



DAP-PL-1397.00

OSTTHÜRINGISCHE MATERIALPRÜFGESELLSCHAFT
für Textil und Kunststoffe mbH
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Nach DIN EN ISO/IEC 17025 durch die DAP Deutsches Akkreditierungssystem Prüfwesen GmbH akkreditiertes Prüflaboratorium.
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HALBE-Rahmen GmbH

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Your letter of	Your ref	Our ref	Phone extension	Date
30.01.08		2.5/Tsch	379-252	2012-11-22

TRANSLATION OF TEST REPORT SEAL

1. General

Test report No.: **2.5/134-1/08**
Commissioned by: Mr. Halbe
Objects tested: 1 granulate EPDM/PP
Test: testing for emissions
Date received: 31.01./14.02.2008
Processed by: 1) Mr. Dr. Kolbe
2) Mr. Dr. Wendler
3) Mr. Dr. Markwitz
4) Mrs. Schwarz
Test procedure: 1) Emission of organic compounds acc. to PV 3341
2) eluate preparation acc. to DIN 38 414-S4
ph-value acc. to DIN 38 404-C5
Microwave digestion according to SAA2.5L126, version 3
Determination of elements using ICP-OES acc. to
DIN EN ISO 11885 (E22)
3) Thermogravimetry (TGA) acc. to DIN EN ISO 11358 coupled with
FT-IR*
4) compression set acc. to DIN ISO 815
Page number: 3
Report copies: 1 copy for client
1 copy for Ostthüringische Materialprüfgesellschaft (OMPG)

The results of the measurements and analyses refer exclusively to the tested samples. This test must be done copy completely. Copies, even in form of an excerpt, require the written permission of OMPG Ltd.

*not accredited test

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2. Test results 2.5/134-1/08

2.1. *Analysis of EPDM/PP granulate*

2.1.1 Thermogravimetry (TGA) and TGA-FTIR-coupling

Explanation: By means of thermo gravimetric analysis the sample is subjected to a defined heating program. Mass loss measured in dependence on temperature characterised the thermal degradation of the material. The coupling with an IR spectrometer permits statements about the nature of the dismantling products developed thereby. With the TGA developing gaseous dismantling products are exhausted in the gas stream from the heater and supplied to the IR spectrometer by a transfer main kept at a moderate temperature of 200°C. The dismantling products are infrared-spectroscopically measured in the gaseous condition.

A sample of the granulate was investigated by the following temperature program by TGA-FTIR-coupling: heating from 25,0 to 200,0 °C (heating rate 10 K/min, N₂ (30 ml/min)).

The TGA plot of the measurement (see attachment 1, experiment 08-0255) doesn't show a mass loss in the analysed temperature range. Probably, the slightly increase in weight is caused by buoyant effect during the measurement. The corresponding infrared spectrum (see attachment 2) only shows moisture, probably coming from the purging gas. The granulate doesn't release any significant emissions in the analysed temperature range.

2.1.2 Emission of organic compounds (conditioning 1h at 80 °C)

Parameter	Emission of organic compounds [µgC/g]		
	1. value	2. value	3. value
sample designation			
Granulate EPDM/PP	< 1 *	< 1 *	< 1 *

The limit of the vehicle interior is 50 µgC/g.

2.1.3 Determination of ph-value and metals

Parameter	ME	Granulate EPDM/PP
pH-value	-	8,2
Lead	mg/kg	22
Cadmium	mg/kg	2
Copper	mg/kg	< 5
Iron	mg/kg	45
Manganese	mg/kg	< 5
Nickel	mg/kg	23
Molybdenum	mg/kg	< 5
Vanadium	mg/kg	9
Cobalt	mg/kg	< 5
Chromium	mg/kg	5
Mercury	mg/kg	0,43
Zinc	mg/kg	7.400
Calcium	mg/kg	330
Magnesium	mg/kg	10
Arsenic	mg/kg	< 3

2.1.4 compression set

Sample: plates (80x80x4) mm³ molded according to ISO 294 with campus tool
Sample preparation: conditioning > 16 h at 23°C and 50% r.F.
Deformation: 25%
Condition: 72 h at 23°C
Regeneration: 30 min
Tester: Digimatic measuring slide CD-15 D (Mitutoyo Cop., Japan)
Number of samples: 4

Sample	sample designation	compression set [%]
1	Granulate EPDM/PP	23 ± 2

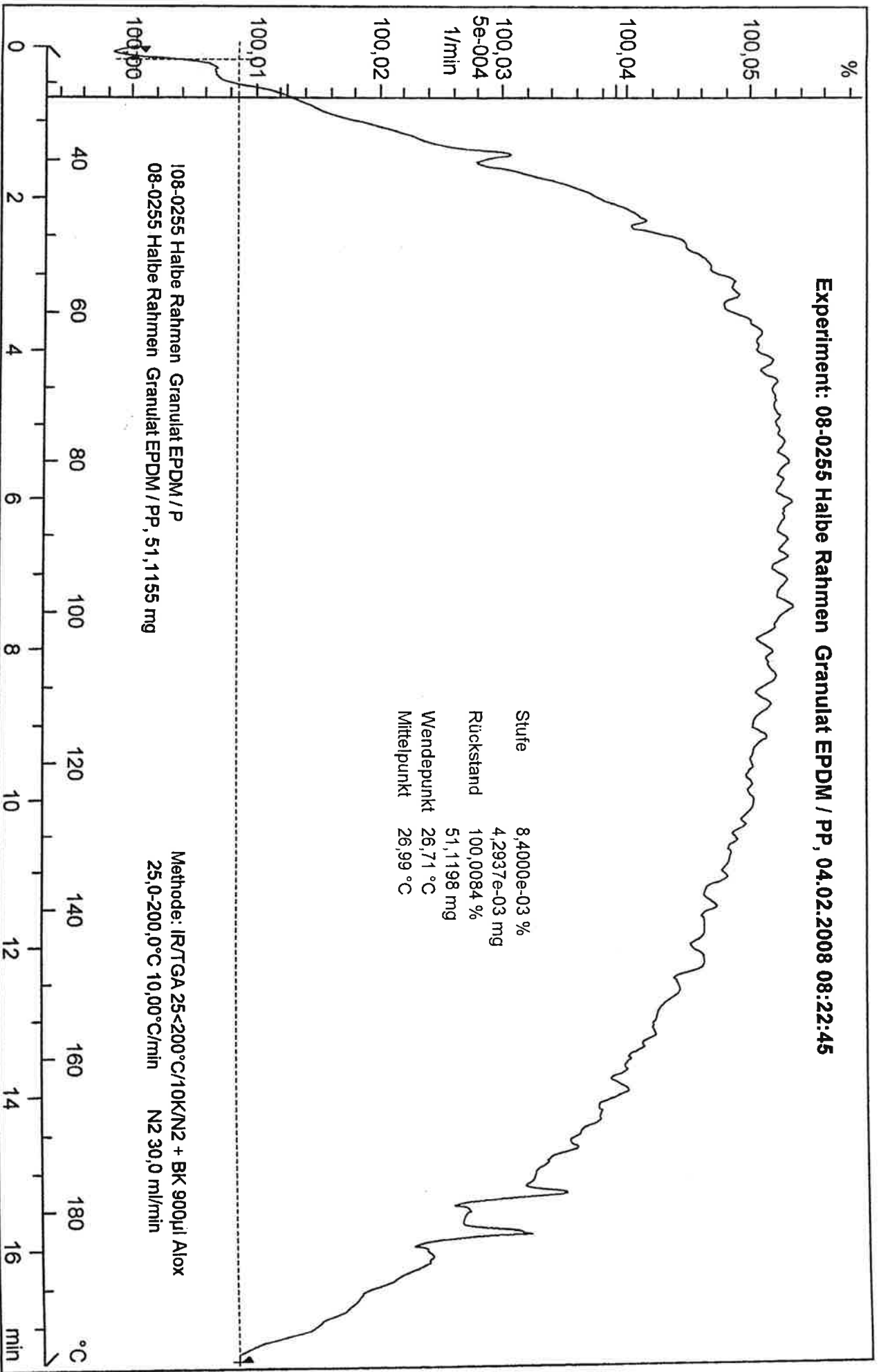
Remark: Deformation was chosen acc. to shore-hardness of the standard specification.



Krämer
Head of Laboratory

Attachments:
TGA-Plots (1 Page)
IR-Spectrum (1 Seite)

Experiment: 08-0255 Halbe Rahmen Granulat EPDM / PP, 04.02.2008 08:22:45

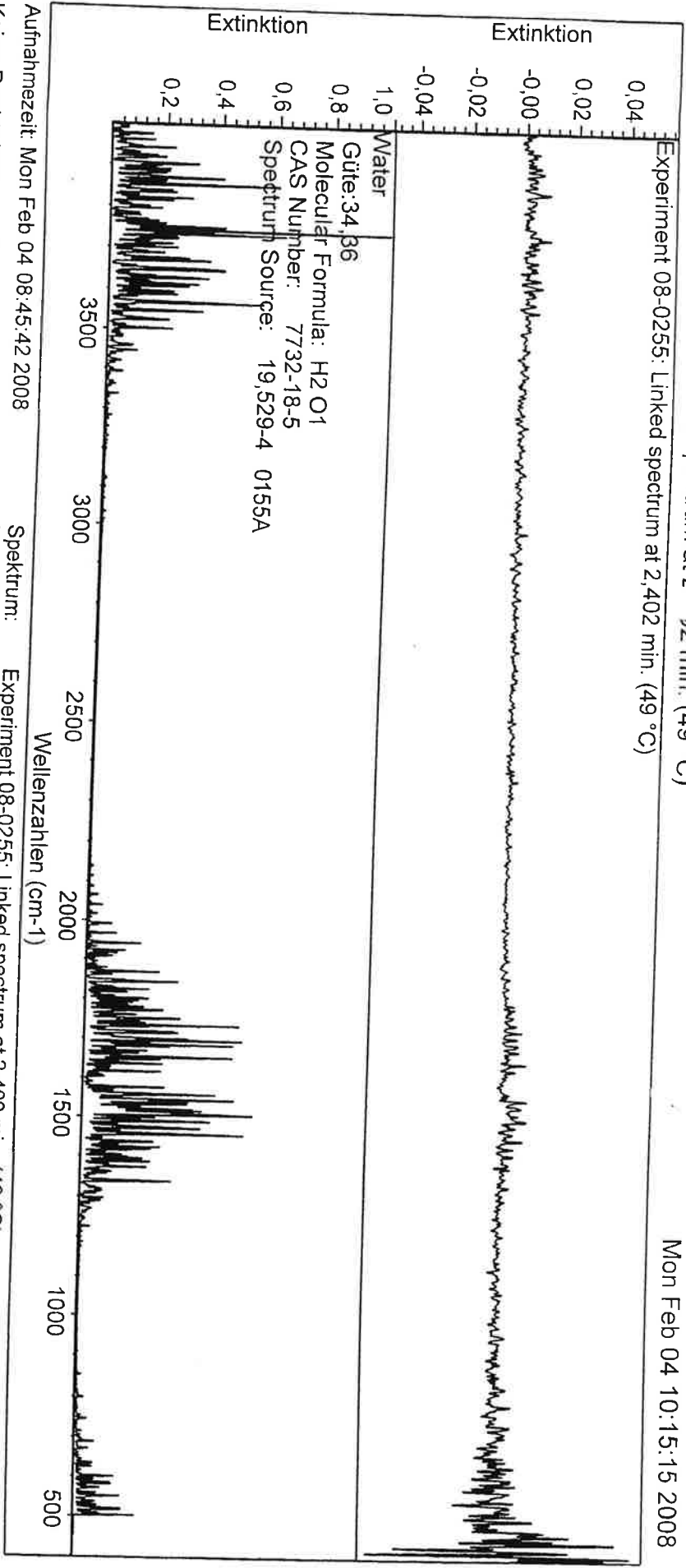


108-0255 Halbe Rahmen Granulat EPDM / P
08-0255 Halbe Rahmen Granulat EPDM / PP, 51,1155 mg

Methode: IR/EGA 25<200°C/10K/N2 + BK 900µl Alox
25,0-200,0°C 10,00°C/min N2 30,0 ml/min

TITK Rudolstadt: Labor

STAR^e SW 8.10



Water
Güte: 34,36
Molecular Formula: H2O1
CAS Number: 7732-18-5
Spektrum Source: 19,529-4 0155A

Aufnahmezeit: Mon Feb 04 08:45:42 2008

Keine Peaktablelle zum gewählten Spektrum!

Spektrum: Experiment 08-0255: Linked spectrum at 2,402 min. (49 °C)
Bereich: 3495,26-455,13
Suchweise: Korrelation
Hit Liste:
Index 453
Güte 34,36
Spektrumname Water
Index 453
Güte 26,04
Spektrumname Water

Bibliothek
HR Nicolet TGA Vapor Phase
Nicolet TGA Vapor Phase