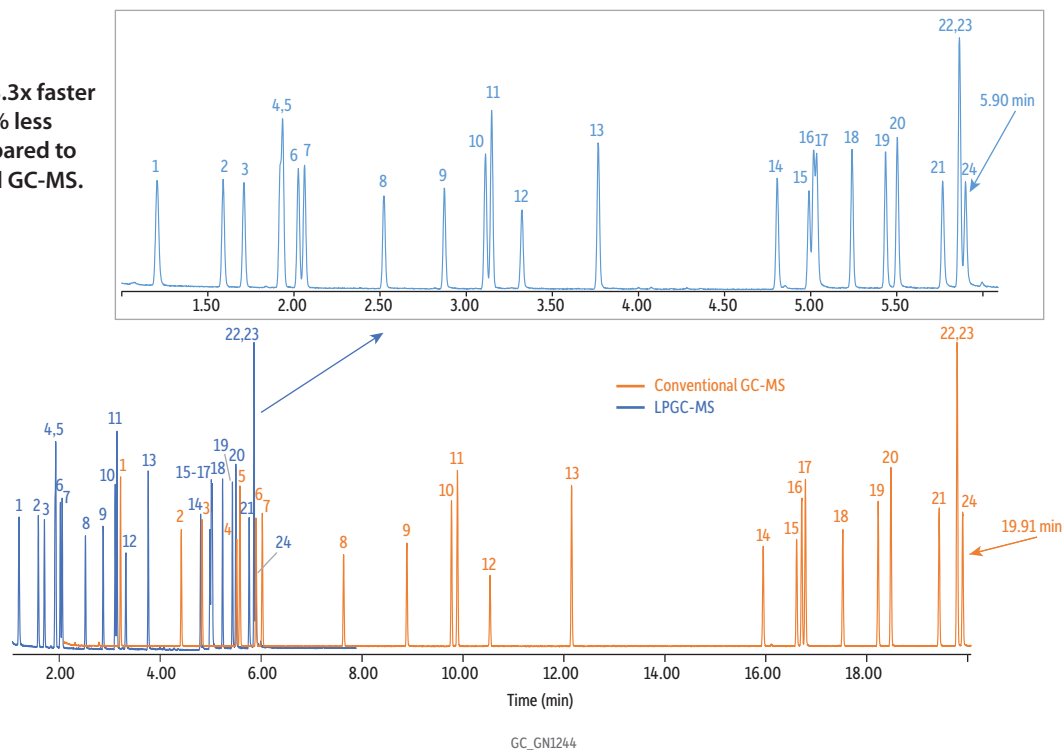


Comparison of Conventional and LPGC-MS Analysis of REACH Carcinogenic Arylamines

- LPGC-MS is 3.3x faster and uses 81% less helium compared to conventional GC-MS.



Peaks	tr (30 m)	tr (LPGC)	Conc. (ppm)	Quant Ion
1. <i>o</i> -Toluidine	3.217	1.207	2	107
2. <i>o</i> -Anisidine	4.42	1.589	2	123
3. 4-Chloroaniline	4.832	1.71	2	127
4. <i>p</i> -Cresidine	5.519	1.92	2	137
5. 2,4,5-Trimethylaniline	5.582	1.935	2	135
6. 3-Chloro- <i>o</i> -toluidine	5.902	2.026	2	141
7. 4-Chloro- <i>o</i> -toluidine	6.025	2.061	2	141
8. 2,4-Diaminotoluene	7.637	2.523	2	122
9. 2,4-Diaminoanisole	8.89	2.872	2	138
10. 2-Naphthylamine	9.773	3.112	2	143
11. 2-Aminobiphenyl	9.892	3.148	2	169
12. 2-Amino-4-nitrotoluene	10.537	3.325	2	152
13. 4-Aminobiphenyl	12.154	3.767	2	169
14. <i>p</i> -Aminoazobenzene	15.95	4.805	2	197
15. 4,4'-Oxydianiline	16.613	4.99	2	200
16. 4,4'-Diaminodiphenylmethane	16.714	5.016	2	198
17. Benzidine	16.787	5.034	2	184
18. <i>o</i> -Aminoazotoluene	17.53	5.24	2	225
19. 3,3'-Dimethyl-4,4'-diaminodiphenylmethane	18.23	5.436	2	226
20. 3,3'-Dimethylbenzidine	18.483	5.504	2	212
21. 4,4'-Thiodianiline	19.439	5.765	2	216
22. 3,3'-Dichlorobenzidine	19.795	5.864	2	252
23. 4,4'-Methylenebis(2-chloroaniline)	19.795	5.864	2	266
24. 3,3'-Dimethoxybenzidine	19.905	5.898	2	244

Column Standard/Sample
 Diluent:
 Conc.:
Injection
 Inj. Vol.:
 Liner:
 Inj. Temp.:
Carrier Gas
Detector
 Mode:
 Transfer Line Temp.:
 Analyzer Type:
 Source Temp.:
 Quad Temp.:
 Electron Energy:
 Tune Type:
 Ionization Mode:

See notes
 AccuStandard carcinogenic aryl amine mix (AE-00049-R1-10X)
 AccuStandard 2,4-diaminoanisole (ALR-0705-R2)
 Ethyl acetate
 20 µg/mL

1 µL split (split ratio 10:1)
 Topaz, splitless, single taper inlet liner, 4.0 mm x 6.5 x 78.5 (cat.# 23303)
 He
 MS
 Scan
 300 °C
 Quadrupole
 230 °C
 150 °C
 70 eV
 PFTBA
 EI

Instrument
Sample Preparation
 Agilent 7890B GC & 5977A MSD
 The standards were diluted with ethyl acetate to 20 ppm; analyzed in a 2 mL, short-cap, screw-thread vial (cat.# 21143); and capped with a short-cap, screw-vial closure (cat.# 24495).

Notes
Conventional (30 m) Analysis:
 Column: Rxi-35Sil MS, 30 m, 0.25 mm ID, 0.25 µm (cat.# 13823)
 Temp. program: 200 °C (hold 0.5 min) to 320 °C at 9.5 °C/min (hold 5 min)
 Flow: 2.0 mL/min
 Scan start time: 2 min
 Scan range: 30-300 amu
 Scan rate: 10 scans/sec

LPGC-MS Analysis:
 Column: LPGC Rxi-35Sil MS column kit, includes 10 m x 0.32 mm ID x 0.25 µm Rxi-35Sil MS analytical column and 5 m x 0.15 mm ID Rxi restrictor factory connected via SilTite connector (cat.# 11806)
 Temp. program: 100 °C (hold 0.5 min) to 300 °C at 35 °C/min (hold 5 min)
 Flow: 0.9 mL/min
 Scan start time: 1 min
 Scan range: 35-300 amu
 Scan rate: 9.7 scans/sec

Compound list based on EU legislation of Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Appendix 8 (<https://reachonline.eu/reach/en/appendix-8.html>). The 3-chloro-*o*-toluidine and 2-aminobiphenyl compounds are not part of the list.