DEKRA Automobil GmbH Magdeburger Chaussee 60 06118 Halle

Adam Hall GmbH
Adam-Hall-Str. 1
61267 Neu-Anspach

DEKRA Automobil GmbH
Laboratory for Environmental and Product Analysis
Magdeburger Chaussee 60
06118 Halle
Phone +49.345.52359-800
Fax +49.345.52359-699

Contact:
Dr. Ingo Knepper
Phone +49 345 52359-831
E-Mail ingo.knepper@dekra.com
Date Nov 05, 2024

Test Report

DEKRA project no.: **55056701**

Test report no.: **PB2451948**

Version 2 replaces version 1 (reason for changes explained on last page; changes marked by #)

Client: Adam Hall GmbH
Adam-Hall-Str. 1
61267 Neu-Anspach

Date of order: Sep 27, 2024

Sample received: Sep 27, 2024

Sample designation: DEFENDER Kabelbrücken
(see list of samples for further information)

Scope of investigation:

1. California Proposition 65 (CP65 - Safe Drinking Water and Toxic Enforcement Act of 1986): Test of selected substances from CP 65 list - Selected elements, selected organic substances (phthalates, phosphororg. flame retardants, PAHs, dyes and other substances) *

* see list of test results for selection of substances

2. TSCA (US-EPA, Toxic Substances Control Act); 5 PBT substances according to TSCA 6(h); Selected PFAS according to TSCA 8 (a)(7) *

* see list of test results for selection of substances

Result:

1. California Proposition 65 (CP65 - Safe Drinking Water and Toxic Enforcement Act of 1986): Test of selected substances from CP 65 list - Selected elements, selected organic substances (phthalates, phosphororg. flame retardants, PAHs, dyes and other substances) *

* see list of test results for selection of substances

Selected elements

Antimony (CAS 7440-36-0) was detected in a concentration of 77ppm in sample 55056701003.

No other selected substances were found above the limit of quantification (see sample list and table of results below).

Phthalates

Dihexyl phthalate (DNHP, CAS 84-75-3) was detected in a concentration of 140ppm in sample 55056701003.

No other selected substances were found above the limit of quantification (see sample list and table of results below).

Phosphororganic flame retardants

None of the selected substances were found above the limit of quantification (see sample list and table of results below).

PAHs

None of the selected substances were found above the limit of quantification (see sample list and table of results below).

Dyes and other substances

None of the selected substances were found above the limit of quantification (see sample list and table of results below).

2. TSCA (US-EPA, Toxic Substances Control Act); 5 PBT substances according to TSCA 6(h); Selected PFAS according to TSCA 8 (a)(7) *

* see list of test results for selection of substances

TSCA 6(h)

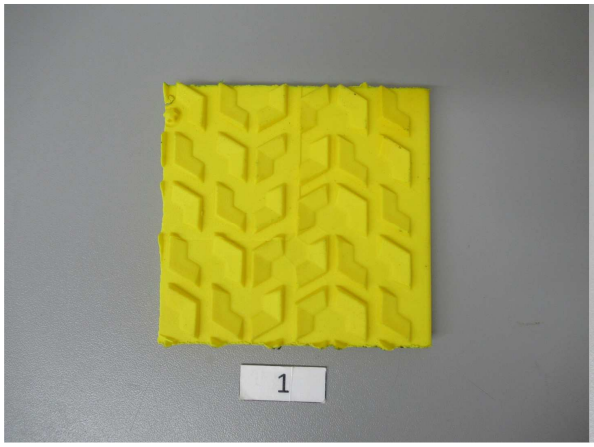
None of the 5 PBT substances were found above the limit of quantification in the tested materials (see sample list and table of results below).

TSCA 8(a)(7)

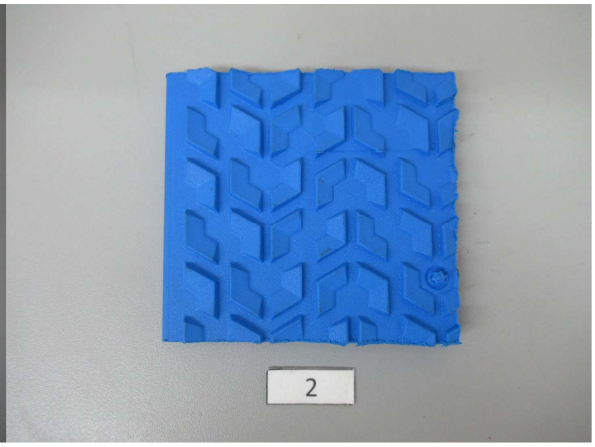
None of the selected PFAS were found above the limit of quantification in the tested materials (see sample list and table of results below).

Project / PO	2172884242 / -
Testing period:	Sep. 27, 2024 - Oct. 25, 2024

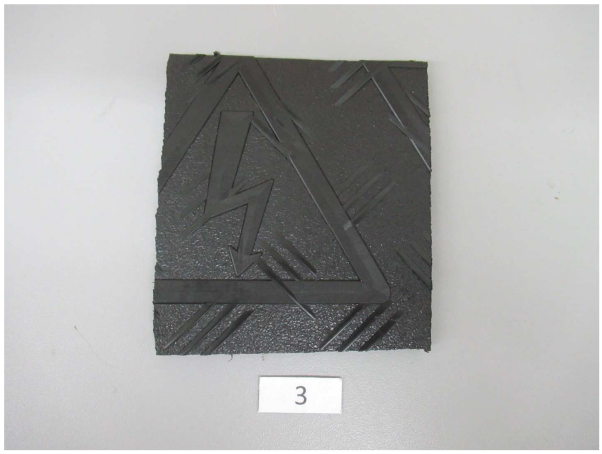
Picture of the samples:



Picture 1: Sample 55056701001.



Picture 2: Sample 55056701002.



Picture 3: Sample 55056701003.

List of samples:

Sample no.	Sample designation
55056701001	DEFENDER Kabelbrücke (yellow)
55056701002	DEFENDER Kabelbrücke (blue)
55056701003	DEFENDER Kabelbrücke (black)

Remarks:

The test results refer exclusively to the samples specified. The decision rule for the evaluation of conformity of test results can be found in the annex of this report or at https://www.dekra.de/media/entscheidungsregel-bewertung-konformitaet-pruefergebnise-gb-web.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).

Halle, November 05th, 2024

DEKRA Automobil GmbH
Laboratory for Environmental and Product Analysis

Dr. Ingo Knepper
Project manager

Test result:

- see following pages -

Test results: CP65

Substance	CAS	Unit	LoQ	55056701001	55056701002	55056701003	Method
Arsenic (As)	7440-38-2	ppm	20	< 20	< 20	< 20	DIN EN ISO 11885:2009-09 (a)
Lead (Pb)	7439-92-1	ppm	20	< 20	< 20	< 20	
Cobalt (Co)	7440-48-4	ppm	20	< 20	< 20	< 20	
Chromium (Cr, total)	7440-47-3	ppm	20	< 20	< 20	< 20	
Chromium-VI (Cr-VI)	18540-29-9	ppm	20	< 20	< 20	< 20	Calculated based on Chromium (total)
Boron (B)	7440-42-8	ppm	20	< 20	< 20	< 20	DIN EN ISO 11885:2009-09 (a)
Tin (Sn)	7440-31-5	ppm	20	< 20	< 20	< 20	
Cadmium (Cd)	7440-43-9	ppm	20	< 20	< 20	< 20	
Nickel (Ni)	7440-02-0	ppm	20	< 20	< 20	< 20	
Mercury (Hg)	7439-97-6	ppm	20	< 20	< 20	< 20 #	DIN EN ISO 17294-2:2017-01 (a)
Antimony (Sb)	7440-36-0	ppm	20	< 20	< 20	**77** #	
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	ppm	100	< 100	< 100	< 100	Lab-AA-2378: 2015-09 (a)
Diisodecyl phthalate (DIDP)	26761-40-0	ppm	100	< 100	< 100	< 100	
Diisononyl phthalate (DINP)	28553-12-0	ppm	100	< 100	< 100	< 100	
Dibutyl phthalate (DBP)	84-74-2	ppm	100	< 100	< 100	< 100	

Dihexyl phthalate (DNHP)	84-75-3	ppm	100	< 100	< 100	**140**	Lab-AA-2378: 2015-09 (a)
Benzyl butyl phthalate (BBP)	85-68-7	ppm	100	< 100	< 100	< 100	
Tris-(2-chloroethyl) phosphate (TCEP)	115-96-8	ppm	5	< 5	< 5	< 5	according to Lab-AA-2434:2021-10 (n*)
Bis(1,3-dichloro-2-propyl)phosphate (TDCPP)	13674-87-8	ppm	5	< 5	< 5	< 5	
Tris(2,3-dibromopropyl) phosphat (TRIS/TDBPP)	126-72-7	ppm	20	< 20	< 20	< 20	
Benzo[a]pyrene	50-32-8	ppm	0.2	< 0.2	< 0.2	< 0.2	AfPS GS:2019-01 PAK 2019-05 (a)
Benz[a]anthracene	56-55-3	ppm	0.2	< 0.2	< 0.2	< 0.2	
Chrysene	218-01-9	ppm	0.2	< 0.2	< 0.2	< 0.2	
Benzo[b]fluoranthene	205-99-2	ppm	0.2	< 0.2	< 0.2	< 0.2	
Benzo[j]fluoranthene	205-82-3	ppm	0.2	< 0.2	< 0.2	< 0.2	
Benzo[k]fluoranthene	207-08-9	ppm	0.2	< 0.2	< 0.2	< 0.2	
Dibenz[a,h]anthracene	53-70-3	ppm	0.2	< 0.2	< 0.2	< 0.2	
Indeno[1,2,3-cd]pyrene	193-39-5	ppm	0.2	< 0.2	< 0.2	< 0.2	
Naphthalene	91-20-3	ppm	0.2	< 0.2	< 0.2	< 0.2	
Anthracene	120-12-7	ppm	0.2	< 0.2	< 0.2	< 0.2	
4-Aminobiphenyl (4-aminodiphenyl)	92-67-1	ppm	10	< 10	< 10	< 10	BVL B 82.02-2:2017-12 (a) / DIN EN ISO 14362-1:2017-05 (a) 1)
Benzidine [and its salts]	92-87-5	ppm	10	< 10	< 10	< 10	
p-Chloro-o-toluidine	95-69-2	ppm	10	< 10	< 10	< 10	
2-Naphthylamine	91-59-8	ppm	10	< 10	< 10	< 10	
o-Aminoazotoluene	97-56-3	ppm	10	< 10	< 10	< 10	

p-Chloroaniline	106-47-8	ppm	10	< 10	< 10	< 10	BVL B 82.02-2:2017-12 [(a)] / DIN EN ISO 14362-1:2017-05 [(a) 1)]
2,4-Diaminoanisole	615-05-4	ppm	10	< 10	< 10	< 10	
4,4'-Methylenedianiline	101-77-9	ppm	10	< 10	< 10	< 10	
3,3'-Dichlorobenzidine	91-94-1	ppm	10	< 10	< 10	< 10	
3,3'-Dimethoxybenzidine (o-Dianisidine)	119-90-4	ppm	10	< 10	< 10	< 10	
3,3'-Dimethylbenzidine (ortho-Tolidine)	119-93-7	ppm	10	< 10	< 10	< 10	
4,4'-Methylene bis(2-methylaniline)	838-88-0	ppm	10	< 10	< 10	< 10	
p-Cresidine	120-71-8	ppm	10	< 10	< 10	< 10	
4,4'-Methylene bis(2-chloroaniline)	101-14-4	ppm	10	< 10	< 10	< 10	
4,4'-Diaminodiphenyl ether (4,4'-Oxydianiline)	101-80-4	ppm	10	< 10	< 10	< 10	
4,4'-Thiodianiline	139-65-1	ppm	10	< 10	< 10	< 10	
o-Toluidine	95-53-4	ppm	10	< 10	< 10	< 10	
o-Anisidine	90-04-0	ppm	10	< 10	< 10	< 10	
p-Aminoazobenzene	60-09-3	ppm	10	< 10	< 10	< 10	
Aniline	62-53-3	ppm	10	< 10	< 10	< 10	
Disperse Blue 1	2475-45-8	ppm	10	< 10	< 10	< 10	DIN 54231:2005-11 [(a)]
C.I. Disperse Yellow 3	2832-40-8	ppm	10	< 10	< 10	< 10	
C.I. Basic Red 9 monohydrochloride	569-61-9	ppm	10	< 10	< 10	< 10	
Gentian violet (Crystal violet) / Basic violet 3	548-62-9	ppm	10	< 10	< 10	< 10	
Ponceau MX /Acid Red 26	3761-53-3	ppm	10	< 10	< 10	< 10	
p-Aminoazobenzene / Solvent Yellow 1	60-09-3	ppm	10	< 10	< 10	< 10	
4-Dimethylaminoazobenzene / Solvent Yellow 2	60-11-7	ppm	10	< 10	< 10	< 10	

o-Aminoazotoluene / Solvent Yellow 3	97-56-3	ppm	10	< 10	< 10	< 10	DIN 54231:2005-11 (a)
1) Extraction performed according to the procedure for natural fibres.							
Perfluorononanoic acid (PFNA) and its salts	---	see selected PFAS analytics in table of results below (TSCA)					
Perfluorooctane sulfonate (PFOS)	1763-23-1						
Perfluorooctane sulfonic acid (PFOS) and its salts and transformation and degradation precursors	---						
Perfluorooctanoic acid (PFOA)	335-67-1						
Acrylamide	79-06-1	ppm	100	< 100	< 100	< 100	Lab-AA-2369: 2021-09 (a)
2,4-Dinitrotoluene	121-14-2	ppm	100	< 100	< 100	< 100	
2,4-Diaminotoluene	95-80-7	ppm	100	< 100	< 100	< 100	
Bisphenol A (BPA)	80-05-7	ppm	100	< 100	< 100	< 100	
Michler's ketone	90-94-8	ppm	100	< 100	< 100	< 100	
Carbazole	86-74-8	ppm	100	< 100	< 100	< 100	
1,3-Propane sultone	1120-71-4	ppm	100	< 100	< 100	< 100	
Bisphenol S (BPS)	80-09-1	ppm	100	< 100	< 100	< 100	

a = accredited test procedure, n = not accredited test procedure, n* = procedure in accreditation process; s = analysis carried out by DEKRA lab Stuttgart, fa = analysis by subcontracting (accredited method in a partner labor), fn = analysis by subcontracting (non-accredited method in a partner labor).

LoQ = Limit of quantification

Limit CP65: No legal limits defined for concentration in materials; Limit of quantification from method is used for assessment.

Test results: PBT substances (TSCA)

Substance	CAS	Unit	LoQ	55056701001	55056701002	55056701003	Method
2,4,6-Tris(tert-butyl)phenol (2,4,6-TTBP)	732-26-3	ppm	80	< 80	< 80	< 80	TSCA (6h)- House method; GC-MS (n)
Decabromo-diphenylether (DecaBDE)	1163-19-5	ppm	50	< 50	< 50	< 50	
Phenol, isopropylated phosphate (3:1) (PIP 3:1)	68937-41-7	ppm	210	< 210	< 210	< 210	
Pentachloro-thiophenol (PCTP)	133-49-3	ppm	160	< 160	< 160	< 160	
Hexachloro-butadiene (HCBD)	87-68-3	ppm	75	< 75	< 75	< 75	

a = accredited test procedure, n = not accredited test procedure, n* = procedure in accreditation process; s = analysis carried out by DEKRA lab Stuttgart, fa = analysis by subcontracting (accredited method in a partner labor), fn = analysis by subcontracting (non-accredited method in a partner labor).

LoQ = Limit of quantification

Limits according to TSCA (concentrations below LoQ are considered to be “non-verifiable” as requested by TSCA):

2,4,6-Tris(tert-butyl)phenol (2,4,6-TTBP): 3000ppm
Decabromo-diphenylether (DecaBDE): < LoQ
Phenol, isopropylated phosphate (3:1) (PIP 3:1): < LoQ
Pentachloro-thiophenol (PCTP): 10000ppm
Hexachloro-butadiene (HCBD): < LoQ

Test results: Selected PFAS (TSCA)

Parameter	CAS	Abbrev. [3)]	Unit	LoQ	55056701001	55056701002	55056701003	Method
Perfluorobutanoic acid	375-22-4	PFBA	ppb	10	< 10	< 10	< 10	E DIN EN 17681-1:2023-12 bzw. 12.02.01.07_PFAS (2023-01) [(fa), *]
Perfluoropentanoic acid	2706-90-3	PFPeA	ppb	10	< 10	< 10	< 10	
Perfluorohexanoic acid	307-24-4	PFHxA	ppb	10	< 10	< 10	< 10	
Perfluoroheptanoic acid	375-85-9	PFHpA	ppb	10	< 10	< 10	< 10	
Perfluorooctanoic acid	335-67-1	PFOA	ppb	10	< 10	< 10	< 10	
Perfluorononanoic acid	375-95-1	PFNA	ppb	10	< 10	< 10	< 10	
Perfluorodecanoic acid	335-76-2	PFDA	ppb	15	< 15	< 15	< 15	
Perfluoroundecanoic acid	2058-94-8	PFUnDA	ppb	15	< 15	< 15	< 15	
Perfluorodecanoic acid	307-55-1	PFDoDA	ppb	15	< 15	< 15	< 15	
Perfluoro tridecanoic acid	72629-94-8	PFTrDA	ppb	15	< 15	< 15	< 15	
Perfluorotetradecanoic acid	376-06-7	PFTeDA	ppb	15	< 15	< 15	< 15	
Perfluorobutanesulfonic acid	375-73-5	PFBS	ppb	10	< 10	< 10	< 10	
Perfluoropentanesulfonic acid	2706-91-4	PFPeS	ppb	10	< 10	< 10	< 10	
Perfluorohexanesulfonic acid	355-46-4	PFHxS	ppb	10	< 10	< 10	< 10	
Perfluoroheptanesulfonic acid	375-92-8	PFHpS	ppb	10	< 10	< 10	< 10	
Perfluorooctane sulfonic acid	1763-23-1	PFOS	ppb	10	< 10	< 10	< 10	
Perfluorononanonesulfonic acid	68259-12-1	PFNS	ppb	10	< 10	< 10	< 10	
Perfluorodecanesulfonic acid	335-77-3	PFDS	ppb	10	< 10	< 10	< 10	

Perfluoroundecanesulfonic acid	749786-16-1	PFUnDS	ppb	10	< 10	< 10	< 10	E DIN EN 17681-1:2023-12 bzw. 12.02.01.07_PFAS (2023-01) (fa), *
Perfluorododecanesulfonic acid	79780-39-5	PFDoDS	ppb	10	< 10	< 10	< 10	
Perfluorotridecanesulfonic acid	791563-89-8	PFTrDS	ppb	10	< 10	< 10	< 10	
Perfluoro(3,7-dimethyloctanoic acid)	172155-07-6	PF-3,7-DMOA	ppb	10	< 10	< 10	< 10	
1H, 1H, 2H, 2H-Perfluorhexanol	2043-47-2	4:2 FTOH	ppb	400	< 400	< 400	< 400	
1H, 1H, 2H, 2H-Perfluoroctanol	647-42-7	6:2 FTOH	ppb	100	< 100	< 100	< 100	
1H, 1H, 2H, 2H-Perfluordecanol	678-39-7	8:2 FTOH	ppb	100	< 100	< 100	< 100	
1H, 1H, 2H, 2H-Perfluordodecanol	865-86-1	10:2 FTOH	ppb	100	< 100	< 100	< 100	
1H, 1H, 2H, 2H-Perfluortetradecanol *	39239-77-5	12:2 FTOH	ppb	100	< 100	< 100	< 100	
4:2 Fluorotelomer sulfonic acid	757124-72-4	4:2 FTS	ppb	10	< 10	< 10	< 10	
6:2 Fluorotelomer sulfonic acid	27619-97-2	6:2 FTS	ppb	10	< 10	< 10	< 10	
8:2 Fluorotelomer sulfonic acid	39108-34-4	8:2 FTS	ppb	10	< 10	< 10	< 10	
10:2 Fluorotelomer sulfonic acid	120226-60-0	10:2 FTS	ppb	10	< 10	< 10	< 10	
3H-Perfluoro-4,8-dioxanonanoic acid	919005-14-4	DONA	ppb	10	< 10	< 10	< 10	
Ammonium-4,8-dioxa-3H-4,8-perfluornonanoate	958445-44-8	ADONA	ppb	10 2)	< 10 2)	< 10 2)	< 10 2)	
F-53 B Major	73606-19-6	-	ppb	10	< 10	< 10	< 10	
F-53 B Minor	83329-89-9	-	ppb	10	< 10	< 10	< 10	
HFPO-DA	13252-13-6	GenX	ppb	10	< 10	< 10	< 10	
1H, 1H, 2H, 2H-Perfluorundecanoic acid	34598-33-9	4HPFUnA	ppb	10	< 10	< 10	< 10	

7H-Perfluoroheptanoic acid	1546-95-8	7HPFHpA	ppb	100	< 100	< 100	< 100	E DIN EN 17681-1:2023-12 bzw. 12.02.01.07_PFAS (2023-01) (fa), *
Perfluoroctansulfonamide	754-91-6	PFOSA	ppb	10	< 10	< 10	< 10	
N-Methylheptadecafluoroctan-sulfonamide	31506-32-8	N-Me-FOSA	ppb	10	< 10	< 10	< 10	
N-Ethylheptadecafluoroctan-sulfonamide	4151-50-2	N-Et-FOSA	ppb	10	< 10	< 10	< 10	
N-Methylheptadecafluoroctan-sulfonamidoethanol	24448-09-7	N-Me-FOSE alcohol	ppb	10	< 10	< 10	< 10	
N-Ethylheptadecafluoroctan-sulfonamidoethanol	1691-99-2	N-Et-FOSE alcohol	ppb	10	< 10	< 10	< 10	
N-(Perfluor-1-octansulfonyl) Glycin	2806-24-8	FOSAA	ppb	10	< 10	< 10	< 10	
N-Methylperfluor-1-octansulfonamido acetic acid	2355-31-9	N-Me-FOSAA	ppb	10	< 10	< 10	< 10	
N-Ethylperfluor-1-octansulfonamido acetic acid	2991-50-6	N-Et-FOSAA	ppb	10	< 10	< 10	< 10	
Perfluorohexansulfonamide (*)	41997-13-1	PFHxSA	ppb	10	< 10	< 10	< 10	
Tridecafluoro-N-methylhexansulfonamide (*)	68259-15-4	N-Me-FHxSA	ppb	10	< 10	< 10	< 10	
Tridecafluoro-N-(2-Hydroxyethyl)-N-Methylhexanesulfonamide (*)	68555-75-9	N-Me-FHxSE alcohol	ppb	10	< 10	< 10	< 10	
N-Ethyltridecafluoro-N-(2-hydroxyethyl)-1-hexanesulfonamide (*)	34455-03-3	N-Et-FHxSE alcohol	ppb	10	< 10	< 10	< 10	
N-[3-(Dimethylamino)propyl]-tridecafluorhexansulfonamide (*)	50598-28-2	N-AP-FHxSA	ppb	10	< 10	< 10	< 10	

a = accredited test procedure, n = not accredited test procedure, n* = procedure in accreditation process; s = analysis carried out by DEKRA lab Stuttgart, fa = analysis by subcontracting (accredited method in a partner labor), fn = analysis by subcontracting (non-accredited method in a partner labor).

LoQ = Limit of quantification

* Substances marked with (*) are not included in the accreditation scope.

The analytical concentration is the sum value of PFAS-concentration + corresponding salts of the selected PFAS; Individual results below the limit of quantification are not taken into account for sum values.

1) Ammonium pentadecafluorooctanoate (APFO, CAS 3825-26-1) is included in the analytical result for Perfluorooctanoic acid (PFOA, CAS 335-67-1), because the analytical concentrations for selected PFAS-compounds include the corresponding salts of the selected PFAS.

2) Ammonium-4,8-dioxa-3H-4,8-perfluornonanoat (ADONA, CAS 958445-44-8) is included in the analytical result for 3H-Perfluoro-4,8-dioxanonanoic acid (DONA, CAS 919005-14-4), because the analytical concentrations for selected PFAS-compounds include the corresponding salts of the selected PFAS.

3) Abbreviation selected by DEKRA. There might be other abbreviations for the listed substances.

Limit TSCA: No legal limits defined. Limit of quantification from method is used for assessment.

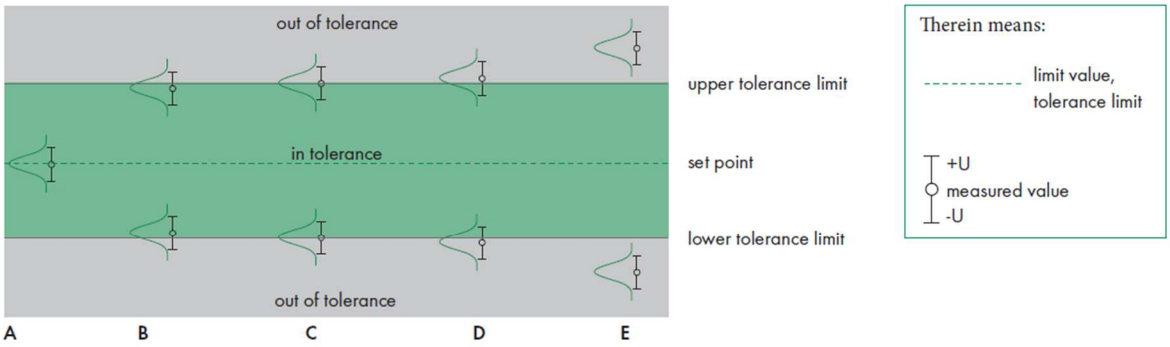
Annex:

Decision rule for the evaluation of conformity of test results

Every measurement result is subject to a measurement uncertainty. The measurement uncertainty can be specified as an interval within which the correct/true value lies with a certain confidence level. The measurement uncertainty is calculated with a 95% confidence level.

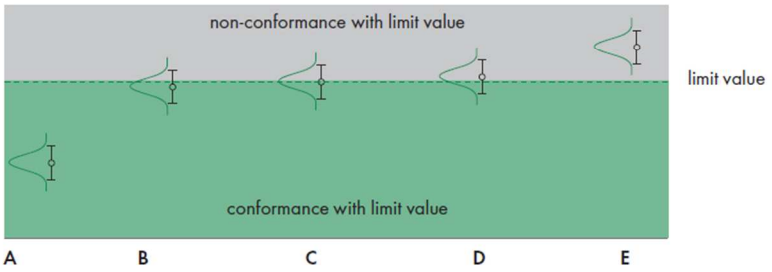
If measurement results are to be used for a conformity assessment, e.g. comparison with a limit value or an otherwise defined specification, and if the measurement result is close to the limit value, the measurement uncertainty is of decisive importance.

When comparing measurement results with tolerance limits, 5 cases have to be distinguished:



Test results and their measurement uncertanties in relation to an upper and lower tolerance limit

When comparing measurement results with a limit value, 5 cases also have to be distinguished:



Test results and their measurement uncertanties in relation to an upper limit value

Case A: Measurement result is below the limit value/within the tolerance limits even with consideration of the measurement uncertainty.

Case B: Measurement result is below the limit value/within the tolerance limits. But with consideration of the measurement uncertainty it is not safely below the limit value / within the tolerance limits (confidence level 95%).

Case C: Measurement result is on the limit value/on the tolerance limits.

Case D: Measurement result is above the limit value/outside the tolerance limits. But with consideration of the measurement uncertainty it is not safely above the limit value/not safely outside the tolerance limits (confidence level 95%).

Case E: Measurement result is above the limit value/outside the tolerance limits even with consideration of the measurement uncertainty.

If there are no specifications in the applicable standard or regulation and also no customer-specific requirements for the conformity assessment, the above-mentioned laboratories of DEKRA Automobil GmbH apply the following decision rule as standard:

Case A and B: For measurement results which, including their measurement uncertainty, are below the limit value/within the tolerance limits and measurement results which are below the limit value/ within the tolerance limits but whose measurement uncertainty range **exceeds this limit value/ tolerance limit, the limit value/tolerance is pass**.

Case C and D: In the case of measurement results that lie at the limit value/on the tolerance limit and measurement results that lie above the limit value/outside the tolerance limits, but whose measurement uncertainty range falls below this limit value/tolerance limit, the limit value/tolerance **limit is considered to be met only partially**. Taking the measurement uncertainty into account, the measurement result could still meet the requirements, but the risk of exceeding is high.

Case E: In the case of measurement results which, including their measurement uncertainty, are **above the limit value/outside the tolerance, the limit value/tolerance fail**.

Reason for change from version 1 to version 2:

- Change of inverted rows for Sb and Hg in table on page 6.

*** end of test report ***