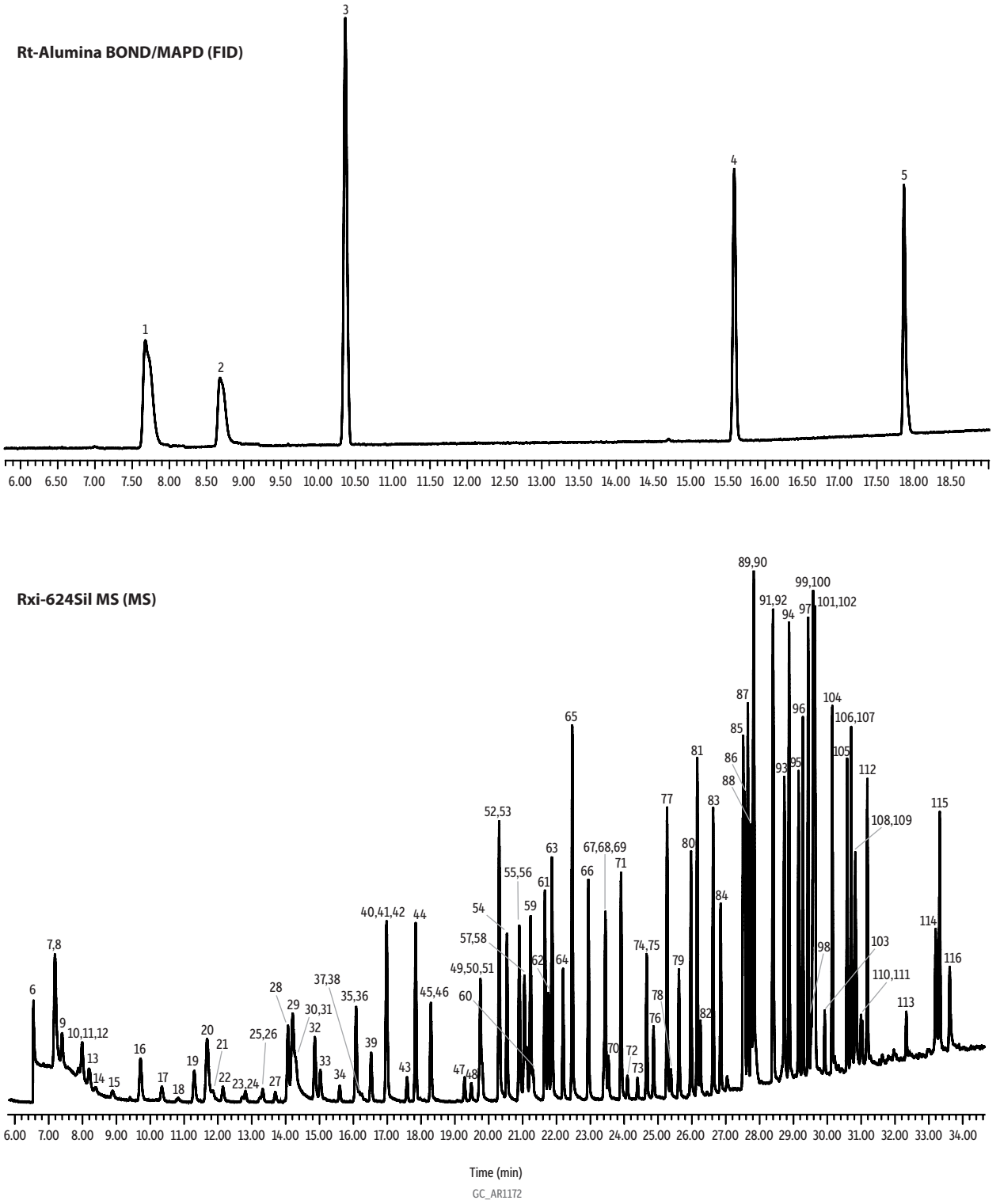
TO-15 (HJ759) + PAMS on Rt-Alumina BOND/MAPD (by FID) and Rxi-624Sil MS (by MS) using Deans Switch

- **Combined TO-15 (HJ759) and PAMS analysis.**
- **No cryogenic cooling.**



	Peaks	t_R (min)
1.	Ethane	7.68
2.	Ethylene	8.68
3.	Propane	10.36
4.	Propylene	15.58
5.	Acetylene	17.86
6.	Dichlorodifluoromethane	6.5
7.	1,2-Dichlorotetrafluoroethane	7.14
8.	Isobutane	7.19
9.	Chloromethane	7.35
10.	*trans*-2-Butene	7.84
11.	*n*-Butane	7.94
12.	Vinyl chloride	7.94
13.	1,3-Butadiene	8.16
14.	*cis*-2-Butene	8.35
15.	1-Butene	8.84
16.	Bromomethane	9.67
17.	Chloroethane	10.31
18.	Isopentane	10.77
19.	Vinyl bromide	11.26
20.	Trichlorofluoromethane	11.64
21.	1-Pentene	11.81
22.	*n*-Pentane	12.11
23.	Ethanol	12.68
24.	*trans*-2-Pentene	12.77
25.	Isoprene	13.21
26.	*cis*-2-Pentene	13.29
27.	Acrolein	13.65
28.	1,1-Dichloroethene	14.03
29.	1,1,2-Trichlorotrifluoroethane	14.17
30.	Acetone	14.27
31.	2,2-Dimethylbutane	14.27
32.	Carbon disulfide	14.83
33.	Isopropyl alcohol	14.99
34.	Allyl chloride	15.56
35.	2,3-Dimethylbutane	16.01
36.	Methylene chloride	16.05
37.	2-Methylpentane	16.14
38.	Cyclopentane	16.21
39.	*tert*-Butyl alcohol	16.49
40.	Methyl tert-butyl ether	16.94
41.	*trans*-1,2-Dichloroethene	16.95
42.	3-Methylpentane	16.97
43.	1-Hexene	17.56
44.	*n*-Hexane	17.81
45.	1,1-Dichloroethane	18.26
46.	Vinyl acetate	18.28
47.	2,4-Dimethylpentane	19.26
48.	Methylcyclopentane	19.46
49.	2-Butanone	19.69
50.	*cis*-1,2-Dichloroethene	19.73
51.	Ethyl acetate	19.78
52.	Bromochloromethane	20.28
53.	Tetrahydrofuran	20.3
54.	Chloroform	20.51
55.	1,1,1-Trichloroethane	20.88
56.	2-Methylhexane	20.89
57.	Cyclohexane	21.03
58.	2,3-Dimethylpentane	21.1
59.	Carbon tetrachloride	21.21
60.	3-Methylhexane	21.28
61.	Benzene	21.63
62.	1,2-Dichloroethane	21.74
63.	2,2,4-Trimethylpentane	21.84
64.	*n*-Heptane	22.17
65.	1,4-Difluorobenzene	22.45
66.	Trichloroethylene	22.93
67.	Methylcyclohexane	23.38
68.	1,2-Dichloropropane	23.42
69.	Methyl methacrylate	23.43
70.	1,4-Dioxane	23.52
71.	Bromodichloromethane	23.89
72.	2,3,4-Trimethylpentane	24.08
73.	2-Methylheptane	24.37
74.	3-Methylheptane	24.64
75.	*cis*-1,3-Dichloropropene	24.65
76.	Methyl isobutyl ketone	24.85
77.	Toluene	25.25
78.	*n*-Octane	25.36
79.	*trans*-1,3-Dichloropropene	25.6
80.	1,1,2-Trichloroethane	25.95
81.	Tetrachloroethene	26.14
82.	2-Hexanone	26.23
83.	Dibromochloromethane	26.61
84.	1,2-Dibromoethane	26.84
85.	Chlorobenzene-d5	27.5
86.	Chlorobenzene	27.55
87.	Ethylbenzene	27.64
88.	*n*-Nonane	27.74
89.	*m*-Xylene	27.81
90.	*p*-Xylene	27.81
91.	*o*-Xylene	28.38
92.	Styrene	28.4
93.	Bromoform	28.72
94.	Isopropylbenzene	28.86
95.	4-Bromofluorobenzene	29.14
96.	1,1,2,2-Tetrachloroethane	29.27
97.	*n*-Propylbenzene	29.42
98.	1,2,3-Trimethylbenzene	29.51
99.	*n*-Decane	29.55
100.	*p*-Ethyltoluene	29.57
101.	2-Chlorotoluene	29.6
102.	1,3,5-Trimethylbenzene	29.63
103.	*m*-Ethyltoluene	29.91
104.	1,2,4-Trimethylbenzene	30.14
105.	1,3-Dichlorobenzene	30.58
106.	*o*-Ethyltoluene	30.68
107.	1,4-Dichlorobenzene	30.70
108.	Benzyl chloride	30.82
109.	*m*-Diethylbenzene	30.86
110.	*p*-Diethylbenzene	30.99
111.	*n*-Undecane	31.02
112.	1,2-Dichlorobenzene	31.18
113.	*n*-Dodecane	32.33
114.	1,2,4-Trichlorobenzene	33.2
115.	Hexachlorobutadiene	33.32
116.	Naphthalene	33.62

Column Rxi-624Sil MS, 60 m, 0.25 mm ID, 1.40 µm (cat.# 13869) with zero dead volume Valco internal union (cat.# 20150)

Sample Ozone precursor/PAMS mix (cat.# 26370)
75 Comp TO15 + NJ mix (cat.# 34392)

Conc.: 10 ppbv

Injection on-column

Oven

Oven Temp.: 35 °C (hold 7 min) to 60 °C at 3 °C/min to 170 °C at 10 °C/min to 250 °C at 30 °C/min (hold 6 min)

Carrier Gas He, constant flow

Flow Rate: 2.0 mL/min

Detector MS

Mode: Scan

Scan Program:

Group	Start Time (min)	Scan Range (amu)	Scan Rate (scans/sec)
1	5.7	29-226	3.7

Transfer Line Temp.: 250 °C

Analyzer Type: Quadrupole

Source Type: Extractor

Source Temp.: 230 °C

Quad Temp.: 150 °C

Electron Energy: 70 eV

Solvent Delay Time: 5.7 min

Tune Type: BFB

Ionization Mode: EI

Preconcentrator Markes Unity 2 + CIA

Trap 1 Settings

Cooling temp.: 5 °C

Desorb temp.: 300 °C

Desorb flow: 6 mL/min

Desorb time: 180 sec

Internal Standard

Purge flow: 50 mL/min

Purge time: 60 sec

Vol.: 50 mL

ISTD flow: 50 mL/min

Standard

Size: 400 mL

Purge flow: 50 mL/min

Purge time: 60 sec

Sample flow: 100 mL/min

Instrument Agilent 7890B GC & 5977A MSD

Notes Deans switch time: 6.489 min
Primary column to Deans switch: Rxi-624Sil MS 60 m x 0.25 mm x 1.40 µm (cat.# 13869), 2 mL/min He
Secondary column to FID: Rt-Alumina BOND/MAPD 30 m x 0.25 mm x 4 µm (cat.# 19781), 3 mL/min He
Transfer line to MS: intermediate-polarity deactivated 1 m x 0.1 mm (cat.# 10100), 3 mL/min He

FID Parameters
Temp.: 250 °C
H_2 flow: 30 mL/min
Air flow: 400 mL/min
Makeup (N_2) flow: 22 mL/min
Data rate: 5 Hz