

Emissions in the Car Interior

Harmful substances, Odour and Fogging

November, 2013

The „Problem“:

A few months ago, there were reports in Chinese television about smelly odour and possibly noxious substances in the interior of German brand cars. However, the local automotive manufacturers could stay cool here:

The suppliers of major OEM's already test components used the car interior for the exactly such properties – and not only now but since years.



The Solution:

The Analytical Services Obernburg offers close to all established methods for testing emissions in the car interior. Nearly always, they can be assigned to one of the following five groups:

1. **Fogging:** condensable emissions leading to surface film formation.
2. **Formaldehyde:** volatile substance (possibly carcinogenic).
3. **Odour:** smell, perceived as unpleasant.
4. **Total Emission:** sum of organic compounds emitted.
5. **Substance Emission:** Identification/assessment of emitted substances:
 - a. Laboratory test using thermodesorption-GC/MS.
 - b. Chamber test (SHED or similar).

The following table lists typical test norms for these five groups, categorized by selected OEM's:

	BMW	Daimler	Opel	Porsche	VW/Audi
1	DIN 75201	DIN 75201	GMW 3235	DIN 75201	PV 3015
2	AA-0061	VDA 275	GMW 14236	VDA 275	PV 3925
3	VDA 270	VDA 270	GMW 3205	VDA 270	PV 3900
4					PV 3341
5a	VDA 278	VDA 278	GMW 15634	PPV 8042	
5b	GS 97014-2			PPV 8041	PV 3942

The requirements to be met by a given test are a.o. determined by the OEM specifications, the type of material, and the location of the part within the car interior.

The Analytik Service Obernburg is your competent partner for all questions concerning emissions in the car interior:

- Accredited according to DIN EN ISO/IEC 17025 and therefore compatible to automotive the QM requirements according to IATF 16949.
- As one of few laboratories approved by **VW** for the entire emission test according to **VW 50180** = PV 3015, PV 3341, PV 3900, PV 3925.
- Successfully evaluated for emission testing by **Opel/GM**, including the norms GMW 3205, GMW 3235, GMW 15634 and GMW 14236.

Industries (A-Z)

Automotive suppliers
Man-made fibres
Paints and coatings
Plastic processors
Textiles

Objectives

Quantification of emissions
Identification of hazardous substances

Materials

Plastics
Textiles
Paint/Varnish

Analytical Methods

Gas chromatography
Mass spectroscopy
UV/Vis spectroscopy

Supplementary Methods

HPLC liquid-
chromatography
IR spectroscopy
NMR spectroscopy

Related Topics

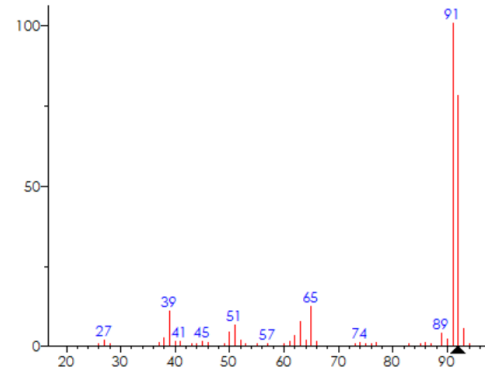
Interior emissions
Volatile substances
OEM approval tests

Example: Single Substance Emissions according to VDA 278

The following figure shows a coupled thermodesorption unit coupled to a gas chromatography system and used for the test norm VDA 278 (left). Substances are identified by their characteristic mass spectra, as depicted on the right hand side for toluene (classified with supposed reproductive toxicity).



Thermodesorption-GC/MS



Mass spectrum of toluene

The OEM's prescribe maximum values or totally ban certain substances; quite common is an assessment based on a KMR^[1]- or GADSL^[2]-listing.

The VDA 278 method also gives total emission values, the **VOC^[3]** (Volatile Organic Substances) and the **FOG^[4]** for less volatile compounds (not to be confused with the result of a fogging test, see above under point 1).

The Advantages:

The services provided by the Analytik Service Obernburg reach beyond the execution of the mere emission test. Our team at the Automotive Test Centre is consulting you with respect to routine and approval testing in order to assure, or establish, your ability to deliver in the automotive market. The chemists in our chromatography department offer qualified consulting in case of possibly occurring problematic emissions and their abatement.

In short: a comprehensive and competent service from one source.

Interested?

The Analytical Services Obernburg is ready to answer your questions.

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[1]: Substances which are carcinogenic, mutagenic and/or toxic for reproduction.

[2]: Global Automotive Declarable Substance List.

[3]: Readily and medium volatile substances, elution range up to Pentacosane (C25).

[4]: Substances in the boiling range of C14 to C32, involved in „Fogging“.