

Chromatography



Low bleed and inert
mid-polar column



MACHEREY-NAGEL

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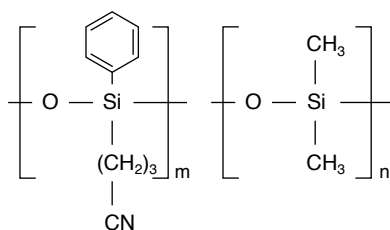
Since 1911



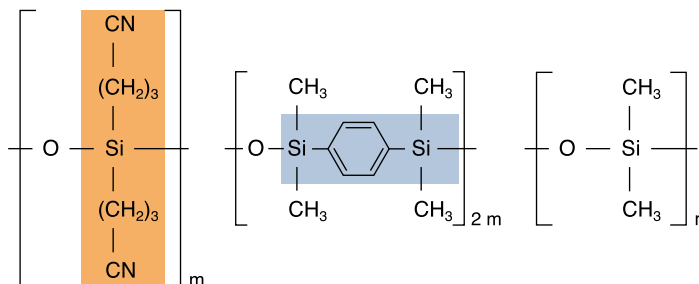
Chromatography

Outstanding features and excellent performance

New silarylene synthesis technology - symmetrically substituted siloxanes and integrated phenyl rings



OPTIMA® 1701



OPTIMA® 1701 MS

The even charge distribution and thereby lower polarizability of the silicon atom in symmetrically substituted **cyanopropylsilanes**, along with integrated phenyl rings (**silarylene**) resulted in a considerable increase of the chemical and thermal stability of the polysiloxane. Substantially reduced column bleed and as a consequence longer column life with less detector contamination qualify the OPTIMA® 1701 MS to outperform conventional columns of equal phase polarity.

14 % cyanopropyl-phenyl – 86 % dimethylpolysiloxane • USP G46

Excellent deactivation

- Reliable quantification even for critical samples at ultra trace levels

Mid-polar low bleed silarylene phase

- 100 % ion trap and quadrupol MS compatibility

Area of application

- Suitable for environmental analysis (e.g., PAH, PCB, pesticides)
- Reference column for structure identification, e.g., in combination with OPTIMA® 5 MS

Bleed comparison

Column dimension of all tested columns:

0.25 µm film, 30 m x 0.25 mm ID

Injection temperature:

280 °C

Carrier gas:

Helium, 0.8 bar

Temperature:

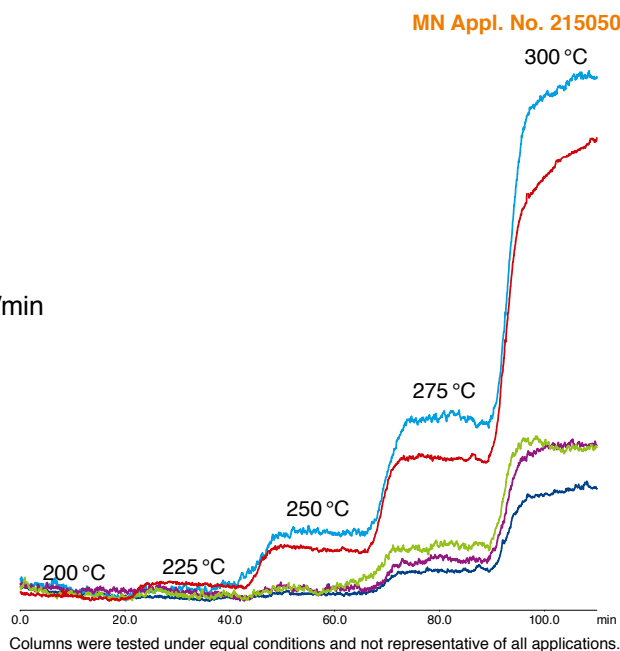
200 °C (20 min) → 225 °C (20 min), 8 °C/min → 250 °C (20 min), 8 °C/min

→ 275 °C (20 min), 8 °C/min → 300 °C (20 min), 8 °C/min

Detector:

FID, 280 °C

- DB-1701
- ZB-1701
- VF-1701ms
- Rtx-1701
- OPTIMA® 1701MS





Separation of 16 EPA PAHs

MN Appl. No. 215070

Column:

OPTIMA® 1701 MS, 0.25 µm film, 30 m x 0.25 mm ID

Sample:

PAH test mixture acc. to EPA (REF 722314)
(20 µg/mL each in toluene)

Injection:

1 µL, 300 °C, splitless (for 1 min), split 1:50

Carrier gas:

Helium, lin. velocity 34 cm/s

Temperature:

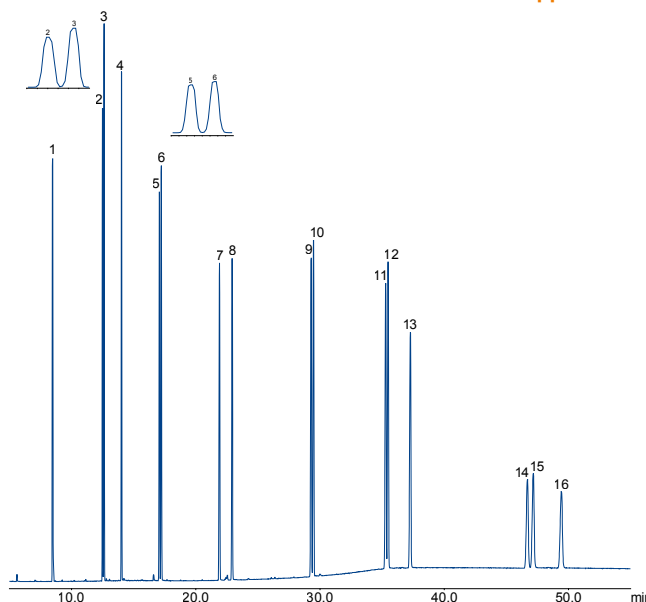
90 °C for 1 min → 220 °C, 10 °C/min → 300 °C, 4 °C/min

Detector:

MSD

Peaks:

1. Naphthalene
2. Acenaphthylene
3. Acenaphthene
4. Fluorene
5. Phenanthrene
6. Anthracene
7. Fluoranthene
8. Pyrene
9. Benzo(a)anthracene
10. Chrysene
11. Benzo(b)fluoranthene
12. Benzo(k)fluoranthene
13. Benzo(a)pyrene
14. Indeno(1,2,3-cd)pyrene
15. Dibenzo(a,h)anthracene
16. Benzo(g,h,i)perylene



Herbicide mix

MN Appl. No. 215100

Column:

OPTIMA® 1701 MS, 0.25 µm film, 30 m x 0.25 mm ID

Sample:

Herbicide mix (400 ng/mL in hexane)

Injection:

1 µL, 300 °C, splitless (for 1 min), split 1:50

Carrier gas:

Helium, lin. velocity 42 cm/s

Temperature:

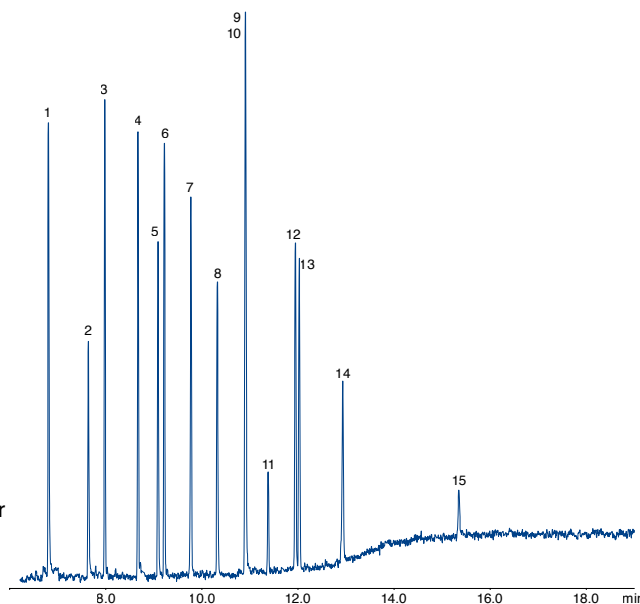
80 °C for 1 min → 200 °C, 20 °C/min → 245 °C, 8 °C/min
→ 260 °C, 20 °C/min

Detector:

MSD

Peaks:

1. 3,5-dichlorobenzoic acid methyl ester
2. 4-nitroanisole
3. Dicamba methyl ester
4. Dichloroprop methyl ester
5. 2,4-D methyl ester
6. Pentachloro-anisole
7. 2,4,5-TP methyl ester
8. 2,4,5-T methyl ester
9. Chloramben methyl ester
10. 2,4-DB methyl ester
11. Dinoseb methyl ether
12. Bentazon methyl ester
13. DCPA methyl ester
14. Picloram methyl ester
15. Acifluorfen methyl ester





Triazine pesticide mix (EPA 619)

MN Appl. No. 215080

Column:

OPTIMA® 1701 MS, 0.25 µm film, 30 m x 0.25 mm ID

Sample:

Triazine pesticide mix

Injection:

1 µL, 250 °C, split 1:100

Carrier gas:

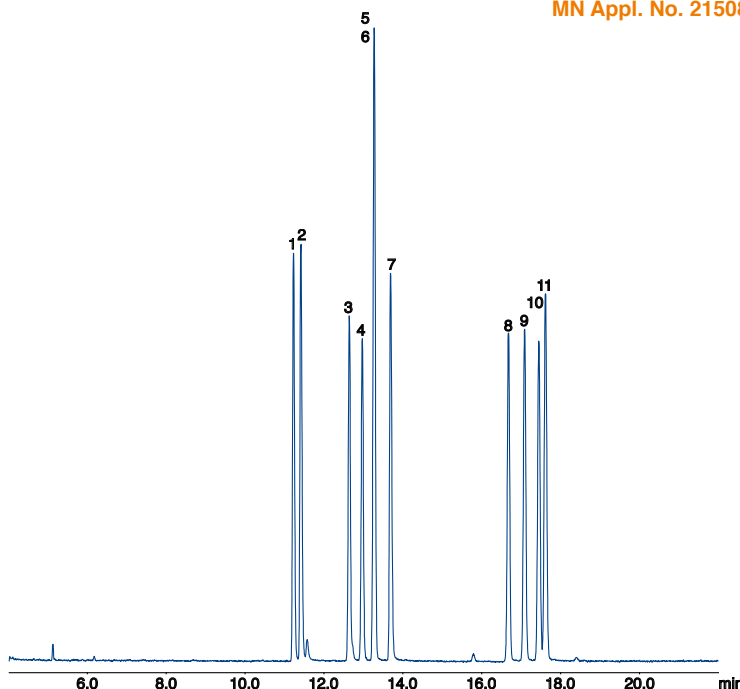
Helium, lin. velocity 42 cm/s

Temperature:

160 °C for 1 min → 180 °C, 15 °C/min → 220 °C, 2 °C/min

Detector:

MSD

**Peaks:**

1. Prometon · 2. Atraton · 3. Propazine · 4. Atrazine ·
 5. Simazine · 6. Tertbutylazine · 7. Secbumeton ·
 8. Prometryn · 9. Ametryn · 10. Simetryn · 11. Terbutryn

OPTIMA® 1701 MS

Max. temperature for isothermal operation 280 °C, max. temperature for short isotherms in a temperature program 300 °C

Similar phases:

VF-1701ms, TG-1701MS, OV-1701, DB-1701, HP-1701, Rtx-1701, SPB-1701, CP Sil 19 CB, 007-1701, BP10, ZB-1701

Ordering information

ID	Length	Film thickness	Agilent J&W VF-1701ms	Restek Rtx-1701	Phenomenex ZB-1701	MACHERY-NAGEL OPTIMA® 1701 MS
0.25 mm	30 m	0.25 µm	CP9151	12023	7HG-G006-11	726630.30
0.25 mm	60 m	0.25 µm	CP9154	12026	7KG-G006-11	726630.60
0.25 mm	30 m	0.50 µm	–	12038	–	726631.30
0.25 mm	60 m	0.50 µm	–	12041	–	726631.60
0.25 mm	30 m	1.00 µm	CP9152	12053	7HG-G006-22	726632.30
0.25 mm	60 m	1.00 µm	CP9156	12056	–	726632.60
0.32 mm	30 m	0.25 µm	CP9162	12024	7HM-G006-11	726633.30
0.32 mm	60 m	0.25 µm	CP9165	12027	7KM-G006-11	726633.60
0.32 mm	30 m	0.50 µm	–	12039	–	726634.30
0.32 mm	60 m	0.50 µm	–	12042	–	726634.60
0.32 mm	30 m	1.00 µm	CP9163	12054	7HM-G006-22	726635.30
0.32 mm	60 m	1.00 µm	CP9166	12057	–	726635.60

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