specification (QMA 2001.1425)

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:

No. of sample	Evaluation	Test method
55179277-1	no changes	QMA 2001.1425

4 Laquer compatibility according to DEKRA test specification (QMA 2001.1400)

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 samples 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)

4.1.1 at room temperature

No. of sample	Evaluation	Test method
55179277-1	no changes	QMA 2001.1400

4.1.2 at 50 °C

No. of sample	Evaluation	Test method
55179277-1	no changes	QMA 2001.1400

4.2 black, metallic (MB 189)

4.2.1 at room temperature

No. of sample	Evaluation	Test method
55179277-1	no changes	QMA 2001.1400

4.2.2 at 50 °C

No. of sample	Evaluation	Test method
55179277-1	no changes	QMA 2001.1400

4.3 dark blue, uni (VW Y5L)

4.3.1 at room temperature

No. of sample	Evaluation	Test method
55179277-1	no changes	QMA 2001.1400

4.3.2 at 50 °C

No. of sample	Evaluation	Test method
55179277-1	no changes	QMA 2001.1400

4.4 red, uni (BMW imolared II)

4.4.1 at room temperature

No. of sample	Evaluation	Test method
55179277-1	no changes	QMA 2001.1400

4.4.2 at 50 °C

No. of sample	Evaluation	Test method
55179277-1	no changes	QMA 2001.1400

5 Metal compatibility according to DEKRA test specification (QMA 2001.1443)

Test method:

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

5.1 Aluminium compatibility (anodized)

Test result:

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	no changes	no changes	QMA 2001.1443

5.2 Aluminium compatibility (raw)

Test result:

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	no changes	no changes	QMA 2001.1443

5.3 Material compatibility with copper

Test result:

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	slight discoloration ¹	slight discoloration ¹	QMA 2001.1443

¹ not negatively evaluated yet

5.4 Material compatibility with brass

Test result:

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	slight discoloration ¹	slight discoloration ¹	QMA 2001.1443

¹ not negatively evaluated yet

5.5 Material compatibility with steel

Test result:

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	slight discoloration ¹	slight discoloration ¹	QMA 2001.1443

¹ not negatively evaluated yet

5.6 Material compatibility with stainless steel

Test result:

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	no changes	no changes	QMA 2001.1443

5.7 Material compatibility with chromed steel

Test result:

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	no changes	no changes	QMA 2001.1443

6 Plastics compatibility according to DEKRA test specification (QMA 2001.1478)

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)

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	no changes	no changes	QMA 2001.1478

6.2 Polypropylene (PP)

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	no changes	no changes	QMA 2001.1478

6.3 Polystyrene (PS)

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	no changes	no changes	QMA 2001.1478

6.4 Polymethyl methacrylate (PMMA)

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	no changes	no changes	QMA 2001.1478

6.5 Acrylonitril-Butadiene-Styrene (ABS)

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	no changes	no changes	QMA 2001.1478

6.6 Polyoxymethylene (POM)

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	no changes	no changes	QMA 2001.1478

6.7 Polyvinyl chloride (PVC)

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	no changes	no changes	QMA 2001.1478

6.8 Polyamide (PA)

No. of sample	Evaluation		Test method
	Room temperature	50 °C	
55179277-1	no changes	no changes	QMA 2001.1478

7 Flash point measurement (of the concentrate)

No. of sample	Result [°C]	Test method
55179277-1	no Fp.	DIN 51 755

* no Fp.: no Flashpoint measured up to 100°C.

Annotation:

Measuring tolerance of the determination: ± 1 °C.

The uncertainty of measurement given in the standard is fulfilled.

8 Measurement of the pH value (20 °C)

No. of sample	Result	Test method
55179277-1	7,5	DIN 38405-11

9 Measurement of density

No. of sample	Result	Test method
55179277-1	0,995	ISO 15212-1

10 Measurement of refraction index

No. of sample	Result	Test method
55179277-1	1,3350	DIN 51423-2

11 Solvent Screening

11.1 Content of aromatics (BTEX) with GC/FID

No. of sample	Substance	Result [% by weight]	Requirement [% by weight]	Test method
55179277-1	Benzene	< 0.1	< 0.1	QMA 2001.1416
	Toluene	< 0.1	< 0.1	
	Ethylbenzene	< 0.1	< 0.1	
	Xylene	< 0.1	< 0.1	

11.2 Content of chlorinated hydrocarbons (CHC) with GC/FID

No. of sample	Substance	Result [% by weight]	Requirement [% by weight]	Test method
55179277-1	Dichlormethane	< 0.1	< 0.1	QMA 2001.1416
	Trichlormethane	< 0.1	< 0.1	
	1,1,1-Trichlorethane	< 0.1	< 0.1	
	Trichlorethene	< 0.1	< 0.1	
	Tetrachlorethene	< 0.1	< 0.1	
	1,2-Dichlorbenzene	< 0.1	< 0.1	

11.3 Content of methanol with GC/FID

No. of sample	Substance	Result [% by weight]	Requirement [% by weight]	Test method
55179277-1	Methanol	< 0.5	< 1	QMA 2001.1273

12 Notifiable scents

according to Council Directive No. 76/768/EEC (1976-07-27, last amended on 2008-04-03) and according to Regulation (EC) No. 648/2004 (2004-03-31, last amended on 2006-06-20).

The sample was diluted with two different solvents. An aliquot of the dilution was analysed once by means of GC-MSD (gas-chromatography coupled with mass-selective detection) in SCAN-mode to determine the TVOC-value (in the retention time area extending from hexane to hexadecane as toluene equivalents) and once in SIM-mode (selected-ion-monitoring) to determine the concentrations of the individual substances (26 sensitising scents). The identification of the substances was achieved by comparison of retention times with those of standards and depending on the substance with 2-4 characteristic mass-traces (1 target-ion and 1-3 qualifier ions) while the quantification was effected by reference to the internal matrix standard.

It was found possible to identify the following substances by comparison with spectra databanks and pure substances with a limit of quantification of 0.001 % w/w in a boiling range of 50 to 400 °C:

12.1 Results

Substance	CAS No.	Unit	Result	Limit ⁴	Test method
Amyl cinnamal	122-40-7	% w/w	< 0.001	0,01	GC/MS
Benzyl alcohol	100-51-6		< 0.001		
Cinnamyl alcohol	104-54-1		< 0.001		
Citral	5392-40-5		< 0.001		
Eugenol	97-53-0		< 0.001		
Hydroxy-citronellal	107-75-5		< 0.001		
Isoeugenol	97-54-1		< 0.001		
Amylcinnamyl alcohol	101-85-9		< 0.001		
Benzyl salicylate	118-58-1		< 0.001		
Cinnamal	104-55-2		< 0.001		
Coumarin	91-64-5		< 0.001		
Geraniol	106-24-1		< 0.001		
Hydroxy-methylpentyl-cyclohexenecarboxaldehyde	31906-04-4		< 0.001		
Anisyl alcohol	105-13-5		< 0.001		
Benzyl cinnamate	103-41-3		< 0.001		
Farnesol	4602-84-0		< 0.001		
2-(4-tert-Butylbenzyl)propion-aldehyde	80-54-6		< 0.001		
Linalool	78-70-6		< 0.001		
Benzyl benzoate	120-51-4		< 0.001		
Citronellol	106-22-9		< 0.001		
Hexyl cinnam-aldehyde	101-86-0		< 0.001		
d-Limonene	5989-27-5		< 0.001		
Methyl heptin carbonate	111-12-6		< 0.001		
3-Methyl-4-(2,6,6-trimethyl-2-cyclohexene-1-yl)-3-buten-2-one	127-51-5	< 0.001			
Treemoss extract	90028-67-4	< 0.001			

⁴ if the content is ≥ 0.01 % w/w the scent must be indicated on the contents list of cleaning products

12.2 Evaluation

There were no substances detected with a content of ≥ 0.01 % w/w.

13 Cleaning performance according to DEKRA test specification (QMA 2001.1405)

The front screen of a VW Golf VI was prepared with DEKRA test dirt mixture "All Season" and test dirt mixture II (insect simulant test dirt) according to the draft "IKW recommendation for the quality evaluation of screen cleaners for the windscreen washer system" from 2001.

The performance of the cleaner was assessed by counting the „cleaning cycles“ to remove residues of the dirt mixtures 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 comparison to a standard product.

13.1 Cleaning performance with DEKRA test dirt "All Season"

13.1.1 Test conditions:

Relative humidity: approx. 60 %
 Temperature: approx. +5°C

13.1.2 Test results:

No. of sample	Cleaning Performance Number of cleaning cycles								Test method
	„free sight“				„clean“				
	a	b	c	Ø	a	b	c	Ø	
55179277-1 (undiluted)	4	4	4	4,0	5	5	5	5,0	QMA 2001.1405
Reference sample	4	4	4	4,0	5	5	5	5,0	

Set of criteria:

very good cleaning performance: ≤ 5 cycles
 good cleaning performance: 6-7 cycles
 sufficient cleaning performance: 8-9 cycles
 inadequate cleaning performance: > 9 cycles

13.2 Cleaning performance with test dirt mixture II (insect simulant test dirt)

13.2.1 Test conditions:

Relative humidity: approx. 60 %
 Temperature: approx. +5°C

13.2.2 Test results:

No. of sample	Cleaning Performance Number of cleaning cycles								Test method
	„free sight“				„clean“				
	a	b	c	Ø	a	b	c	Ø	
55179277-1 (undiluted)	6	6	6	6,0	7	7	7	7,0	QMA 2001.1405
Reference sample	6	6	6	6,0	7	7	7	7,0	

Set of criteria:

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

13.3 Evaluation

The tested sample showed a "very good cleaning performance" on testdirt mixture "All Season" and a "very good cleaning performance" on testdirt mixture II (insect simulant test dirt).

The tested sample overall showed **"very good cleaning performance"**.

14 Stability against hard water (QMA 2001.1447)

Test method:

The sample is mixed with demineralised water and with 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 7 days. Afterwards a visual examination of precipitates is carried out at +60 °C, at room temperature and at +4 °C.

Test results:

14.1 Mixture with demineralised water

No. of sample	Mixture	Evaluation
55179277-1	100 mL sample + 50 mL demin. water	no precipitate
	50 mL sample + 100 mL demin. water	no precipitate

14.2 Mixture with synthetic hard water

No. of sample	Mixture	Evaluation
55179277-1	100 mL sample + 50 mL hard water	no precipitate
	50 mL sample + 100 mL hard water	no precipitate

14.3 Evaluation

The tested sample showed no noticeable problems.

15 Evaluation of handling, labelling and consumer protection

No. of sample	Evaluation
55179277-1	-Safety data sheet: non existent -Address: -labeling according to the ordinance on hazardous substances: -package instructions: no retail package existent yet -Recycling information: -labelling: -Childproofness: -Closeness:

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

16 Final evaluation

Requirements for obtaining a DEKRA product label are **fulfilled** (except the still outstanding check of safety data sheet and package labelling).

Information:

The results of the investigation apply exclusively to the named samples. Reproduction of extracts from the test report may only be made with the written permission of the test laboratory.

Stuttgart, 2013-02-22

DEKRA Automobil GmbH

Laboratory for Environmental and Product Analysis



Thilo Kunst

Project manager car chemistry and technical cleanliness