Chromatography

GC

OPTIMA® 5 HT

lowest bleeding
optimal deactivation
highest temperature stability

MACHEREY-NAGEL

www.mn-net.com

MN Since 1911

Special features of the new OPTIMA® 5 HT

✔ **temperature stability up to 400 °C**

- ➢ the new polyimide cover and thermo-stable OPTIMA® 5 HT-silarylene phase result in a longer lifetime, even at extreme conditions (high isotherm temperatures, steep heating rates > 40 °C/min.)
- ➢ solution for high boiling compounds and simulated distillation
- ➢ at standard conditions: longer life time of the column
- ➢ shorter retention times due to increased heating rates are possible

✔ **ultra low bleed silarylene phase with „5-type“ polarity**

- ➢ 100% MS compatible
- ➢ fast method transfer from other 5-type phases possible

✔ **excellent deactivation**

- ➢ reliable quantifications even for critical compounds

✔ **high temperature stable fused silica**

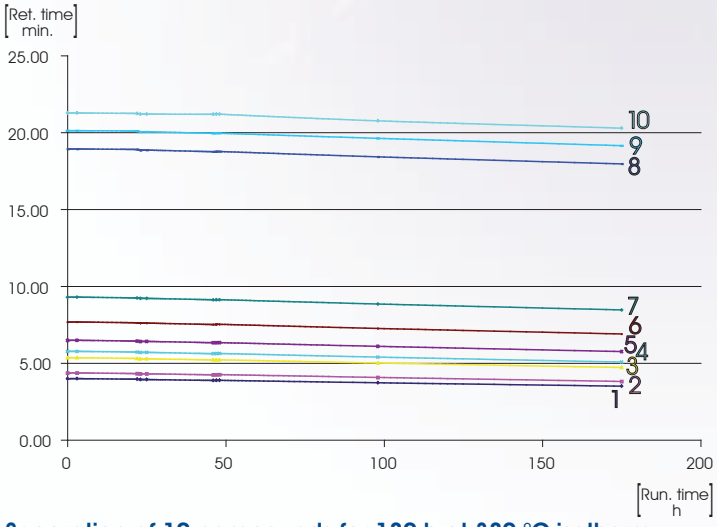
- ➢ familiar easy handling of the capillary

Stability and long-life features

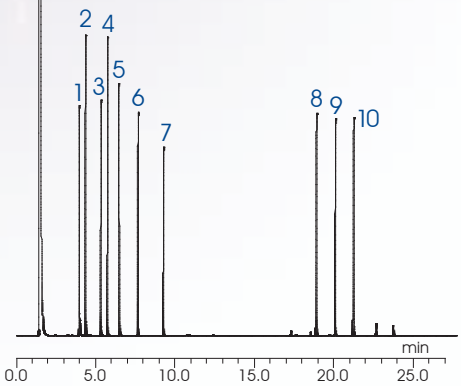
After 180 h at 380 °C isothermal:

✔ the fused silica capillary remains flexible and does not show signs of embrittling

✔ separation efficiency and deactivation remain nearly unchanged. The decrease of retention time is less than 4%, this is an indication for the high temperature stability of the cross linked polymer (no bleeding!)



Peaks:
1. Undecane, 2. Dodecane, 3. Octanol,
4. Dimethylaniline, 5. Decylamine,
6. Decane-acid-methylether
7. Undecane-acid-methylether
8. Henicosane, 9. Docosane, 10. Tricosane

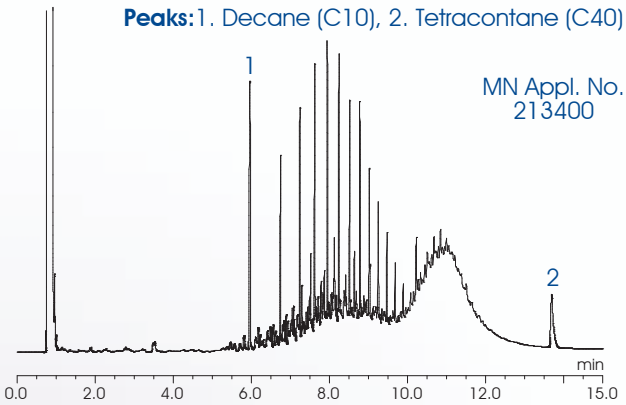


Separation of 10 compounds for 180 h at 380 °C isotherm
Column: OPTIMA® 5-HT, 15 m, 0.25 mm ID, 0.1 µm
(REF 726 102.15)

Motor oil/Mineral oil (Type A & B), rapid determination (14 min.) acc. to DIN H-53/ISO DIS 9377 with a steep heating rate (50 °C/min.)

Peaks: 1. Decane (C10), 2. Tetracontane (C40)

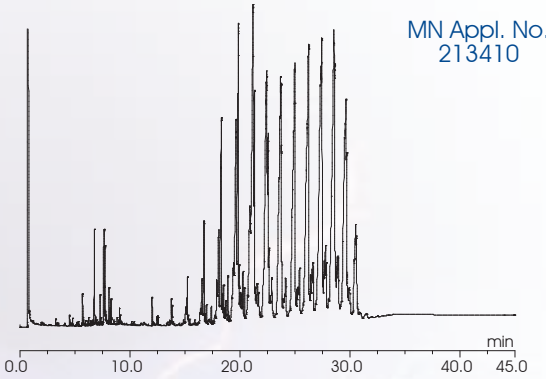
MN Appl. No. 213400



Conditions:	OPTIMA® 5-HT, 15 m, 0.32 mm ID, 0.25 µm (REF 726 108.15)
Sample:	Mineral oil (type A & B, hydrocarbon-index-kit acc. to DIN EN ISO 9377-2) in hexane
Injection.:	1.0 µl, splitless
Inj. temp.:	300 °C
Gas:	Helium, 0.6 bar
Temperature:	40 °C (for 5 min.) -> 390 °C (50 °C/min.)
Detector:	FID, 280 °C

Triglycerides in butter

MN Appl. No. 213410

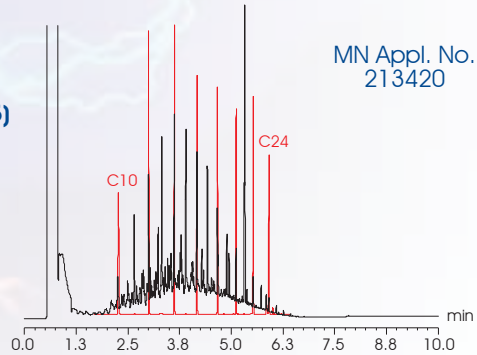


Conditions:	OPTIMA® 5-HT, 15 m, 0.25 mm ID, 0.1 µm (REF 726 102.15)
Sample:	Butter in CH_2Cl_2, filtered via a CHROMAFIL® Xtra PTFE -20/25 syringe filter
Injection:	2.0 µl, split 1:40
Inj. temp.:	350 °C
Gas:	Hydrogen, 0.3 bar
Temperature:	80 °C (for 1 min.) -> 250 °C (20 °C/min.) -> 400 °C (5 °C/min.)
Detector:	FID, 380 °C

Diesel sample with calibration, rapid determination (7 min.) via a steep heating rate (50 °C/min.)

Peaks: 1. Decane (C10), 2. Tetracosane (C24)

MN Appl. No. 213420

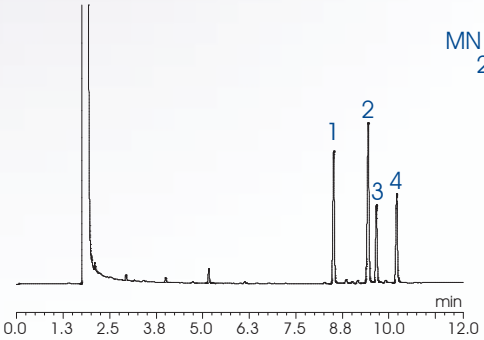


Conditions:	OPTIMA® 5-HT, 15 m, 0.25 mm ID, 0.1 µm (REF 726 102.15)
Sample:	Diesel, 0.5 mg/ml in CH_2Cl_2
Calibration mixture:	alkane mix C10-C24
Injection:	1,0 µl, splitless (0 min.), after 0.2 min. split 100 ml/min.
Inj. temp.:	230 °C
Gas:	Helium, 0.8 bar
Temperature:	40 °C (1 min.) -> 360 °C (50 °C/min.) (for 20 min.)
Detector:	FID, 280 °C

Steroides

Peaks: 1. Cholesterol, 2. Campesterol, 3. Stigmasterol, 4. ß-Sitosteol

MN Appl. No. 213430



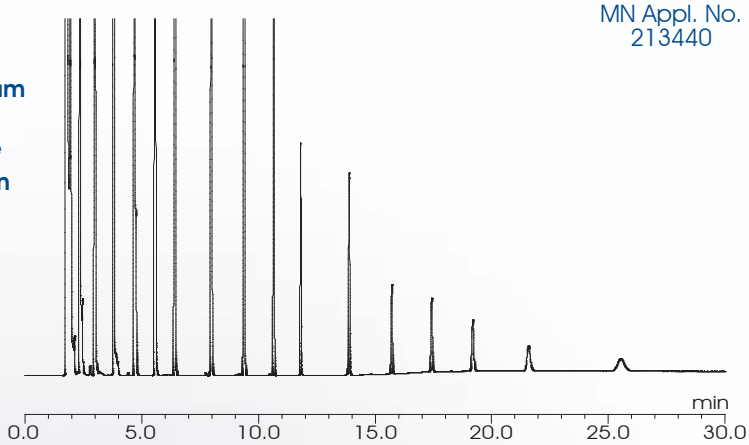
Conditions:	OPTIMA® 5-HT, 30 m, 0.32 mm ID, 0.25 µm (REF 726 108.30)
Sample:	Steroides in CH_2Cl_2
Injection:	1.0 µl, split 1:10
Inj. temp.:	280 °C
Gas:	Helium, 0.8 bar
Temperature:	250 °C -> 360 °C (6 °C/min.)
Detector:	FID, 350 °C

ASTM method D 2887, simulated distillation

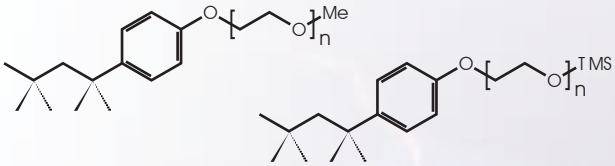
MN Appl. No. 213440

Conditions: OPTIMA® 5-HT, 15 m, 0.32 mm ID, 0.25 µm (REF 726 108.15)
Sample: ASTM D 2887 calibration mix in pentane
Injection: 1.0 µl, splitless, cold on column injection
Gas: Helium, 0.6 bar
Temperature: 35 °C -> 360 °C (15 °C/min.) (5 min.)
Detector: FID, 280 °C

Peaks:
1. Hexane, 2. Heptane, 3. Octane, 4. Nonane, 5. Decane, 6. Undecane, 7. Dodecane, 8. Tetradecan, 9. Hexadecane, 10. Octadecane, 11. Eicosane, 12. Tetracosane, 13. Octacosane, 14. Dotriacontane, 15. Hexatriacontane, 16. Tetracontane, 17. Tetratetracontane

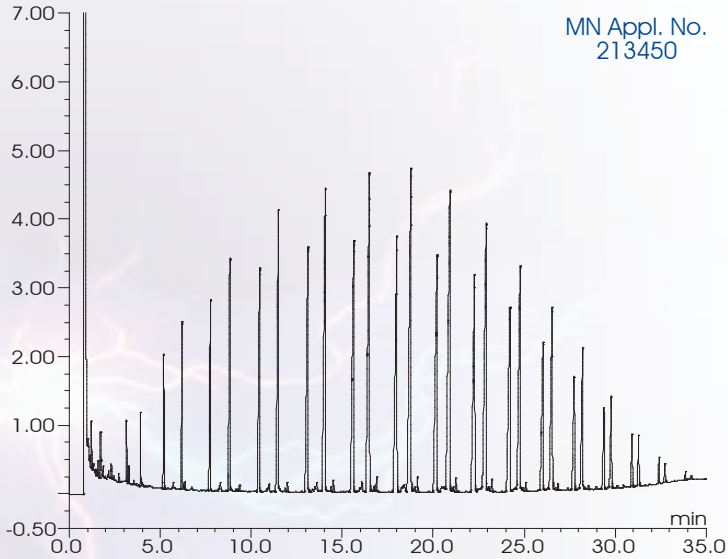


Triton test (Methyl- and TMS-ether)



MN Appl. No. 213450

Conditions: OPTIMA® 5-HT, 15 m, 0.25 mm ID, 0.1 µm (REF 726 102.15)
Sample: Triton-Methyl and -TMS ether (p-tert-Octylphenol-derivates with polyethylene glycol-chains)
Injection: 1 µl, split 1:40
Inj. temp.: 350 °C
Gas: Hydrogen, 0,8 bar
Temperature: 200 °C -> 400 °C (6 °C/min.) (20 min.)
Detector: FID, 380 °C



OPTIMA® 5 HT

- max. temperature or isothermal runs: 400 °C
- low bleed column, non polar, ideal for MS detectors, can be rinsed with solvents
- application area: for simulated distillation, hydrocarbon-, fuel-, oil-analysis, high boiling analytes
- chemically bonded, cross-linked silarylene phase, polarity index according to 5% Phenyl / 95% Methyl-Polysiloxane
- simillar phases: DB-5HT, VF-5HT, HT-5, XTI-5HT, ZB-5HT
- USP G 27 / G 36

REF	length [m]	ID [mm]	film [µm]
726102.15	15	0.25	0.1
726102.30	30	0.25	0.1
726104.15	15	0.32	0.1
726104.30	30	0.32	0.1
726106.15	15	0.25	0.25
726106.30	30	0.25	0.25
726108.15	15	0.32	0.25
726108.30	30	0.32	0.25

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