



**Peaks**

1. Dimethyl phthalate
2. Diethyl phthalate
3. Benzyl benzoate
4. Diisobutyl phthalate
5. Di-*n*-butyl phthalate
6. Bis(2-methoxyethyl) phthalate
7. Bis[4-methyl-2-pentyl] phthalate isomer 1
8. Bis[4-methyl-2-pentyl] phthalate isomer 2
9. Bis(2-ethoxyethyl) phthalate
10. Di-*n*-pentyl phthalate
11. Di-*n*-hexyl phthalate
12. Butyl benzyl phthalate
13. Hexyl-2-ethylhexyl phthalate
14. Bis(2-butoxyethyl) phthalate
15. Bis(2-ethylhexyl) phthalate
16. Dicyclohexyl phthalate
17. Di-*n*-octyl phthalate
18. Diisononyl phthalate
19. Diisodecyl phthalate
20. Dinonyl phthalate

**Column**

**Standard/Sample**

Rtx-50, 30 m, 0.25 mm ID, 0.25 µm (cat.# 10523)  
Benzyl benzoate (cat.# 31847)  
EPA Method 8061A phthalate esters mixture (cat.# 33227)  
Diisononyl phthalate  
Diisodecyl phthalate  
Hexyl-2-ethylhexyl phthalate  
Methylene chloride

**Diluent:**

Conc.:

**Injection**

Inj. Vol.:

Liner:

Inj. Temp.:

Split Vent Flow Rate:

**Oven**

Oven Temp.:

**Carrier Gas**

Linear Velocity:

**Detector**

Mode:

Scan Program:

1 µL split (split ratio 20:1)  
Premium 3.5 mm Precision liner w/wool (cat.# 23320.1)  
280 °C  
3 mL/min  
200 °C (hold 0.5 min) to 320 °C at 30 °C/min (hold 1 min)  
He, constant linear velocity  
66.7 cm/sec, 39.5 psi, 272.3 kPa @ 200 °C  
MS  
Scan

Group	Start Time (min)	Scan Range (amu)	Scan Rate (scans/sec)
1	0.9	59-400	-

Transfer Line Temp.:

Analyzer Type:

Source Temp.:

Electron Energy:

Solvent Delay Time:

Tune Type:

Ionization Mode:

**Instrument**

**Notes**

**Acknowledgement**

300 °C  
Quadrupole  
280 °C  
70 eV  
0.9 min  
PFTBA  
EI  
Shimadzu 2010 GC & QP2010+ MS  
The flow rate of 66.7 cm/sec is equivalent to 3 mL/min @ 200 °C. The MS scan interval is 0.1 sec. The authors would like to thank Shimadzu Corporation for their consultation with the operation of the QP2010 Plus GC-MS instrument.