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HYOSUNG CHEMICAL
TEST REPORT

SCOPE OF WORK
VDA278 (Oct. 2011) on Polyketone

REPORT NUMBER
105334067GRR-002

ISSUE DATE
22-Februrary-2023

PAGES
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TEST REPORT FOR HYOSUNG CHEMICAL CORPORATION

Report No.: 105334067GRR-002
Date: 22-Februrary-2023
P.O.: RC23R-S0012

SECTION 1

CLIENT INFORMATION

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Erin Kahn
Project Engineer

Lindsay Delamarter
Project Reviewer

SECTION 2
SUMMARY AND CONCLUSION

Date Received:	24-January-2023
Dates Tested:	06-Februrary-2023 to 16-February-2023

DESCRIPTION OF SAMPLES

Part Name:	Polyketone
Part Number:	M630V
Date of Manufacture:	Not Specified
Material Submitted:	Two (2) Plaques
Material Specification:	DBL5430 (2019)
Condition of Samples:	Not Specified
Shipping Condition:	Okay Condition – Sealed in plastic bag

WORK REQUESTED/APPLICABLE DOCUMENTS

VOC/FOG Emissions Analysis:	VDA278 (Oct. 2011)
Intertek Quote:	Qu-01317148

TEST RESULTS

TEST	DISPOSITION
VDA278 (OCTOBER 2011)	**CONFORMING**

SAMPLE DISPOSITION

At the completion of testing, samples were disposed of in a routine manner.

SECTION 3
VOC/FOG EMISSIONS ANALYSIS VDA278

Date Received:	24-January-2023
Dates Tested:	06-Februrary to 16-February-2023

DESCRIPTION OF SAMPLES:

Part Name:	Polyketone
Part Number:	M630V
Date of Manufacture:	Not Specified
Material Submitted:	Two (2) Plaques
Material Specification:	DBL5430 (2019)
Condition of Samples:	Not Specified
Shipping Condition:	Okay Condition – Sealed in plastic bag

TEST PROCEDURE:

Test Method:	VDA278 (October 2011)
Sample Conditioning:	23°C / 50% RH for 168 hours
Sample Size:	30 ± 5 mg
Overall Dimension of Component:	Not Specified
Number of Samples:	Two (2) Samples

ACCEPTANCE CRITERIA:

Referencing:	VDA278 (October 2011), DBL5430 (2019) ME5
Total VOC:	≤ 250 µg/g
Total FOG:	≤ 500 µg/g

TEST NOTES OR DEVIATIONS:

Relative humidity fell below the acceptable limit of 50 ± 5% for approximately 9% of the conditioning period. This is not expected to have a significant impact on results.

RESULTS:

Table 1: Sample Information and Results for Polyketone

		SAMPLE 1	SAMPLE 2
Dimensions (mm):		3.7 x 3.8 x 2.0	6.1 x 2.2 x 1.9
Mass (g):		0.03025	0.03383
RESULTS (µg/g)	**VOC**	17.0	15.6
	FOG	-	58.1

Table 2: Individual VOC Emissions Results (as Toluene Equivalent)

RETENTION TIME (min)	SUBSTANCE NAME (WITH OBSERVED MASS FRAGMENTATION)	CAS No.	AREA %	CONCENTRATION (µg/g)
44.709	Tricosane	638-67-5	12.0%	2
45.724	Tetracosane	646-31-1	35.7%	6
46.880	Pentacosane	629-99-2	45.2%	8

Table 3: Individual FOG Emissions Results (as Hexadecane Equivalent)

RETENTION TIME (min)	SUBSTANCE NAME (WITH OBSERVED MASS FRAGMENTATION)	CAS No.	AREA %	CONCENTRATION (µg/g)
20.217	Tetracosane	646-31-1	5.3%	3
21.373	Pentacosane	629-99-2	14.9%	9
22.731	Hexacosane	630-01-3	24.3%	14
24.358	Heptacosane	593-49-7	22.6%	13
26.334	Octacosane	630-02-4	15.4%	9
27.282	? Alkene, alcohol, cycloalkane 95 81 69	-	2.4%	1
28.756	Nonacosane	630-03-5	7.0%	4
31.753	Triacontane	638-68-6	2.1%	1

PHOTOGRAPHS:

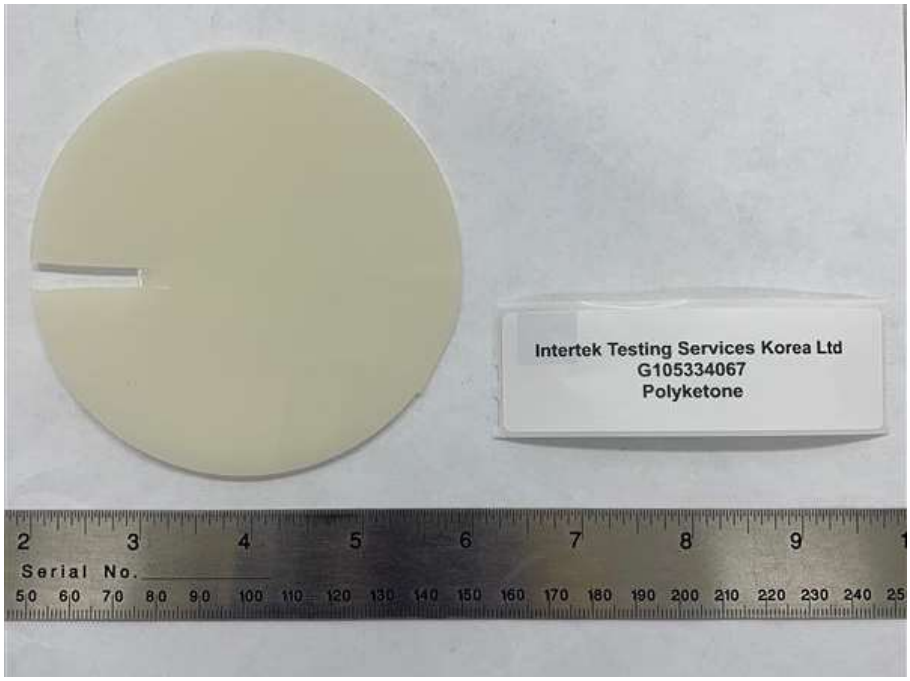

Figure 1: Photograph of Polyketone sample showing the sampling area.

Figure 2: Photograph of Polyketone samples loaded in thermal desorption tubes.

SECTION 4

FACILITIES AND EQUIPMENT:

VDA278 (OCTOBER 2011)	
INSTRUMENTATION USED:	Markes TD-100 Thermal Desorption Agilent 7890B GC Agilent 5977A MS
COLUMN USED:	Agilent HP-Ultra 2 (GC)

SECTION 5

APPENDIX A: CHROMATOGRAMS:

Non-classified peaks are below a calculated concentration of 1.0 µg/g or outside the volatility range specified in VDA278.

```
File       :D:\Intertek GR G105334067 Intertek Polyketone A .D
Operator   : EKK
Acquired   : 16 Feb 2023  00:38     using AcqMethod VDA278 VOC_V2.M
Instrument :   Agilent 5977
Sample Name: Intertek GR G105334067 Intertek Polyketone A
Misc Info  :
Vial Number: 1
```

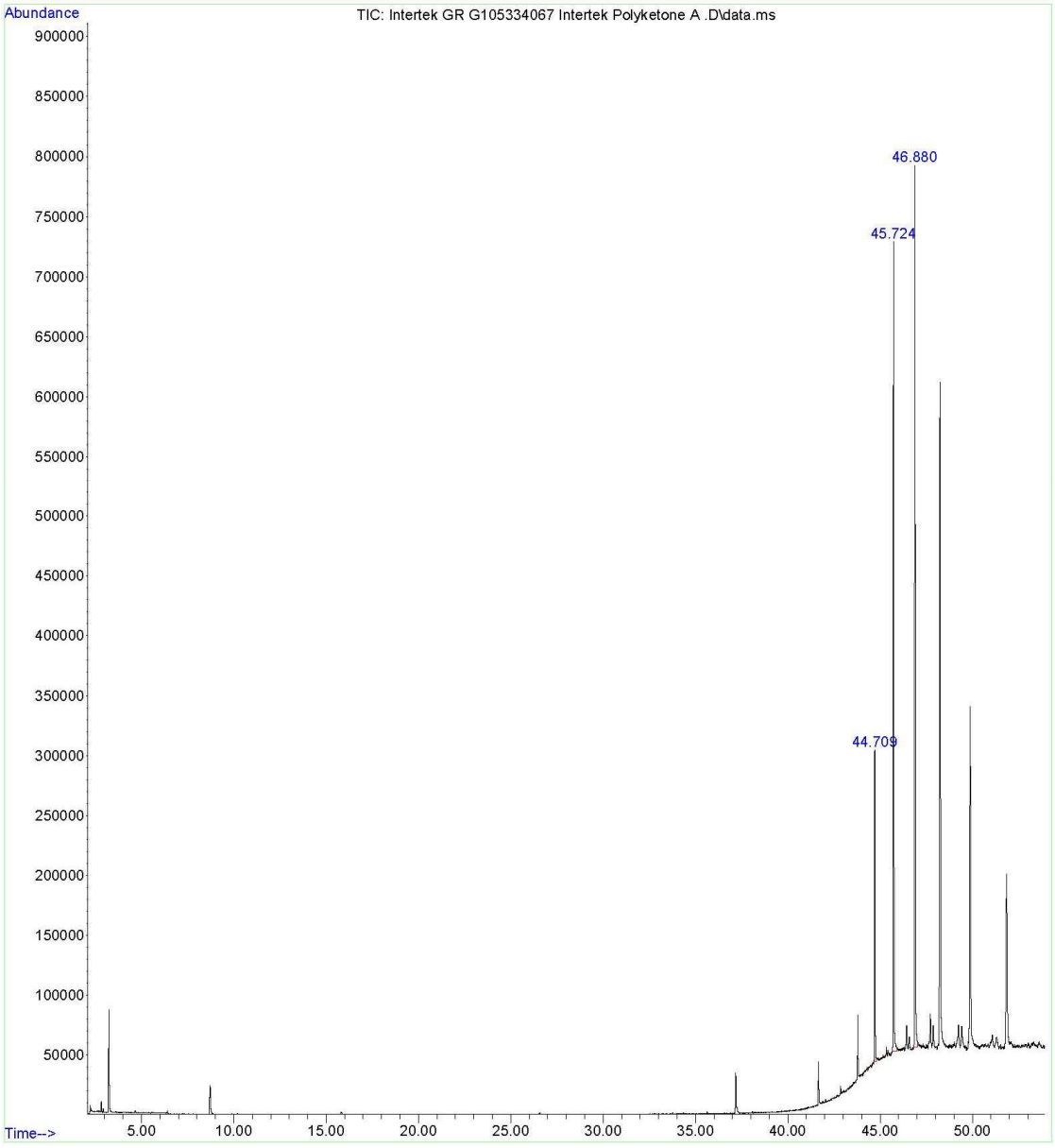

Figure A-1: Chromatogram for VOC analysis of Polyketone, sample 1.

```
File       :D:\Intertek GR G105334067 Intertek Polyketone B .D
Operator   : EKK
Acquired   : 16 Feb 2023  02:06     using AcqMethod VDA278 VOC_V2.M
Instrument :   Agilent 5977
Sample Name: Intertek GR G105334067 Intertek Polyketone B
Misc Info  :
Vial Number: 1
```

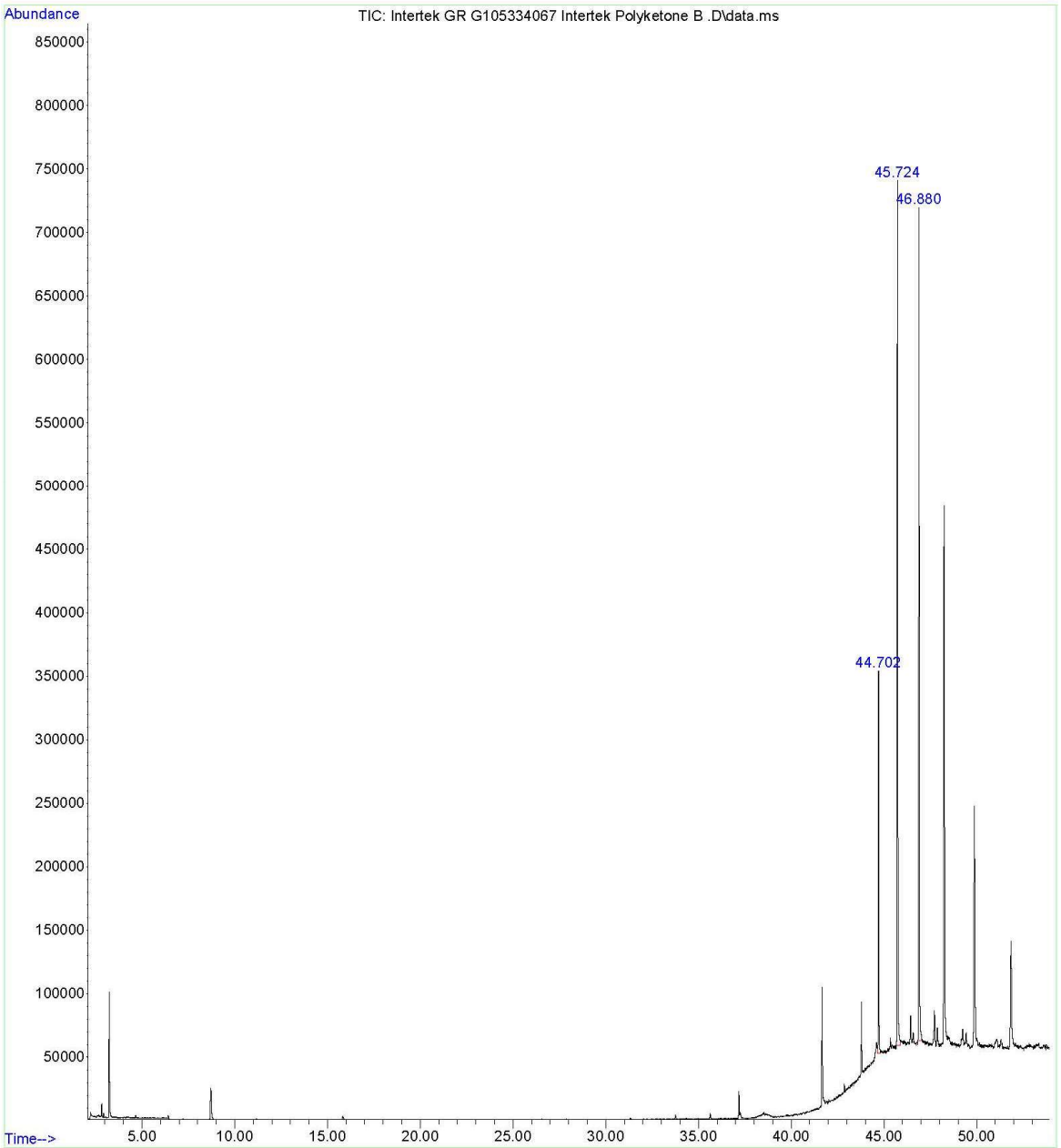

Figure A-2: Chromatogram for VOC analysis of Polyketone, sample 2.

```
File       :D:\Intertek GR G105334067 Intertek Polyketone F .D
Operator   : EKK
Acquired   : 16 Feb 2023  04:03     using AcqMethod VDA278 FOG_V2.M
Instrument :   Agilent 5977
Sample Name: Intertek GR G105334067 Intertek Polyketone F
Misc Info  :
Vial Number: 1
```

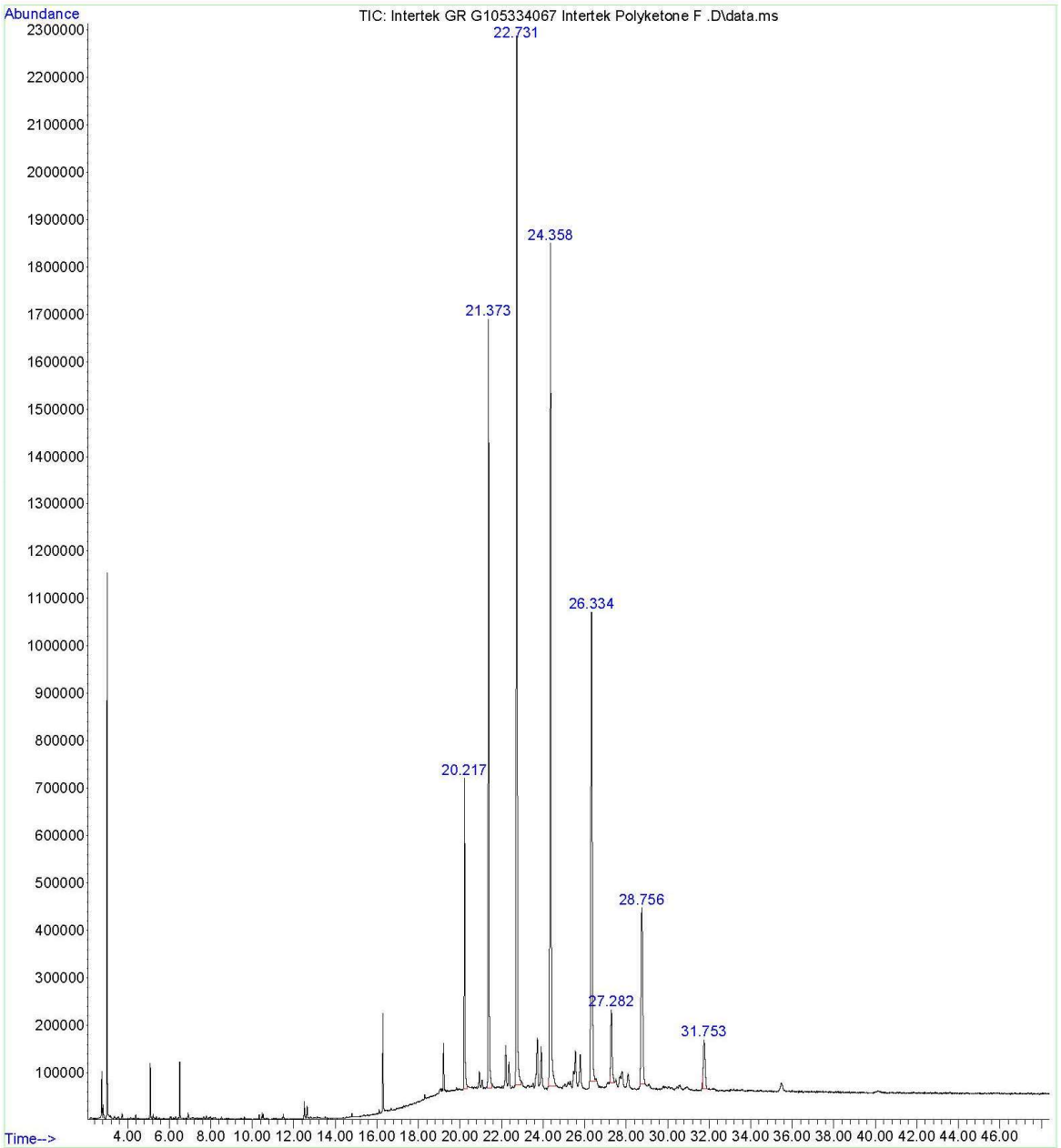

Figure A-3: Chromatogram for FOG analysis of Polyketone, sample 2.