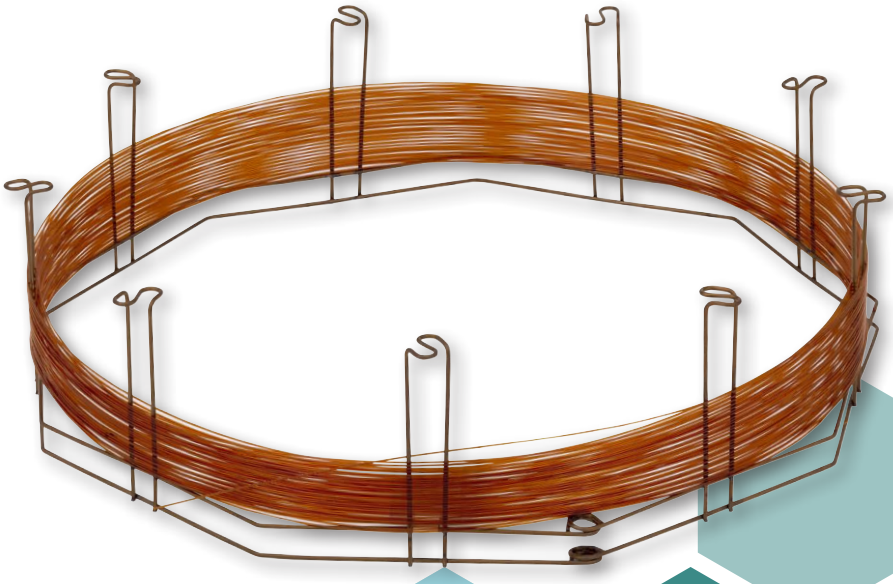
LION™ GC COLUMNS



CHROMSERVIS

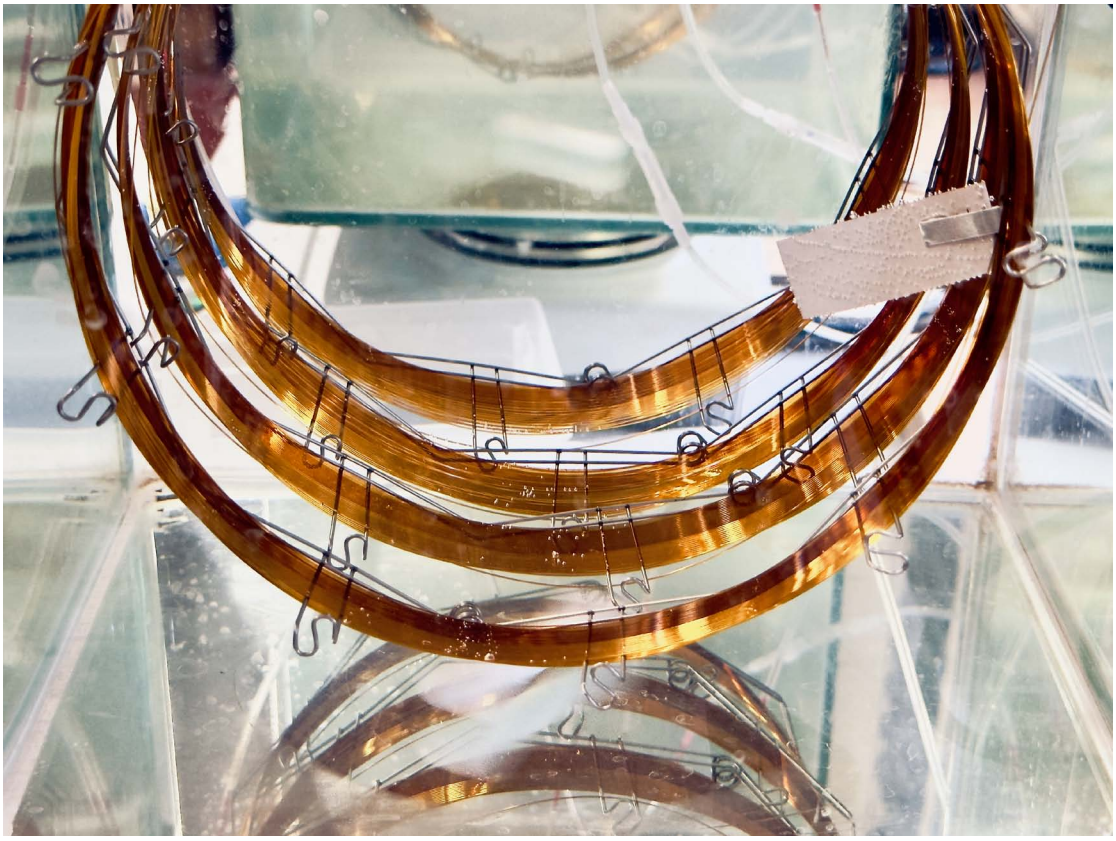
LION™

The **LION™ LN-FAME HT** column with dimensions 60 m × 0.25 mm (0.20 µm) has been used in method development for the fatty acid profiling in plasma lipid classes in our Atherosclerosis Research Laboratory at First Faculty of Medicine, Charles University in Prague, the Czech Republic. This column withstands high temperatures needed to elute cholesterol from the system when analysing cholesteryl ester profiles. Separation of peaks critical for the methyl ester analyses is also possible on this type of column.
Marek Vecka, Ph.D., Charles Universtity Prague

FIRST FACULTY OF MEDICINE
Charles University

Chempoint, a well-established chemical company headquartered in Slovakia, has been a trusted source of high-quality chemical solutions for over two decades. With a focus on organic chemistry, they are able to synthesize extremely wide variety of compounds, particularly renowned for expertise in organophosphorus compounds and isocyanates.
The chromatography column, **LION™ LN-5 MS**, has demonstrated exceptional versatility in analyzing a wide range of compounds. Notably, it has proven resilient even when subjected to highly corrosive and acidic substances, showcasing its robustness in handling hostile chemical environments. Furthermore, it consistently delivers good separation, enhancing the accuracy and reliability of compound analysis.
Ing. Miroslav Toma, CHEMPOINT

Chempoint



LION™

LION™ GC columns have arrived to offer you a broad range of stationary phases and flexibility in capillary dimensions. What benefits do these GC capillary columns bring you?

- Strict quality control, each column individually tested.
- Column box includes column test mixture and scoring wafer.
- High flexibility in column dimensions and film thickness.
- Customer specific columns available.

LION™ stationary phases

Phase name	Stationary phase composition	Max. temp. *	Page
LN-1	100% dimethyl polysiloxane	350 °C	5
LN-5	5% diphenyl, 95% dimethyl polysiloxane	350 °C	6
LN-13	13% diphenyl, 87% dimethyl polysiloxane	340 °C	7
LN-20	20% diphenyl, 80% dimethyl polysiloxane	340 °C	7
LN-35	35% diphenyl, 65% dimethyl polysiloxane	340 °C	8
LN-17	50% diphenyl, 50% dimethyl polysiloxane	340 °C	8
LN-200	Trifluoropropyl methyl polysiloxane	250 °C	9
LN-225	25% cyanopropyl, 25% phenyl, 50% methyl polysiloxane	260 °C	9
LN-624	6% cyanopropylphenyl, 94% methyl polysiloxane	260 °C	10
LN-1301	6% cyanopropylphenyl, 94% methyl polysiloxane	260 °C	10
LN-1701	14% cyanopropylphenyl, 86% methyl polysiloxane	280 °C	11
LN-WAX	Polyethylene glycol (PEG)	250 °C	11
LN-WAX Plus	Polyethylene glycol (PEG) inert and water resistant	270 °C	12
LN-FFAP	Acid modified polyethylene glycol (PEG)	250 °C	12
LN-5 BA	Basic modified 5% phenyl, 95% methyl polysiloxane	320 °C	13
LN-WAX BA	Basic modified polyethylene glycol (PEG)	240 °C	13
LN-23	50% cyanopropyl, 50% methyl polysiloxane	260 °C	14
LN-FAME	100% cyanopropyl polysiloxane	250 °C	14
LN-1 MS	100% dimethyl polysiloxane – low bleeding	350 °C	15
LN-5 MS	5% diphenyl 95% dimethyl polysiloxane – low bleeding	350 °C	16
LN-5 MS Plus	Silphenylene methyl polysiloxane – extra low bleeding and inert	350 °C	17
LN-XLB **	Proprietary phase for semi-volatiles – low bleeding	360 °C	18
LN-35 MS	35% diphenyl, 65% dimethyl polysiloxane – low bleeding	340 °C	18
LN-17 MS	50% diphenyl, 90% dimethyl polysiloxane – low bleeding	340 °C	19
LN-225 MS	25% cyanopropyl, 25% phenyl, 50% methyl polysiloxane – low bleeding	260 °C	19
LN-624 MS	6% cyanopropylphenyl, 94% methyl polysiloxane – low bleeding	260 °C	20
LN-624 Sil MS	6% cyanopropylsilphenyl (equivalent), 94% methyl polysiloxane – low bleeding	320 °C	20
LN-WAX MS	Polyethylene glycol (PEG) – low bleeding	250 °C	20
LN-1 HT	100% dimethyl polysiloxane – high temperature	380 °C	21
LN-5 HT	5% diphenyl , 95% dimethyl polysiloxane – high temperature	380 °C	21
LN-8 HT	Low to mid proprietary high temperature phase	400 °C	21
LN-35 HT	35% dimethyl, 65% dimethyl polysiloxane – high temperature	370 °C	22
LN-17 HT	50% dimethyl, 50% dimethyl polysiloxane – high temperature	370 °C	22
LN-65 HT	65% dimethyl, 35% dimethyl polysiloxane – high temperature	370 °C	23
LN-1701 HT	14% cyanopropylphenyl, 86% methyl polysiloxane – high temperature	320 °C	22
LN-WAX HT	Polyethylene glycol (PEG) – high temperature	300 °C	23
LN-FAME HT	Cyanopropyl polysiloxane – high temperature	280 °C	23

* The max. temperature depends on the stationary phase film thickness.
** XLB GC column selectivities of various manufacturers may vary.

LION™ Retention Gaps / Precolumns

LION™ deactivated Fused Silica Retention Gaps / Precolumns

- DPTMDS deactivated Fused Silica Retention Gap / Precolumn.
- General purpose deactivation for both non polar and polar solvents.
- **Max. temperature 350 °C.**

LION™ deactivated Fused Silica Retention Gaps / Precolumns			
ID [mm]	1 m	5 m	10 m
0.10	LNG-0000-B001	LNG-0000-B005	LNG-0000-B010
0.15	LNG-0000-C001	LNG-0000-C005	LNG-0000-C010
0.18	LNG-0000-D001	LNG-0000-D005	LNG-0000-D010
0.20	LNG-0000-E001	LNG-0000-E005	LNG-0000-E010
0.25	LNG-0000-F001	LNG-0000-F005	LNG-0000-F010
0.32	LNG-0000-G001	LNG-0000-G005	LNG-0000-G010
0.53	LNG-0000-H001	LNG-0000-H005	LNG-0000-H010

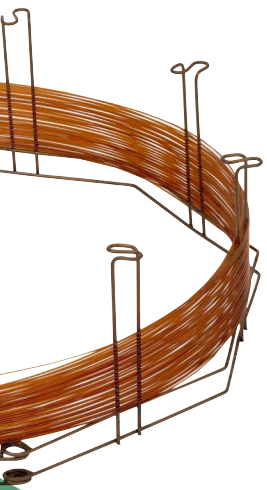
LION™ high temperature deactivated Fused Silica Retention Gaps / Precolumns

- DPTMDS deactivated high temperature Fused Silica Retention Gap / Precolumn.
- Deactivation mainly for non polar solvents.
- **Max. temperature 380 °C.**

LION™ high temperature deactivated Fused Silica Retention Gaps / Precolumns			
ID [mm]	1 m	5 m	10 m
0.10	LNH-0000-B001	LNH-0000-B005	LNH-0000-B010
0.15	LNH-0000-C001	LNH-0000-C005	LNH-0000-C010
0.18	LNH-0000-D001	LNH-0000-D005	LNH-0000-D010
0.20	LNH-0000-E001	LNH-0000-E005	LNH-0000-E010
0.25	LNH-0000-F001	LNH-0000-F005	LNH-0000-F010
0.32	LNH-0000-G001	LNH-0000-G005	LNH-0000-G010
0.53	LNH-0000-H001	LNH-0000-H005	LNH-0000-H010

Integrated Guard Column

- Available for the most standard, MS and HT columns.
- Leak free connection between guard column and analytical column.
- Add suffix -G05 for 5 m length guard column after part number of the analytical column.



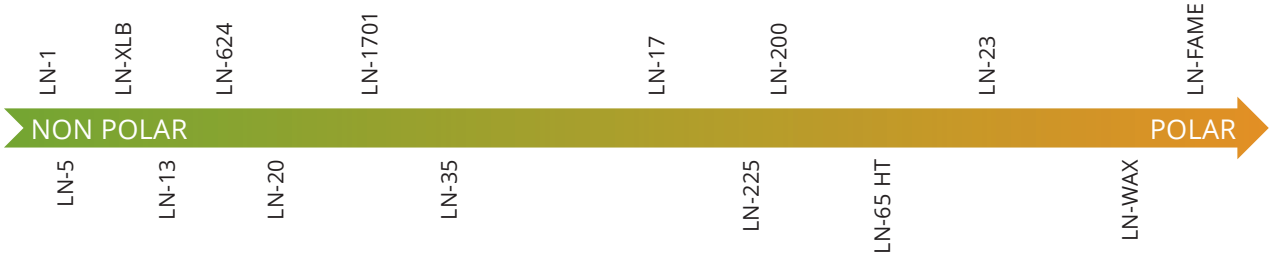
Standard GC phases

LION™ LN-1

- Non polar phase.
- Crossbond®, 100% dimethyl polysiloxane.
- Separation of analytes according to boiling points.
- General purpose columns for analysis hydrocarbons, PCBs, pesticides, aromatics, ketones, semivolatiles, oxygenates, natural gas deodorants, residual solvents.
- **Max. temperature 350 °C for df ≤ 0.25 µm, 320 °C for df ≤ 0.5 µm, 300 °C for df ≥ 1 µm.**
- Equivalent to USP G1, G2, G9 and G38 phases.

LION™ LN-1				
df [µm]	**10 m**	**20 m**	**40 m**	
0.18 mm ID				
0.20 µm	LNI-5755-DE10	LNI-5755-DE20	LNI-5755-DE40	
0.40 µm	LNI-5755-DJ10	LNI-5755-DJ20	LNI-5755-DJ40	
df [µm]	**15 m**	**30 m**	**60 m**	**105 m**
0.25 mm ID				
0.10 µm	LNI-5755-FB15	LNI-5755-FB30	LNI-5755-FB60	–
0.25 µm	LNI-5755-FF15	LNI-5755-FF30	LNI-5755-FF60	LNI-5755-FF1Y
0.50 µm	LNI-5755-FL15	LNI-5755-FL30	LNI-5755-FL60	LNI-5755-FL1Y
1.00 µm	LNI-5755-FQ15	LNI-5755-FQ30	LNI-5755-FQ60	LNI-5755-FQ1Y
0.32 mm ID				
0.10 µm	LNI-5755-GB15	LNI-5755-GB30	LNI-5755-GB60	
0.25 µm	LNI-5755-GF15	LNI-5755-GF30	LNI-5755-GF60	LNI-5755-GF1Y
0.50 µm	LNI-5755-GL15	LNI-5755-GL30	LNI-5755-GL60	LNI-5755-GL1Y
1.00 µm	LNI-5755-GQ15	LNI-5755-GQ30	LNI-5755-GQ60	LNI-5755-GQ1Y
1.50 µm	LNI-5755-GT15	LNI-5755-GT30	LNI-5755-GT60	–
3.00 µm	LNI-5755-GY15	LNI-5755-GY30	LNI-5755-GY60	–
5.00 µm	LNI-5755-G115	LNI-5755-G130	LNI-5755-G160	–
0.53 mm ID				
0.25 µm	LNI-5755-HF15	LNI-5755-HF30	LNI-5755-HF60	LNI-5755-HF1Y
0.50 µm	LNI-5755-HL15	LNI-5755-HL30	LNI-5755-HL60	LNI-5755-HL1Y
1.00 µm	LNI-5755-HQ15	LNI-5755-HQ30	LNI-5755-HQ60	LNI-5755-HQ1Y
1.50 µm	LNI-5755-HT15	LNI-5755-HT30	LNI-5755-HT60	–
3.00 µm	LNI-5755-HY15	LNI-5755-HY30	LNI-5755-HY60	–
5.00 µm	LNI-5755-H115	LNI-5755-H130	LNI-5755-H160	–
7.00 µm	LNI-5755-H215	LNI-5755-H230	LNI-5755-H260	–

Phases polarity chart

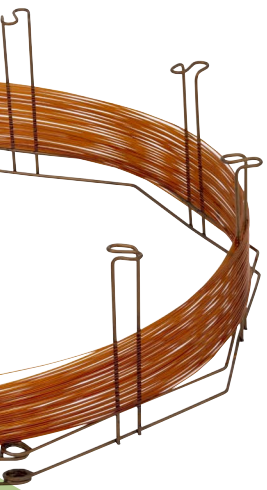


Standard GC phases

LION™ LN-5

- Low polar phase.
- Crossbond®, 5% diphenyl 95% dimethyl polysiloxane.
- General purpose columns for analysis hydrocarbons, PCBs, pesticides, aromatics, semivolatiles, essential oils, drugs and anesthetics.
- **Max. temperature 350 °C for df ≤ 0.25 µm, 320 °C for df ≤ 1 µm, 300 °C for df > 1 µm.**
- Equivalent to USP G27 and G36 phases.

LION™ LN-5				
df [µm]	**10 m**	**20 m**	**40 m**	
0.18 mm ID				
0.20 µm	LNI-5764-DE10	LNI-5764-DE20	LNI-5764-DE40	
0.40 µm	LNI-5764-DJ10	LNI-5764-DJ20	LNI-5764-DJ40	
df [µm]	**15 m**	**30 m**	**60 m**	**105 m**
0.25 mm ID				
0.10 µm	LNI-5764-FB15	LNI-5764-FB30	LNI-5764-FB60	
0.25 µm	LNI-5764-FF15	LNI-5764-FF30	LNI-5764-FF60	LNI-5764-FF1Y
0.50 µm	LNI-5764-FL15	LNI-5764-FL30	LNI-5764-FL60	LNI-5764-FL1Y
1.00 µm	LNI-5764-FQ15	LNI-5764-FQ30	LNI-5764-FQ60	LNI-5764-FQ1Y
0.32 mm ID				
0.10 µm	LNI-5764-GB15	LNI-5764-GB30	LNI-5764-GB60	
0.25 µm	LNI-5764-GF15	LNI-5764-GF30	LNI-5764-GF60	LNI-5764-GF1Y
0.50 µm	LNI-5764-GL15	LNI-5764-GL30	LNI-5764-GL60	LNI-5764-GL1Y
1.00 µm	LNI-5767-GQ15	LNI-5764-GQ30	LNI-5764-GQ60	LNI-5764-GQ1Y
1.50 µm	LNI-5764-GT15	LNI-5764-GT30	LNI-5764-GT60	–
3.00 µm	LNI-5764-GY15	LNI-5764-GY30	LNI-5764-GY60	–
0.53 mm ID				
0.25 µm	LNI-5764-HF15	LNI-5764-HF30	LNI-5764-HF60	–
0.50 µm	LNI-5764-HL15	LNI-5764-HL30	LNI-5764-HL60	–
1.00 µm	LNI-5764-HQ15	LNI-5764-HQ30	LNI-5764-HQ60	–
1.50 µm	LNI-5764-HT15	LNI-5764-HT30	LNI-5764-HT60	–
3.00 µm	LNI-5764-HY15	LNI-5764-HY30	LNI-5764-HY60	–
5.00 µm	LNI-5764-H115	LNI-5764-H130	LNI-5764-H160	–



Standard GC phases

LION™ LN-13

- Low to middle polar phase.
- Crossbond®, 13% diphenyl 87% dimethyl polysiloxane.
- General purpose columns for analysis halocarbons, suitable column for EPA method 601, 602 and 604.
- **Max. temperature**
  340 °C for df ≤ 0.25 µm,
  320 °C for df ≤ 0.50 µm,
  300 °C for df = 1.00 µm.

LION™ LN-13			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.20 µm	LNI-5781-DE10	LNI-5781-DE20	LNI-5781-DE40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.25 µm	LNI-5781-FF15	LNI-5781-FF30	LNI-5781-FF60
0.50 µm	LNI-5781-FL15	LNI-5781-FL30	LNI-5781-FL60
1.00 µm	LNI-5781-FQ15	LNI-5781-FQ30	LNI-5781-FQ60
0.32 mm ID			
0.25 µm	LNI-5781-GF15	LNI-5781-GF30	LNI-5781-GF60
0.50 µm	LNI-5781-GL15	LNI-5781-GL30	LNI-5781-GL60
1.00 µm	LNI-5781-GQ15	LNI-5781-GQ30	LNI-5781-GQ60
0.53 mm ID			
0.50 µm	LNI-5781-HL15	LNI-5781-HL30	LNI-5781-HL60
1.00 µm	LNI-5781-HQ15	LNI-5781-HQ30	LNI-5781-HQ60

LION™ LN-20

- Low to middle polar phase.
- Crossbond®, 20% diphenyl 80% dimethyl polysiloxane.
- General purpose columns for analysis volatiles and flavor compounds.
- **Max. temperature**
  340 °C for df ≤ 0.25 µm,
  320 °C for df = 0.50 µm,
  300 °C for df = 1.00 µm.
- Equivalent to USP G28 and G32 phases.

LION™ LN-20			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.20 µm	LNI-5786-DE10	LNI-5786-DE20	LNI-5786-DE40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.25 µm	LNI-5786-FF15	LNI-5786-FF30	LNI-5786-FF60
0.50 µm	LNI-5786-FL15	LNI-5786-FL30	LNI-5786-FL60
1.00 µm	LNI-5786-FQ15	LNI-5786-FQ30	LNI-5786-FQ60
0.32 mm ID			
0.25 µm	LNI-5786-GF15	LNI-5786-GF30	LNI-5786-GF60
0.50 µm	LNI-5786-GL15	LNI-5786-GL30	LNI-5786-GL60
1.00 µm	LNI-5786-GQ15	LNI-5786-GQ30	LNI-5786-GQ60
0.53 mm ID			
0.50 µm	LNI-5786-HL15	LNI-5786-HL30	LNI-5786-HL60
1.00 µm	LNI-5786-HQ15	LNI-5786-HQ30	LNI-5786-HQ60

Standard GC phases

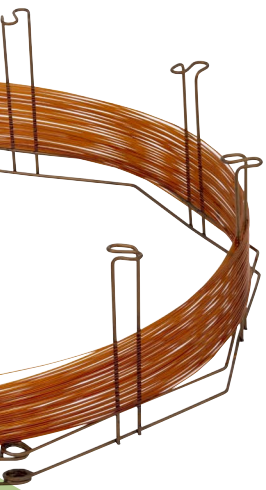
LION™ LN-35

- Middle polar phase.
- Crossbond®, 35% diphenyl 65% dimethyl polysiloxane.
- General purpose columns for pesticides, PCBs, phthalate esters and sterols.
- **Max. temperature**
  340 °C for df ≤ 0.25 µm,
  320 °C for df = 0.50 µm,
  300 °C for df = 1.00 µm.
- Equivalent to USP G28, G32 and G42 phase.

LION™ LN-35			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.20 µm	LNI-5762-DE10	LNI-5762-DE20	LNI-5762-DE40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.25 µm	LNI-5762-FF15	LNI-5762-FF30	LNI-5762-FF60
0.50 µm	LNI-5762-FL15	LNI-5762-FL30	LNI-5762-FL60
1.00 µm	LNI-5762-FQ15	LNI-5762-FQ30	LNI-5762-FQ60
0.32 mm ID			
0.25 µm	LNI-5762-GF15	LNI-5762-GF30	LNI-5762-GF60
0.50 µm	LNI-5762-GL15	LNI-5762-GL30	LNI-5762-GL60
1.00 µm	LNI-5762-GQ15	LNI-5762-GQ30	LNI-5762-GQ60
0.53 mm ID			
0.50 µm	LNI-5762-HL15	LNI-5762-HL30	LNI-5762-HL60
1.00 µm	LNI-5762-HQ15	LNI-5762-HQ30	LNI-5762-HQ60

LION™ LN-17

- Middle to high polar phase.
- Crossbond®, 50% diphenyl 50% dimethyl polysiloxane.
- General purpose columns for pesticides, phthalate esters, sterols and steroids.
- **Max. temperature**
  340 °C for df ≤ 0.25 µm,
  320 °C for df = 0.50 µm,
  300 °C for df = 1.00 µm.
- Equivalent to USP G3 and G17 phases.



LION™ LN-17			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.20 µm	LNI-5757-DE10	LNI-5757-DE20	LNI-5757-DE40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.25 µm	LNI-5757-FF15	LNI-5757-FF30	LNI-5757-FF60
0.50 µm	LNI-5757-FL15	LNI-5757-FL30	LNI-5757-FL60
1.00 µm	LNI-5757-FQ15	LNI-5757-FQ30	LNI-5757-FQ60
0.32 mm ID			
0.25 µm	LNI-5757-GF15	LNI-5757-GF30	LNI-5757-GF60
0.50 µm	LNI-5757-GL15	LNI-5757-GL30	LNI-5757-GL60
1.00 µm	LNI-5757-GQ15	LNI-5757-GQ30	LNI-5757-GQ60
0.53 mm ID			
0.50 µm	LNI-5757-HL15	LNI-5757-HL30	LNI-5757-HL60
1.00 µm	LNI-5757-HQ15	LNI-5757-HQ30	LNI-5757-HQ60

Standard GC phases

LION™ LN-200

- High polar phase.
- Crossbond®, trifluoropropyl methyl polysiloxane.
- General purpose columns for fluorocarbons, alcohols, ketones.
- **Max. temperature 250 °C for df ≤ 0.50 µm, 220 °C for df ≥ 1.00 µm.**
- Equivalent to USP G6 phase.

LION™ LN-200			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.20 µm	LNI-5787-DE10	LNI-5787-DE20	LNI-5787-DE40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.25 µm	LNI-5787-FF15	LNI-5787-FF30	LNI-5787-FF60
0.50 µm	LNI-5787-FL15	LNI-5787-FL30	LNI-5787-FL60
1.00 µm	LNI-5787-FQ15	LNI-5787-FQ30	LNI-5787-FQ60
0.32 mm ID			
0.25 µm	LNI-5787-GF15	LNI-5787-GF30	LNI-5787-GF60
0.50 µm	LNI-5787-GL15	LNI-5787-GL30	LNI-5787-GL60
1.00 µm	LNI-5787-GQ15	LNI-5787-GQ30	LNI-5787-GQ60
0.53 mm ID			
0.50 µm	LNI-5787-HL15	LNI-5787-HL30	LNI-5787-HL60
1.00 µm	LNI-5787-HQ15	LNI-5787-HQ30	LNI-5787-HQ60

LION™ LN-225

- Middle to high polar phase.
- 25% cyanopropyl, 25% phenyl, 50% methyl polysiloxane.
- General purpose columns for sterols, FAMEs and flavor compounds.
- **Max. temperature 260 °C.**
- Equivalent to USP G7 and G19 phases.

LION™ LN-225			
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.25 µm	LNI-5788-FF15	LNI-5788-FF30	LNI-5788-FF60
0.50 µm	LNI-5788-FL15	LNI-5788-FL30	LNI-5788-FL60
1.00 µm	LNI-5788-FQ15	LNI-5788-FQ30	LNI-5788-FQ60
0.32 mm ID			
0.25 µm	LNI-5788-GF15	LNI-5788-GF30	LNI-5788-GF60
0.50 µm	LNI-5788-GL15	LNI-5788-GL30	LNI-5788-GL60
1.00 µm	LNI-5788-GQ15	LNI-5788-GQ30	LNI-5788-GQ60
0.53 mm ID			
0.50 µm	LNI-5788-HL15	LNI-5788-HL30	LNI-5788-HL60
1.00 µm	LNI-5788-HQ15	LNI-5788-HQ30	LNI-5788-HQ60

Standard GC phases

LION™ LN-624

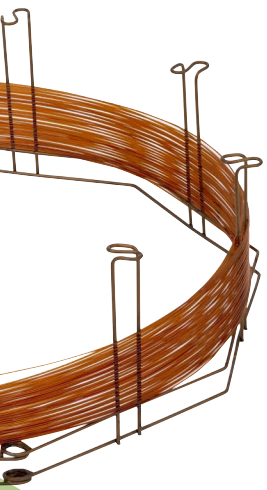
- Low to middle polar phase.
- Crossbond®, 6% cyanopropylphenyl, 94% methyl polysiloxane.
- General purpose columns for residual solvents, alcohols and volatile organic pollutants.
- **Max. temperature 260 °C.**
- Equivalent to USP G43 phase.

LION™ LN-624			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
1.00 µm	LNI-5769-DQ10	LNI-5769-DQ20	LNI-5769-DQ40
df [µm]	**30 m**	**60 m**	**105 m**
0.25 mm ID			
1.40 µm	LNI-5769-FS30	LNI-5769-FS60	LNI-5769-FS1Y
0.32 mm ID			
1.80 µm	LNI-5769-GU30	LNI-5769-GU60	LNI-5769-GU1Y
0.53 mm ID			
3.00 µm	LNI-5769-HY30	LNI-5769-HY60	LNI-5769-HY1Y

LION™ LN-1301

- Low to middle polar phase.
- Crossbond®, 6% cyanopropylphenyl, 94% methyl polysiloxane.
- General purpose columns for residual solvents, alcohols and volatile organic pollutants.
- **Max. temperature 260 °C.**
- Equivalent to USP G43 phase.

LION™ LN-1301			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.20 µm	LNI-5756-DE10	LNI-5756-DE20	LNI-5756-DE40
0.40 µm	LNI-5756-DJ10	LNI-5756-DJ20	LNI-5756-DJ40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.25 µm	LNI-5756-FF15	LNI-5756-FF30	LNI-5756-FF60
0.50 µm	LNI-5756-FL15	LNI-5756-FL30	LNI-5756-FL60
1.00 µm	LNI-5756-FQ15	LNI-5756-FQ30	LNI-5756-FQ60
0.32 mm ID			
0.25 µm	LNI-5756-GF15	LNI-5756-GF30	LNI-5756-GF60
0.50 µm	LNI-5756-GL15	LNI-5756-GL30	LNI-5756-GL60
1.00 µm	LNI-5756-GQ15	LNI-5756-GQ30	LNI-5756-GQ60
1.50 µm	LNI-5756-GT15	LNI-5756-GT30	LNI-5756-GT60
0.53 mm ID			
0.25 µm	LNI-5756-HF15	LNI-5756-HF30	LNI-5756-HF60
0.50 µm	LNI-5756-HL15	LNI-5756-HL30	LNI-5756-HL60
1.00 µm	LNI-5756-HQ15	LNI-5756-HQ30	LNI-5756-HQ60
1.50 µm	LNI-5756-HT15	LNI-5756-HT30	LNI-5756-HT60



Standard GC phases

LION™ LN-1701

- Middle polar phase.
- Crossbond®, 14% cyanopropylphenyl, 86% methyl polysiloxane.
- General purpose columns for pesticides, PCBs, alcohols and residual solvents.
- **Max. temperature 280 °C for df ≤ 0.50 µm, 270 °C for df ≥ 1.00 µm.**
- Equivalent to USP G46 phase.

LION™ LN-1701			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.20 µm	LNI-5758-DE10	LNI-5758-DE20	LNI-5758-DE40
0.40 µm	LNI-5758-DJ10	LNI-5758-DJ20	LNI-5758-DJ40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.25 µm	LNI-5758-FF15	LNI-5758-FF30	LNI-5758-FF60
0.50 µm	LNI-5758-FL15	LNI-5758-FL30	LNI-5758-FL60
1.00 µm	LNI-5758-FQ15	LNI-5758-FQ30	LNI-5758-FQ60
0.32 mm ID			
0.25 µm	LNI-5758-GF15	LNI-5758-GF30	LNI-5758-GF60
0.50 µm	LNI-5758-GL15	LNI-5758-GL30	LNI-5758-GL60
1.00 µm	LNI-5758-GQ15	LNI-5758-GQ30	LNI-5758-GQ60
1.50 µm	LNI-5758-GT15	LNI-5758-GT30	LNI-5758-GT60
0.53 mm ID			
0.25 µm	LNI-5758-HF15	LNI-5758-HF30	LNI-5758-HF60
0.50 µm	LNI-5758-HL15	LNI-5758-HL30	LNI-5758-HL60
1.00 µm	LNI-5758-HQ15	LNI-5758-HQ30	LNI-5758-HQ60
1.50 µm	LNI-5758-HT15	LNI-5758-HT30	LNI-5758-HT60
3.00 µm	LNI-5758-HY15	LNI-5758-HY30	LNI-5758-HY60

LION™ LN-WAX

- High polar phase.
- Crossbond®, polyethylene glycol.
- General purpose columns for volatiles, aromatics, flavors, fragrances, residual solvents and FAMEs.
- **Max. temperature 250 °C**
- Equivalent to USP G14, G15, G16 and G39 phases.

LION™ LN-WAX			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.20 µm	LNI-5783-DE10	LNI-5783-DE20	LNI-5783-DE40
0.40 µm	LNI-5783-DJ10	LNI-5783-DJ20	LNI-5783-DJ40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.25 µm	LNI-5783-FF15	LNI-5783-FF30	LNI-5783-FF60
0.50 µm	LNI-5783-FL15	LNI-5783-FL30	LNI-5783-FL60
0.32 mm ID			
0.25 µm	LNI-5783-GF15	LNI-5783-GF30	LNI-5783-GF60
0.50 µm	LNI-5783-GL15	LNI-5783-GL30	LNI-5783-GL60
1.00 µm	LNI-5783-GQ15	LNI-5783-GQ30	LNI-5783-GQ60
0.53 mm ID			
0.25 µm	LNI-5783-HF15	LNI-5783-HF30	LNI-5783-HF60
0.50 µm	LNI-5783-HL15	LNI-5783-HL30	LNI-5783-HL60
1.00 µm	LNI-5783-HQ15	LNI-5783-HQ30	LNI-5783-HQ60
1.50 µm	LNI-5783-HT15	LNI-5783-HT30	LNI-5783-HT60

Standard GC phases

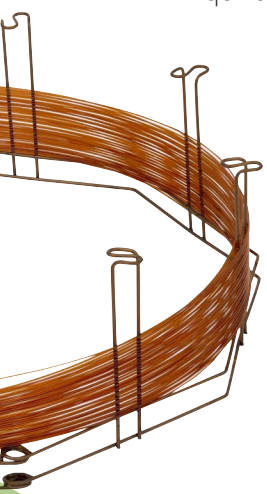
LION™ LN-WAX Plus

- High polar phase.
- Crossbond®, polyethylene glycol.
- High stable and low bleeding, water stable column for volatiles, aromatics, flavors, fragrances, residual solvents and FAMEs.
- **Max. temperature 270 °C.**
- Equivalent to USP G14, G15, G16 and G39 phases.

LION™ LN-WAX Plus			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.20 µm	LNI-5774-DE10	LNI-5774-DE20	LNI-5774-DE40
0.40 µm	LNI-5774-DJ10	LNI-5774-DJ20	LNI-5774-DJ40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.10 µm	LNI-5774-FB15	LNI-5774-FB30	LNI-5774-FB60
0.25 µm	LNI-5774-FF15	LNI-5774-FF30	LNI-5774-FF60
0.50 µm	LNI-5774-FL15	LNI-5774-FL30	LNI-5774-FL60
0.32 mm ID			
0.25 µm	LNI-5774-GF15	LNI-5774-GF30	LNI-5774-GF60
0.50 µm	LNI-5774-GL15	LNI-5774-GL30	LNI-5774-GL60
1.00 µm	LNI-5774-GQ15	LNI-5774-GQ30	LNI-5774-GQ60
0.53 mm ID			
0.25 µm	LNI-5774-HF15	LNI-5774-HF30	LNI-5774-HF60
0.50 µm	LNI-5774-HL15	LNI-5774-HL30	LNI-5774-HL60
1.00 µm	LNI-5774-HQ15	LNI-5774-HQ30	LNI-5774-HQ60
1.50 µm	LNI-5774-HT15	LNI-5774-HT30	LNI-5774-HT60

LION™ LN-FFAP

- High polar phase.
- Crossbond®, acid modified polyethylene glycol.
- Specifically designed columns for organic acid and free fatty acids.
- **Max. temperature 250 °C.**
- Equivalent to USP G25 and G35 phases.



LION™ LN-FFAP			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.20 µm	LNI-5773-DE10	LNI-5773-DE20	LNI-5773-DE40
0.40 µm	LNI-5773-DJ10	LNI-5773-DJ20	LNI-5773-DJ40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.10 µm	LNI-5773-FB15	LNI-5773-FB30	LNI-5773-FB60
0.25 µm	LNI-5773-FF15	LNI-5773-FF30	LNI-5773-FF60
0.50 µm	LNI-5773-FL15	LNI-5773-FL30	LNI-5773-FL60
0.32 mm ID			
0.25 µm	LNI-5773-GF15	LNI-5773-GF30	LNI-5773-GF60
0.50 µm	LNI-5773-GL15	LNI-5773-GL30	LNI-5773-GL60
1.00 µm	LNI-5773-GQ15	LNI-5773-GQ30	LNI-5773-GQ60
0.53 mm ID			
0.25 µm	LNI-5773-HF15	LNI-5773-HF30	LNI-5773-HF60
0.50 µm	LNI-5773-HL15	LNI-5773-HL30	LNI-5773-HL60
1.00 µm	LNI-5773-HQ15	LNI-5773-HQ30	LNI-5773-HQ60
1.50 µm	LNI-5773-HT15	LNI-5773-HT30	LNI-5773-HT60

Standard GC phases

LION™ LN-5 BA

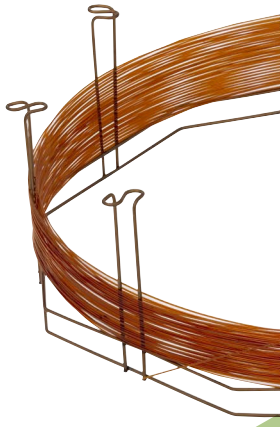
- Low polar phase.
- Crossbond®, basic modified 5% phenyl, 95% methyl polysiloxane.
- Specific column for basic compounds, amines, alkylamines, diethylamines etc.
- **Max. temperature 300/320 °C for df ≤ 0.50 µm, 280/300 °C for df ≥ 1.00 µm.**

LION™ LN-5 BA			
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.25 µm	LNI-5899-FF15	LNI-5899-FF30	LNI-5899-FF60
0.50 µm	LNI-5899-FL15	LNI-5899-FL30	LNI-5899-FL60
1.00 µm	LNI-5899-FQ15	LNI-5899-FQ30	LNI-5899-FQ60
0.32 mm ID			
0.50 µm	LNI-5899-GL15	LNI-5899-GL30	LNI-5899-GL60
1.00 µm	LNI-5899-GQ15	LNI-5899-GQ30	LNI-5899-GQ60
1.50 µm	LNI-5899-GT15	LNI-5899-GT30	LNI-5899-GT60
0.53 mm ID			
1.00 µm	LNI-5899-HQ15	LNI-5899-HQ30	LNI-5899-HQ60

LION™ LN-WAX BA

- High polar phase.
- Crossbond®, basic modified polyethylene glycol.
- Specific column for basic compound.
- **Max. temperature 230/240 °C.**

LION™ LN-WAX BA			
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.25 µm	LNI-5807-FF15	LNI-5807-FF30	LNI-5807-FF60
0.50 µm	LNI-5807-FL15	LNI-5807-FL30	LNI-5807-FL60
0.32 mm ID			
0.25 µm	LNI-5807-GF15	LNI-5807-GF30	LNI-5807-GF60
0.50 µm	LNI-5807-GL15	LNI-5807-GL30	LNI-5807-GL60
1.00 µm	LNI-5807-GQ15	LNI-5807-GQ30	LNI-5807-GQ60
0.53 mm ID			
0.50 µm	LNI-5807-HL15	LNI-5807-HL30	LNI-5807-HL60
1.00 µm	LNI-5807-HQ15	LNI-5807-HQ30	LNI-5807-HQ60
1.50 µm	LNI-5807-HT15	LNI-5807-HT30	LNI-5807-HT60



Standard GC phases

LION™ LN-23

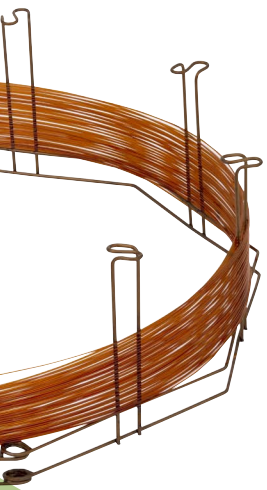
- High polar phase.
- 50% cyanopropyl, 50% methyl polysiloxane.
- General purpose columns for FAME, FAME cis-trans.
- **Max. temperature 260 °C.**
- Equivalent to USP G8 phases.

LION™ LN-23			
df [µm]	**40 m**	**60 m**	**100 m**
0.20 mm ID			
0.20 µm	LNI-5771-EE40	LNI-5771-EE60	LNI-5771-EE1X
df [µm]	**30 m**	**60 m**	**100 m**
0.25 mm ID			
0.20 µm	LNI-5771-FE30	LNI-5771-FE60	LNI-5771-FE1X
0.32 mm ID			
0.25 µm	LNI-5771-GF30	LNI-5771-GF60	LNI-5771-GF1X

LION™ LN-FAME

- High polar phase.
- 100% cyanopropyl polysiloxane.
- General purpose columns for FAMEs cis-trans.
- **Max. temperature 250 °C.**
- Equivalent to USP G5, G8 and G48 phases.

LION™ LN-FAME			
df [µm]	**40 m**	**60 m**	**100 m**
0.20 mm ID			
0.20 µm	LNI-5777-DE40	LNI-5777-DE60	LNI-5777-DE1X
df [µm]	**30 m**	**60 m**	**100 m**
0.25 mm ID			
0.20 µm	LNI-5777-FE30	LNI-5777-FE60	LNI-5777-FE1X
0.32 mm ID			
0.25 µm	LNI-5777-GF30	LNI-5777-GF60	LNI-5777-GF1X

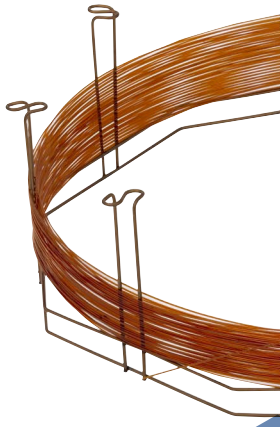


GC/MS low bleed phases

LION™ LN-1 MS

- Non polar phase.
- Crossbond®, 100% dimethyl polysiloxane.
- Separation of analytes according to boiling points.
- Low bleeding columns for analysis hydrocarbons, PCBs, pesticides, aromatics, ketones, semivolatiles, oxygenates, natural gas deodorants, residual solvents.
- **Max. temperature 350 °C for df ≤ 0.25 µm, 320 °C for df = 0.50 µm, 300 °C for df ≥ 1.00 µm.**
- Equivalent to USP G1, G2, G9 and G38 phases.

LION™ LN-1 MS			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.18 µm	LNI-5761-DD10	LNI-5761-DD20	LNI-5761-DD40
0.36 µm	LNI-5761-DI10	LNI-5761-DI20	LNI-5761-DI40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.10 µm	LNI-5761-FB15	LNI-5761-FB30	LNI-5761-FB60
0.25 µm	LNI-5761-FF15	LNI-5761-FF30	LNI-5761-FF60
0.50 µm	LNI-5761-FL15	LNI-5761-FL30	LNI-5761-FL60
1.00 µm	LNI-5761-FQ15	LNI-5761-FQ30	LNI-5761-FQ60
0.32 mm ID			
0.10 µm	LNI-5761-GB15	LNI-5761-GB30	LNI-5761-GB60
0.25 µm	LNI-5761-GF15	LNI-5761-GF30	LNI-5761-GF60
0.50 µm	LNI-5761-GL15	LNI-5761-GL30	LNI-5761-GL60
1.00 µm	LNI-5761-GQ15	LNI-5761-GQ30	LNI-5761-GQ60
0.53 mm ID			
0.25 µm	LNI-5761-HF15	LNI-5761-HF30	LNI-5761-HF60
0.50 µm	LNI-5761-HL15	LNI-5761-HL30	LNI-5761-HL60
1.00 µm	LNI-5761-HQ15	LNI-5761-HQ30	LNI-5761-HQ60
1.50 µm	LNI-5761-HT15	LNI-5761-HT30	LNI-5761-HT60

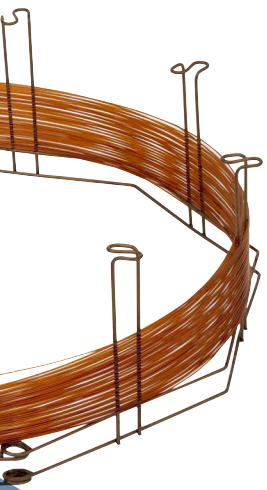


GC/MS low bleed phases

LION™ LN-5 MS

- Low polar phase.
- Crossbond®, 5% diphenyl 95% dimethyl polysiloxane.
- Low bleeding column for analysis hydrocarbons, PCBs, pesticides, aromatics, semivolatiles, essential oils, drugs and anesthetics.
- **Max. temperature**
  350 °C for df ≤ 0.25 µm,
  320 °C for df = 0.50 µm and 1.00 µm,
  300 °C for df ≥ 1.50 µm.
- Equivalent to USP G27 and G36 phases.

LION™ LN-5 MS			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.18 µm	LNI-5766-DD10	LNI-5766-DD20	LNI-5766-DD40
0.36 µm	–	LNI-5766-DI20	LNI-5766-DI40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.10 µm	LNI-5766-FB15	LNI-5766-FB30	LNI-5766-FB60
0.25 µm	LNI-5766-FF15	LNI-5766-FF30	LNI-5766-FF60
0.50 µm	LNI-5766-FL15	LNI-5766-FL30	LNI-5766-FL60
1.00 µm	LNI-5766-FQ15	LNI-5766-FQ30	LNI-5766-FQ60
0.32 mm ID			
0.25 µm	LNI-5766-GF15	LNI-5766-GF30	LNI-5766-GF60
0.50 µm	LNI-5766-GL15	LNI-5766-GL30	LNI-5766-GL60
1.00 µm	LNI-5766-GQ15	LNI-5766-GQ30	LNI-5766-GQ60
0.53 mm ID			
0.25 µm	LNI-5766-HF15	LNI-5766-HF30	LNI-5766-HF60
0.50 µm	LNI-5766-HL15	LNI-5766-HL30	LNI-5766-HL60
1.00 µm	LNI-5766-HQ15	LNI-5766-HQ30	LNI-5766-HQ60
1.50 µm	LNI-5766-HT15	LNI-5766-HT30	LNI-5766-HT60

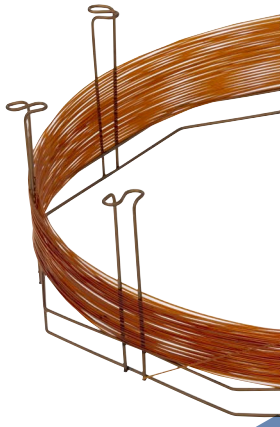


GC/MS low bleed phases

LION™ LN-5 MS Plus

- Low polar phase.
- Crossbond®, silphenylene methyl polysiloxane.
- Extra low bleeding phase and inert columns for analysis hydrocarbons, PCBs, pesticides, aromatics, semivolatiles, essential oils, drugs and anesthetics.
- **Max. temperature**
  350 °C for df ≤ 0.25 µm,
  320 °C for df = 0.50 µm and 1.00 µm,
  300 °C for df ≥ 1.50 µm.
- Equivalent to USP G27 and G36 phases.

LION™ LN-5 MS Plus			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.18 µm	LNI-5767-DD10	LNI-5767-DD20	LNI-5767-DD40
0.36 µm	–	LNI-5767-DI20	LNI-5767-DI40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.10 µm	LNI-5767-FB15	LNI-5767-FB30	LNI-5767-FB60
0.25 µm	LNI-5767-FF15	LNI-5767-FF30	LNI-5767-FF60
0.50 µm	LNI-5767-FL15	LNI-5767-FL30	LNI-5767-FL60
1.00 µm	LNI-5767-FQ15	LNI-5767-FQ30	LNI-5767-FQ60
0.32 mm ID			
0.25 µm	LNI-5767-GF15	LNI-5767-GF30	LNI-5767-GF60
0.50 µm	LNI-5767-GL15	LNI-5767-GL30	LNI-5767-GL60
1.00 µm	LNI-5767-GQ15	LNI-5767-GQ30	LNI-5767-GQ60
0.53 mm ID			
0.25 µm	LNI-5767-HF15	LNI-5767-HF30	LNI-5767-HF60
0.50 µm	LNI-5767-HL15	LNI-5767-HL30	LNI-5767-HL60
1.00 µm	LNI-5767-HQ15	LNI-5767-HQ30	LNI-5767-HQ60
1.50 µm	LNI-5767-HT15	LNI-5767-HT30	LNI-5767-HT60



GC/MS low bleed phases

LION™ LN-XLB

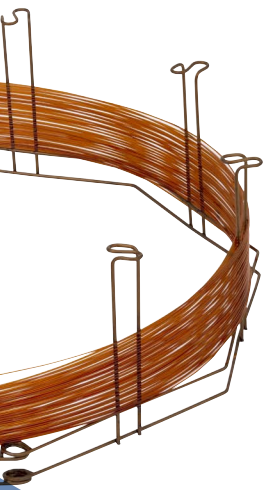
- Low polar phase.
- Crossbond®, proprietary phase.
- Low bleeding column for semivolatiles, pesticides, PCBs and PAHs.
- **Max. temperature**
  360 °C for df ≤ 0.25 µm,
  340 °C for df = 0.50 µm.

LION™ LN-XLB			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.18 µm	–	LNI-5778-DD20	–
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.10 µm	LNI-5778-FB15	LNI-5778-FB30	–
0.25 µm	LNI-5778-FF15	LNI-5778-FF30	LNI-5778-FF60
0.50 µm	–	LNI-5778-FL30	–
0.32 mm ID			
0.25 µm	–	LNI-5778-GF30	LNI-5778-GF60
0.50 µm	–	LNI-5778-GL30	LNI-5778-GL60

LION™ LN-35 MS

- Middle polar phase.
- Crossbond®, 35% diphenyl 65% dimethyl polysiloxane.
- Low bleeding columns for pesticides, PCBs, phthalate esters and sterols.
- **Max. temperature**
  340 °C for df ≤ 0.25 µm,
  320 °C for df = 0.50 µm,
  300 °C for df = 1.00 µm.
- Equivalent to USP G28, G32 and G42 phase.

LION™ LN-35 MS			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.18 µm	LNI-5763-DD10	LNI-5763-DD20	LNI-5763-DD40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.10 µm	LNI-5763-FB15	LNI-5763-FB30	LNI-5763-FB60
0.25 µm	LNI-5763-FF15	LNI-5763-FF30	LNI-5763-FF60
0.50 µm	LNI-5763-FL15	LNI-5763-FL30	LNI-5763-FL60
0.32 mm ID			
0.25 µm	LNI-5763-GF15	LNI-5763-GF30	LNI-5763-GF60
0.50 µm	LNI-5763-GL15	LNI-5763-GL30	LNI-5763-GL60
1.00 µm	LNI-5763-GQ15	LNI-5763-GQ30	LNI-5763-GQ60
0.53 mm ID			
0.50 µm	LNI-5763-HL15	LNI-5763-HL30	LNI-5763-HL60
1.00 µm	LNI-5763-HQ15	LNI-5763-HQ30	LNI-5763-HQ60



GC/MS low bleed phases

LION™ LN-17 MS

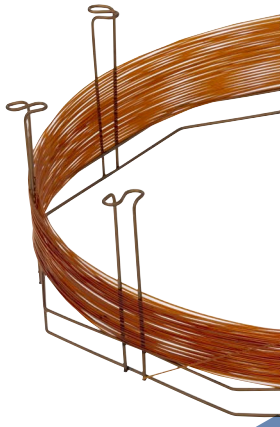
- Middle to high polar phase.
- Crossbond®, 50% diphenyl 50% dimethyl polysiloxane.
- Low bleeding columns for pesticides, phthalate esters, sterols and steroids.
- **Max. temperature**
  340 °C for df ≤ 0.25 µm,
  320 °C for df = 0.50 µm,
  300 °C for df = 1.00 µm.
- Equivalent to USP G3 and G17 phases.

LION™ LN-17 MS			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.18 µm	LNI-5759-DD10	LNI-5759-DD20	LNI-5759-DD40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.10 µm	LNI-5759-FB15	LNI-5759-FB30	LNI-5759-FB60
0.25 µm	LNI-5759-FF15	LNI-5759-FF30	LNI-5759-FF60
0.50 µm	LNI-5759-FL15	LNI-5759-FL30	LNI-5759-FL60
0.32 mm ID			
0.25 µm	LNI-5759-GF15	LNI-5759-GF30	LNI-5759-GF60
0.50 µm	LNI-5759-GL15	LNI-5759-GL30	LNI-5759-GL60
1.00 µm	LNI-5759-GQ15	LNI-5759-GQ30	LNI-5759-GQ60
0.53 mm ID			
0.50 µm	LNI-5759-HL15	LNI-5759-HL30	LNI-5759-HL60
1.00 µm	LNI-5759-HQ15	LNI-5759-HQ30	LNI-5759-HQ60

LION™ LN-225 MS

- Middle to high polar phase.
- 25% cyanopropyl, 25% phenyl, 50% methyl polysiloxane.
- Low bleeding columns for sterols, FAMEs and flavor compounds.
- **Max. temperature**
  260 °C for df ≤ 0.25 µm.
- Equivalent to USP G7 and G19 phases.

LION™ LN-225 MS			
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.10 µm	LNI-5789-FB15	LNI-5789-FB30	LNI-5789-FB60
0.25 µm	LNI-5789-FF15	LNI-5789-FF30	LNI-5789-FF60
0.32 mm ID			
0.10 µm	LNI-5789-GB15	LNI-5789-GB30	LNI-5789-GB60
0.25 µm	LNI-5789-GF15	LNI-5789-GF30	LNI-5789-GF60
0.53 mm ID			
0.25 µm	LNI-5789-HF15	LNI-5789-HF30	LNI-5789-HF60



GC/MS low bleed phases

LION™ LN-624 MS

- Low to middle polar phase.
- Crossbond®, 6% cyanopropylphenyl, 94% methyl polysiloxane.
- Low bleeding columns for residual solvents, alcohols and volatile organic pollutants.
- **Max. temperature 260 °C.**
- Equivalent to USP G43 phase.

LION™ LN-624 MS			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
1.00 µm	LNI-5770-DQ10	LNI-5770-DQ20	LNI-5770-DQ40
df [µm]	**30 m**	**60 m**	**105 m**
0.25 mm ID			
1.40 µm	LNI-5770-FS30	LNI-5770-FS60	LNI-5770-FS1Y
0.32 mm ID			
1.80 µm	LNI-5770-GU30	LNI-5770-GU60	LNI-5770-GU1Y
0.53 mm ID			
3.00 µm	LNI-5770-HY30	LNI-5770-HY60	LNI-5770-HY1Y

LION™ LN-624 Sil MS

- Low to middle polar phase.
- Crossbond®, 6% cyanopropylsilphenyl (equivalent), 94% methyl polysiloxane.
- Low bleeding columns for residual solvents, alcohols and volatile organic pollutants.
- **Max. temperature 300/320 °C.**
- Equivalent to USP G43 phase.

LION™ LN-624 Sil MS			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
1.00 µm	LNI-5901-DQ10	LNI-5901-DQ20	LNI-5901-DQ40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
1.40 µm	LNI-5901-FS15	LNI-5901-FS30	LNI-5901-FS60
0.32 mm ID			
1.80 µm	LNI-5901-GU15	LNI-5901-GU30	LNI-5901-GU60
0.53 mm ID			
3.00 µm	LNI-5901-HY15	LNI-5901-HY30	LNI-5901-HY60

LION™ LN-WAX MS

- High polar phase.
- Crossbond®, polyethylen glycol.
- Low bleeding columns for volatiles, aromatics, flavors, fragrances, residual solvents and FAMEs.
- **Max. temperature 250 °C.**
- Equivalent to USP G14, G15, G16 and G39 phases.

LION™ LN-WAX MS			
df [µm]	**10 m**	**20 m**	**40 m**
0.18 mm ID			
0.18 µm	LNI-5784-DD10	LNI-5784-DD20	LNI-5784-DD40
df [µm]	**15 m**	**30 m**	**60 m**
0.25 mm ID			
0.25 µm	LNI-5784-FF15	LNI-5784-FF30	LNI-5784-FF60
0.50 µm	LNI-5784-FL15	LNI-5784-FL30	LNI-5784-FL60
0.32 mm ID			
0.25 µm	LNI-5784-GF15	LNI-5784-GF30	LNI-5784-GF60
0.50 µm	LNI-5784-GL15	LNI-5784-GL30	LNI-5784-GL60
0.53 mm ID			
0.25 µm	LNI-5784-HF15	LNI-5784-HF30	LNI-5784-HF60
0.50 µm	LNI-5784-HL15	LNI-5784-HL30	LNI-5784-HL60

High temperature phases

LION™ LN-1 HT

- Non polar phase.
- Crossbond®, 100% dimethyl polysiloxane.
- Separation of analytes according to boiling points.
- High temperature columns for analysis high boiling hydrocarbons, waxes, oils, Simulated distillation.
- **Max. temperature 380 °C for df ≤ 0.25 µm.**
- Equivalent to USP G1, G2, G9 and G38 phases.

LION™ LN-1 HT		
df [µm]	**15 m**	**30 m**
0.25 mm ID		
0.10 µm	LNI-5760-FB15	LNI-5760-FB30
0.25 µm	LNI-5760-FF15	LNI-5760-FF30
0.32 mm ID		
0.10 µm	LNI-5760-GB15	LNI-5760-GB30
0.25 µm	LNI-5760-GF15	LNI-5760-GF30
0.53 mm ID		
0.10 µm	LNI-5760-HB15	LNI-5760-HB30
0.25 µm	LNI-5760-HF15	LNI-5760-HF30

LION™ LN-5 HT

- Low polar phase.
- Crossbond®, 5% diphenyl 95% dimethyl polysiloxane.
- High temperature columns for analysis high boiling hydrocarbons waxes, oils, fuels, simulated distillation, triglycerides.
- **Max. temperature 380 °C for df ≤ 0.25 µm.**
- Equivalent to USP G27 and G36 phases.

LION™ LN-5 HT			
df [µm]	**10 m**	**15 m**	**30 m**
0.25 mm ID			
0.10 µm	LNI-5765-FB10	LNI-5765-FB15	LNI-5765-FB30
0.25 µm	LNI-5765-FF10	LNI-5765-FF15	LNI-5765-FF30
0.32 mm ID			
0.10 µm	LNI-5765-GB10	LNI-5765-GB15	LNI-5765-GB30
0.25 µm	LNI-5765-GF10	LNI-5765-GF15	LNI-5765-GF30
0.53 mm ID			
0.10 µm	LNI-5765-HB10	LNI-5765-HB15	LNI-5765-HB30
0.25 µm	LNI-5765-HF10	LNI-5765-HF15	LNI-5765-HF30

LION™ LN-8 HT

- Low to middle polar special phase.
- High temperature columns for analysis PCB and pesticides.
- **Max. temperature 400 °C for df ≤ 0.25 µm.**

LION™ LN-8 HT			
df [µm]	**10 m**	**15 m**	**30 m**
0.25 mm ID			
0.10 µm	LNI-5845-FB10	LNI-5845-FB15	LNI-5845-FB30
0.25 µm	LNI-5845-FF10	LNI-5845-FF15	LNI-5845-FF30
0.32 mm ID			
0.10 µm	LNI-5845-GB10	LNI-5845-GB15	LNI-5845-GB30
0.25 µm	LNI-5845-GF10	LNI-5845-GF15	LNI-5845-GF30
0.53 mm ID			
0.25 µm	LNI-5845-HF10	LNI-5845-HF15	LNI-5845-HF30
0.50 µm	LNI-5845-HL10	LNI-5845-HL15	LNI-5845-HL30

High temperature phases

LION™ LN-35 HT

- Middle polar phase.
- Crossbond®, 35% diphenyl 65% dimethyl polysiloxane.
- High temperature columns for pesticides, PCBs, phthalate esters and sterols.
- **Max. temperature 370 °C for df ≤ 0.25 µm.**
- Equivalent to USP G28, G32 and G42 phase.

LION™ LN-35 HT		
df [µm]	**15 m**	**30 m**
0.25 mm ID		
0.10 µm	LNI-5772-FB15	LNI-5772-FB30
0.25 µm	LNI-5772-FF15	LNI-5772-FF30
0.32 mm ID		
0.10 µm	LNI-5772-GB15	LNI-5772-GB30
0.25 µm	LNI-5772-GF15	LNI-5772-GF30
0.53 mm ID		
0.25 µm	LNI-5772-HF15	LNI-5772-HF30
0.50 µm	LNI-5772-HL15	LNI-5772-HL30

LION™ LN-17 HT

- Middle to high polar phase.
- Crossbond®, 50% diphenyl 50% dimethyl polysiloxane.
- High temperature columns for pesticides, phthalate esters, sterols, steroids and for GC×GC applications.
- **Max. temperature 370 °C.**
- Equivalent to USP G3 and G17 phases.

LION™ LN-17 HT		
df [µm]	**15 m**	**30 m**
0.25 mm ID		
0.10 µm	LNI-5796-FB15	LNI-5796-FB30
0.25 µm	LNI-5796-FF15	LNI-5796-FF30
0.32 mm ID		
0.10 µm	LNI-5796-GB15	LNI-5796-GB30
0.25 µm	LNI-5796-GF15	LNI-5796-GF30
0.53 mm ID		
0.25 µm	LNI-5796-HF15	LNI-5796-HF30
0.50 µm	LNI-5796-HL15	LNI-5796-HL30

LION™ LN-1701 HT

- Middle polar phase.
- Crossbond®, 14% cyanopropylphenyl, 86% methyl polysiloxane.
- High temperature columns with extended temperature range for pesticides, PCBs, confirmation analysis and GC×GC.
- **Max. temperature 320 °C for df ≤ 0.25 µm.**
- Equivalent to USP G46 phase.

LION™ LN-1701 HT		
df [µm]	**15 m**	**30 m**
0.25 mm ID		
0.10 µm	LNI-5843-FB15	LNI-5843-FB30
0.25 µm	LNI-5843-FF15	LNI-5843-FF30
0.32 mm ID		
0.10 µm	LNI-5843-GB15	LNI-5843-GB30
0.25 µm	LNI-5843-GF15	LNI-5843-GF30
0.53 mm ID		
0.25 µm	LNI-5843-HF15	LNI-5843-HF30
0.50 µm	LNI-5843-HL15	LNI-5843-HL30

High temperature phases

LION™ LN-WAX HT

- High polar phase.
- Crossbond®, polyethylen glycol.
- General purpose columns with extended temperature limit for aromatics, flavors, fragrances, residual solvents and FAMEs.
- **Max. temperature 300 °C for df ≤ 0.1 µm, 280 °C for df > 0.1 µm.**
- Equivalent to USP G14, G15, G16 and G39 phases.

LION™ LN-WAX HT		
df [µm]	**15 m**	**30 m**
0.25 mm ID		
0.10 µm	LNI-5808-FB15	LNI-5808-FB30
0.25 µm	LNI-5808-FF15	LNI-5808-FF30
0.32 mm ID		
0.10 µm	LNI-5808-GB15	LNI-5808-GB30
0.25 µm	–	LNI-5808-GF30
0.53 mm ID		
0.10 µm	LNI-5808-HB15	LNI-5808-HB30
0.25 µm	LNI-5808-HF15	LNI-5808-HF30

LION™ LN-65 HT

- High polar phase.
- Crossbond®, 65% diphenyl 35% dimethyl polysiloxane.
- High temperature columns for triglycerides separation based on the carbon number and degree of unsaturation.
- **Max. temperature 360–370 °C.**

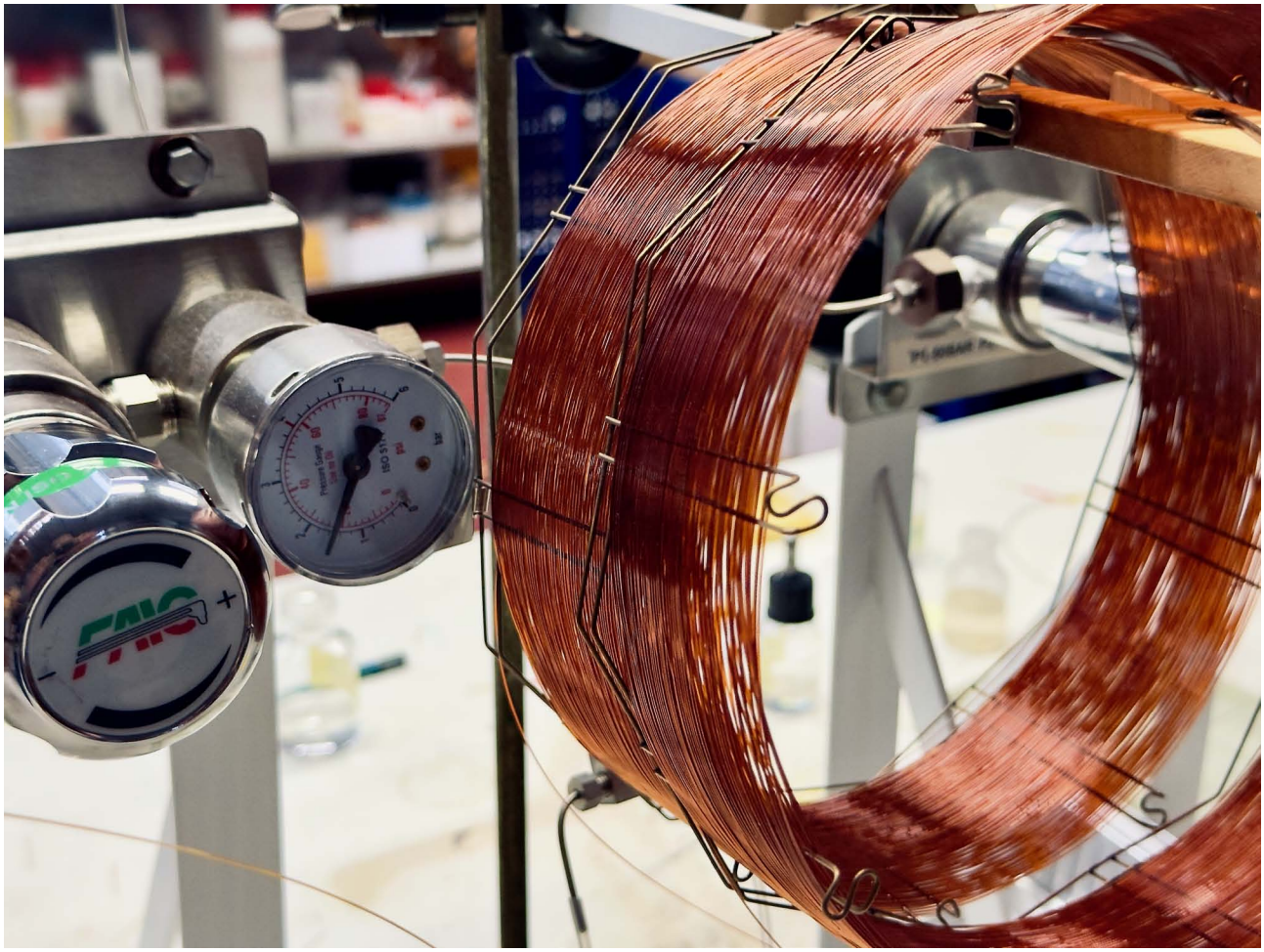
LION™ LN-65 HT		
df [µm]	**15 m**	**30 m**
0.25 mm ID		
0.10 µm	LNI-5844-FB15	LNI-5844-FB30
0.32 mm ID		
0.10 µm	LNI-5844-GB15	LNI-5844-GB30
0.53 mm ID		
0.10 µm	–	LNI-5844-HB30

LION™ LN-FAME HT

- High polar phase.
- Crossbond®, 100% cyanopropyl polysiloxane.
- General purpose columns for FAMEs cis-trans.
- **Max. temperature 260–280 °C.**
- Equivalent to USP G5, G8 and G48 phases.

LION™ LN-FAME HT			
df [µm]	**40 m**	**60 m**	**100 m**
0.20 mm ID			
0.20 µm	LNI-5881-DE40	LNI-5881-DE60	LNI-5881-DE1X
df [µm]	**30 m**	**60 m**	**100 m**
0.25 mm ID			
0.20 µm	LNI-5881-FE30	LNI-5881-FE60	LNI-5881-FE1X
0.32 mm ID			
0.25 µm	LNI-5881-GF30	LNI-5881-GF60	LNI-5881-GF1X

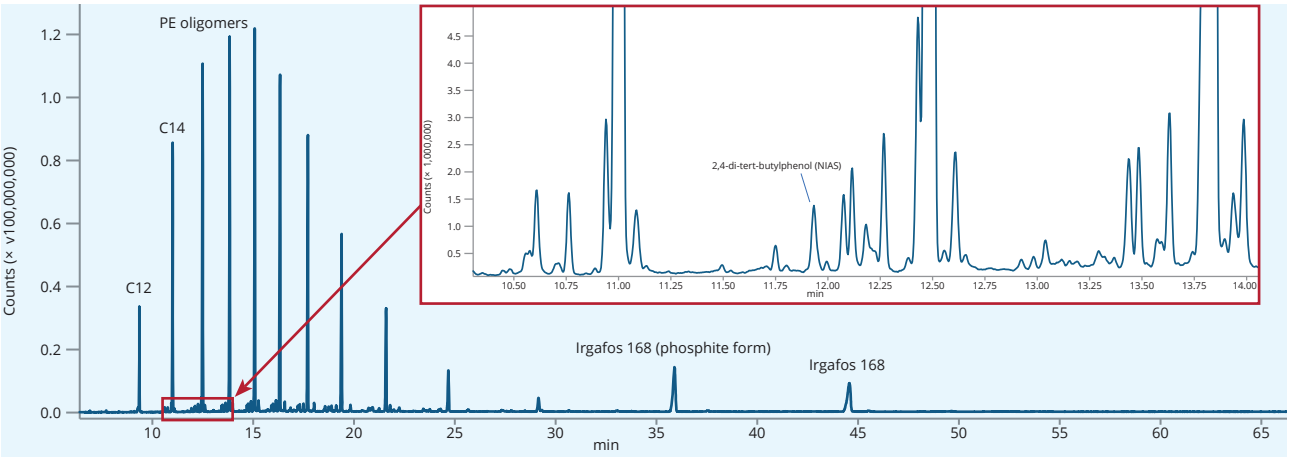
LION™



The production of our GC columns follows strict workflow criteria. All columns are individually tested using GC test mixture. The LION™ columns are supplied together with this column standard mixture and scoring wafer.

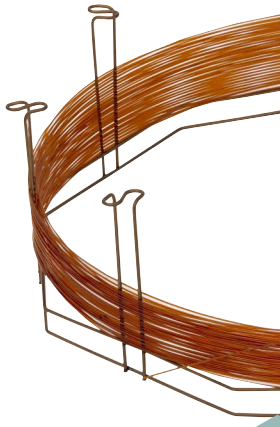
Non-intentionally added substances (NIAS) in food simulants

2,4-di-tert-butylphenol is the degradation/hydrolysis product of the antioxidant Irgafos 168.



PE sample has been migrated in 95% ethanol 10 days under 40 °C

Column	LION™ LN-5 MS
Dimensions	60 m × 0.25 mm × 0.25 µm with integrated guard
Part number	LNI-5767-FF60-G05
Injection volume	2 µL
Injector temperature	PTV 280 °C, 120 °C/min to 335 °C, hold 0.64 min
Column flowrate	2.48 mL/min (40 cm/s)
Total flow	79.7 mL/min, purge 3 mL/min
Oven program	35 °C, hold 0 min 20 °C/min, 280 °C, hold 0 min 10 °C/min, 310 °C, hold 55 min
Detection	MS Shimadzu QP2010 NX
Ionization energy	70 eV
Interface temperature	240 °C
Acquisition	48 to 700 amu

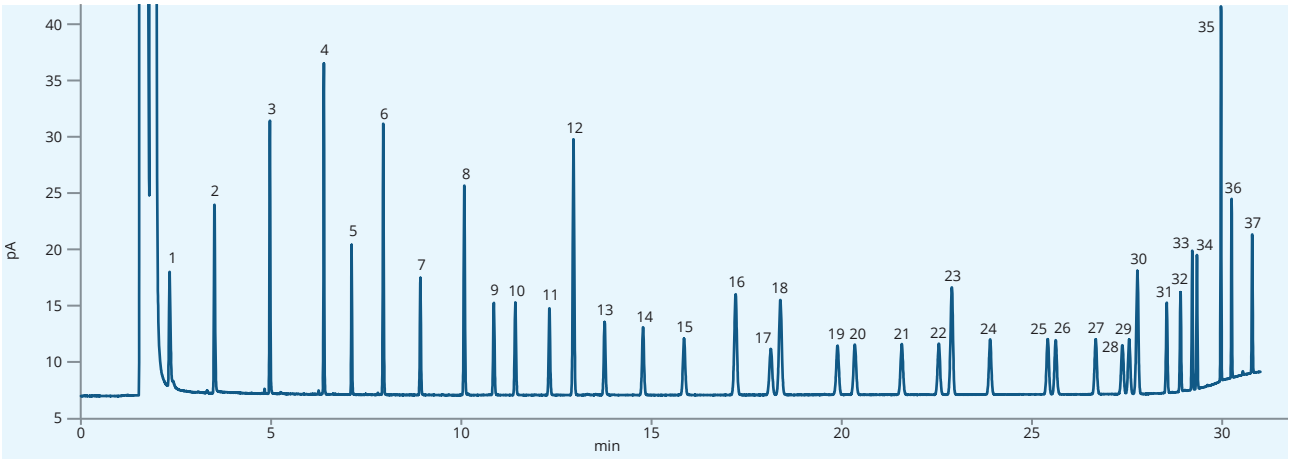


This application was developed by the Institute for testing and certification in the Czech Republic.

FAME

Fatty acids are carboxylic acids with a long side carbon chain typically found in lipids. These acids differ by the number of carbon atoms in the chain and the number of double bonds in the chain. According to the number of double bonds we distinguish saturated fatty acids (SFA), monounsaturated fatty acids (MUFA) and polyunsaturated fatty acids (PUFA). Trans fatty acids are unsaturated fatty acids in which at least one double bond is in the trans position.
Capilary column LION™ LN-FAME was designed to provide the required polarity by the high-cyanopropyl phase (G48). In this application note you can see a fast, robust and reproducible baseline separation of the 37 most common FAMEs.

Analytes	Fatty acid methyl esters (see table below)



FAME standard on LION™ LN-FAME capillary column

Column	LION™ LN-FAME
Dimensions	30 m × 0.25 mm × 0.20 µm
Part number	LNI-5777-FE30
Injection volume	1 µL (air lock 1 µL), cold needle injection
Injector temperature	240 °C
Injection mode	S/SL, Split ratio 10:1
Column flowrate	Carrier gas- hydrogen, constant flow, 1 mL/min
Oven program	60 °C, hold 2 min 15 °C/min, 140 °C, hold 0 min 3 °C/min, 160 °C, hold 5 min 3 °C/min, 190 °C, hold 0 min 25 °C/min, 240 °C, hold 1 min
Detection	FID @240 °C Air: 350 mL/min Hydrogen: 35 mL/min Make-up gas (nitrogen): 30 mL/min
Sample	Supelco 37 FAME mix in DCM (dilution 1:10)
Analytes	**See table below**

BRNO UNIVERSITY OF TECHNOLOGY FACULTY OF CHEMISTRY

This application was developed by the University of Technology Brno, Faculty of Chemistry.

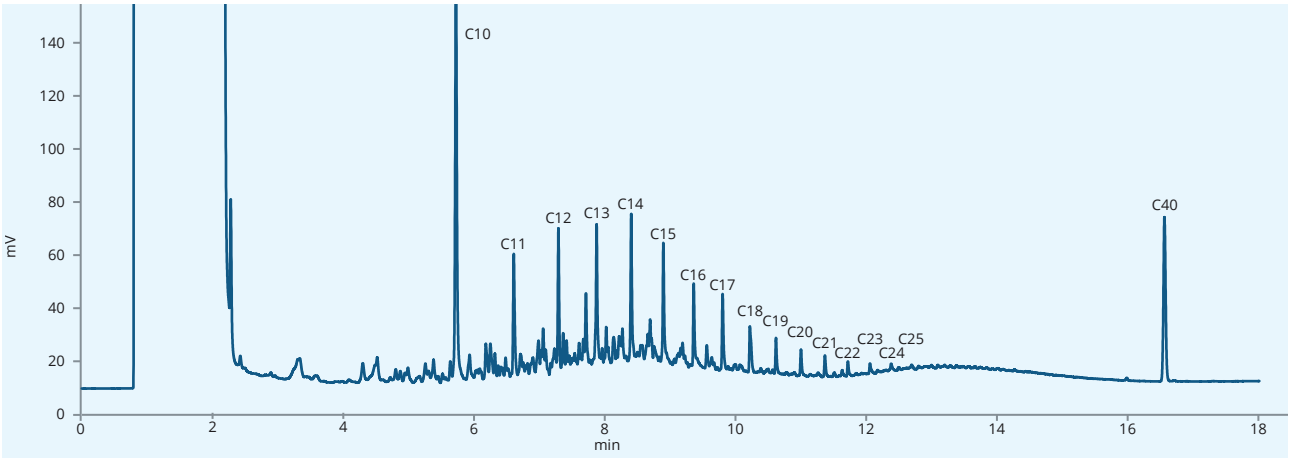
FAME

Peak No.	Compound name	Compound ID	Retention time (min)
1	Butanoic acid methyl ester	C4:0	2.347
2	Hexanoic acid methyl ester	C6:0	3.518
3	Octanoic acid methyl ester	C8:0	4.968
4	Decanoic acid methyl ester	C10:0	6.385
5	Undecanoic acid methyl ester	C11:0	7.115
6	Dodecanoic acid methyl ester	C12:0	7.947
7	Tridecanoic acid methyl ester	C13:0	8.920
8	Myristic acid methyl ester	C14:0	10.075
9	Myristoleic acid methyl ester	C14:1 cis 9	10.848
10	Pentadecanoic acid methyl ester	C15:0	11.415
11	*cis*-10-Pentadecenoic acid methyl ester	C15:1 cis 10	12.310
12	Hexadecanoic acid methyl ester	C16:0	12.953
13	Palmitoleic acid methyl ester	C16:1 cis 9	13.762
14	Heptadecanoic acid methyl ester	C17:0	14.773
15	*cis*-10-Heptadecenoic acid methyl ester	C17:1 cis 10	15.852
16	Stearic acid methyl ester	C18:0	17.223
17	Elaidic acid methyl ester	C18:1 trans 9	18.137
18	Oleic acid methyl ester	C18:1 cis 9	18.398
19	Linolelaidic acid methyl ester	C18:2 trans 9,12	19.888
20	Linoleic acid methyl ester	C18:2 cis 9,12	20.345
21	γ-Linolenic acid methyl ester	C18:3 cis 6,9,12	21.575
22	α-Linolenic acid methyl ester	C18:3 cis 9,12,15	22.553
23	Arachidic acid methyl ester	C20:0	22.913
24	*cis*-11-Eicosenoic acid methyl ester	C20:1 cis 11	23.907
25	*cis*-11,14-Eicosadienoic acid methyl ester	C20:2 cis 11,14	25.433
26	Heneicosanoic acid methyl ester	C21:0	25.630
27	*cis*-8,11,14-Eicosatrienoic acid methyl ester	C20:3 cis 8,11,14	26.682
28	Arachidonic acid methyl ester	C20:4 cis 5,8,11,14	27.378
29	*cis*-11,14,17-Eicosatrienoic acid methyl ester	C20:3 cis 11,14,17	27.560
30	Behenic acid methyl ester	C22:0	27.802
31	Erucic acid methyl ester	C22:1 cis 13	28.548
32	*cis*-5,8,11,14,17-Eicosapentaenoic acid methyl ester	C20:5 cis 5,8,11,14,17	28.903
33	*cis*-13,16-Docosadienoic acid methyl ester	C22:2 cis 13,16	29.218
34	Tricosanoic acid methyl ester	C23:0	29.337
35	Lignoceric acid methyl ester	C24:0	29.975
36	Nervonic acid methyl ester	C24:1 cis 15	30.250
37	*cis*-4,7,10,13,16,19-Docosahexaenoic acid methyl ester	C22:6 cis 4,7,10,13,16,19	30.787

Total Petroleum Hydrocarbons (C10–C40 index)

Total petroleum hydrocarbons index (TPH) is a typical environmental analysis. It has replaced the infrared spectroscopy method using problematic solvents, i.e. Freons. This gas chromatography analysis (GC) monitors hydrocarbons between n-decane and n-tetracontane. These two hydrocarbons are used as the range marker and injection efficiency control. Additionally, the GC method has an important advantage – this can show a type of hydrocarbon contamination (e.g. gasoline, naphtha, motor oil) and weathering status (some n-alkanes disappear during their stay in the enviroment).

Analytes	Total petroleum hydrocarbons in the range of C10 to C40

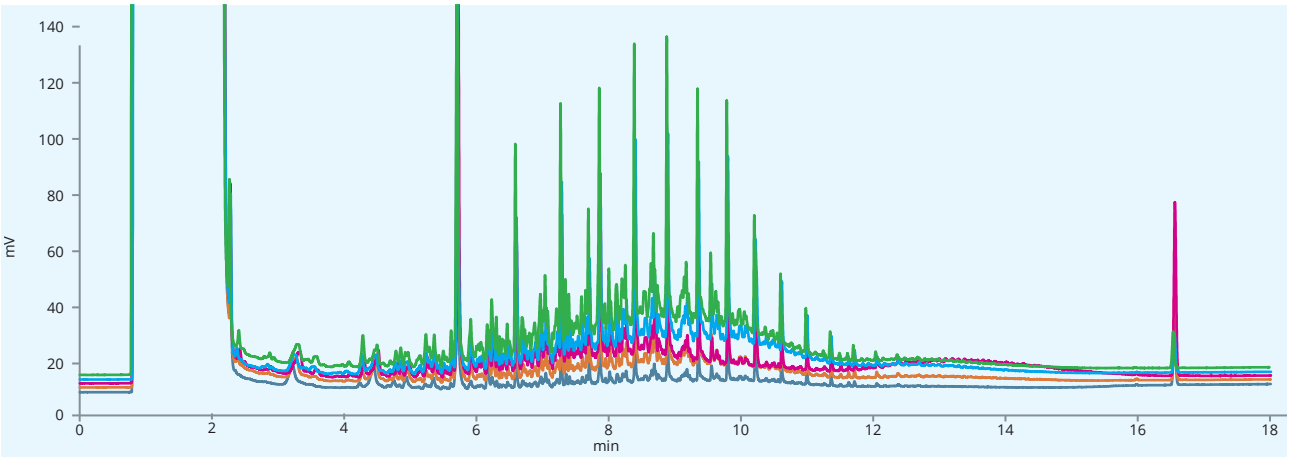


Calibration standard on LION™ LN-5HT capillary column

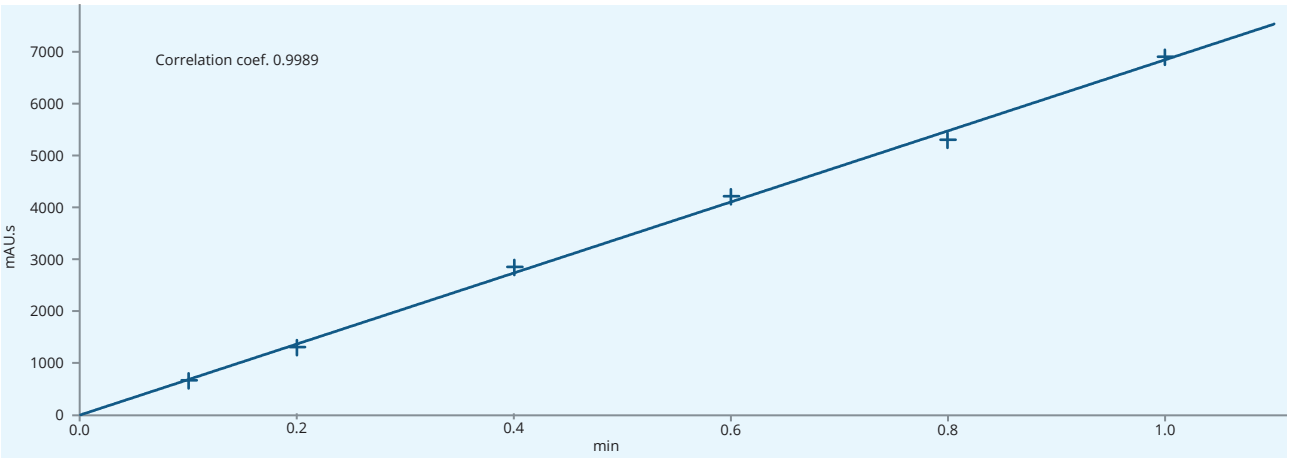
Column	LION™ LN-5HT
Dimensions	15 m × 0.25 mm × 0.10 µm
Part number	LNI-5765-FB15
Injection volume	1 µL
Injector temp.	300 °C
Injection mode	Splitless, hold 1 min, Split purge 50 mL/min, Septum purge 5 mL/min
Column flowrate	1 mL/min, constant flow, nitrogen
Oven program	40 °C, hold 4 min 25 °C/min, 330 °C, hold 2.4 min Total run time 18 min
Detection	FID @350 °C Air: 280 mL/min Hydrogen: 40 mL/min Make-up gas (nitrogen): 30 mL/min
Instrument	Master GC (Dani/Perkin-Elmer)

Note: This method has been also developed on PTV injector.
Ask for more details.

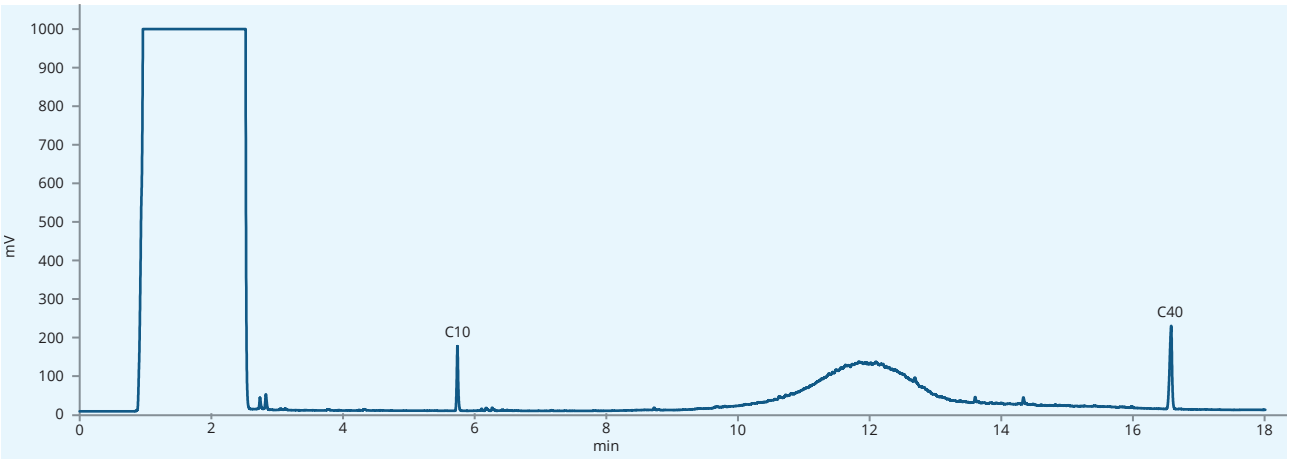
Total Petroleum Hydrocarbons (C10–C40 index)



Calibration standards for 5-level calibration



Calibration curve



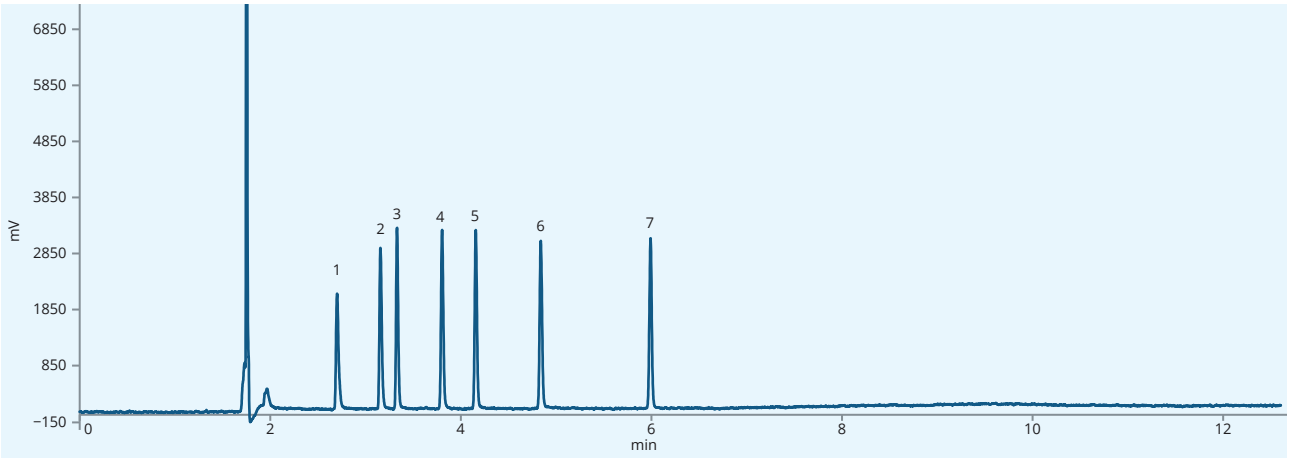
Analysis of sewer water with presence of TPH

Free Fatty Acids (FFA)

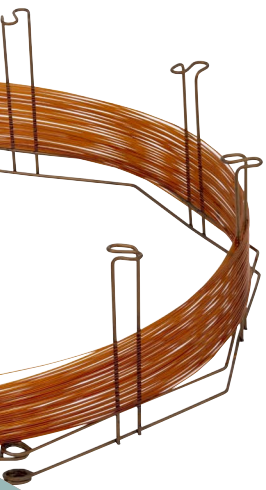
Free fatty acids (FFA) are the most important intermediate of the anaerobic digestion of organic compounds. During methanisation, acetic acid and propionic acid are mainly present. The FFA concentration depends on the substrate composition and the run of the digestion process. FFA are inhibitors of methanisation, but only in an undissociated form in concentrations starting from 40 to 60 mg/L. They are good markers of digestion quality in biogas stations.

Analytes

Acetic acid, CAS Number 64-19-7
Propionic acid, CAS Number 79-09-4
Isobutyric acid, 2-methylpropanoic acid, CAS Number 79-31-2
Butyric acid, butanoic acid, CAS Number 107-92-6
Isovaleric acid, 3-methylbutanoic aicd, CAS Number 503-74-2
Valeric acid, pentanoic acid, CAS Number 109-52-4
Caproic acid, hexanoic acid, CAS Number 142-62-1

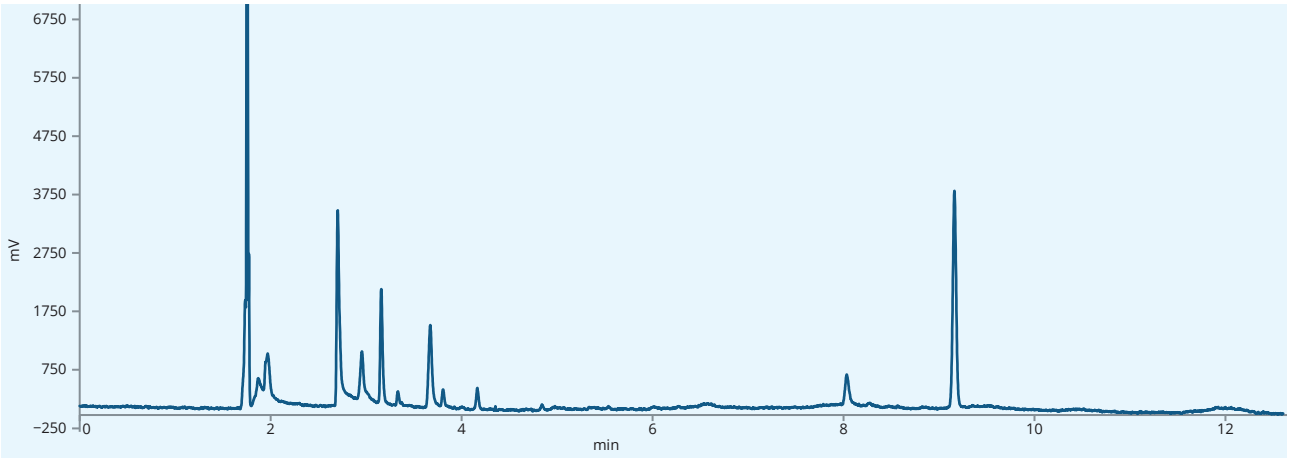


Calibration standard on LION™ LN-FFAP capillary column



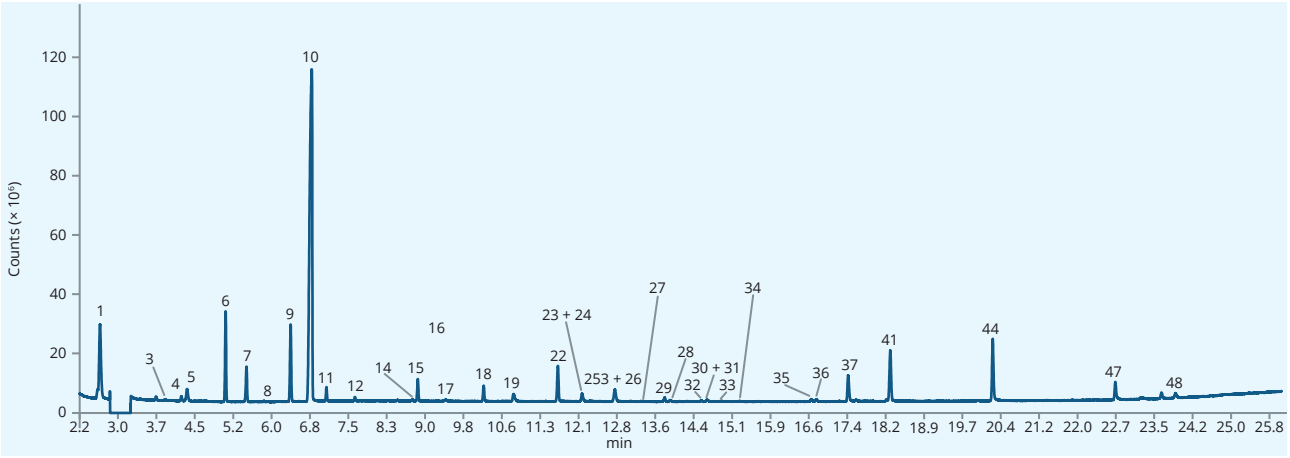
Free Fatty Acids (FFA)

Column	LION™ LN-FFAP
Dimensions	30 m × 0.25 mm × 0.25 µm
Part number	LNI-5773-FF30
Injection volume	1 µL
Injector temp.	200 °C
Injection mode	PTV, isothermal, split 1:20 for water samples, 1:30 for sludge samples
Column flowrate	1 mL/min, constant flow, nitrogen, 3 mL/min septum purge
Oven program	145 °C, hold 3 min 7 °C/min, 158 °C, hold 3 min 20 °C/min, 230 °C, hold 5 min
Detection	FID @250 °C Air: 400 mL/min Hydrogen: 40 mL/min Make-up gas (nitrogen): 30 mL/min
Instrument	Master GC (Dani/Perkin-Elmer)
Analytes	**1. Acetic acid** **2. Propionic acid** **3. Isobutyric acid** **4. Butyric acid** **5. Isovaleric acid** **6. Valeric acid** **7. Caproic acid**



Water sample

Wine profile analysis by GC/MS



Calibration standard on LION™ LN-WAX MS GC capillary column

Column	LION™ LN-WAX MS
Dimensions	30 m × 0.25 mm × 0.25 µm
Part number	LNI-5784-FF30
Injector temp.	200 °C
Injection mode	Split, 5:1
Column flowrate	1.2 mL/min
Oven program	45 °C, hold 3.5 min, 15 °C/min, 90 °C, hold 0 min, 6 °C/min, 135 °C, hold 0 min, 9 °C/min, 207 °C, hold 0 min, 15 °C/min, 252 °C, hold 1 min
Detection	MS, Interface @250 °C, 20 to 220 amu
Instrument	Shimadzu GC/MS system 17A/QP-5050A

Analytes

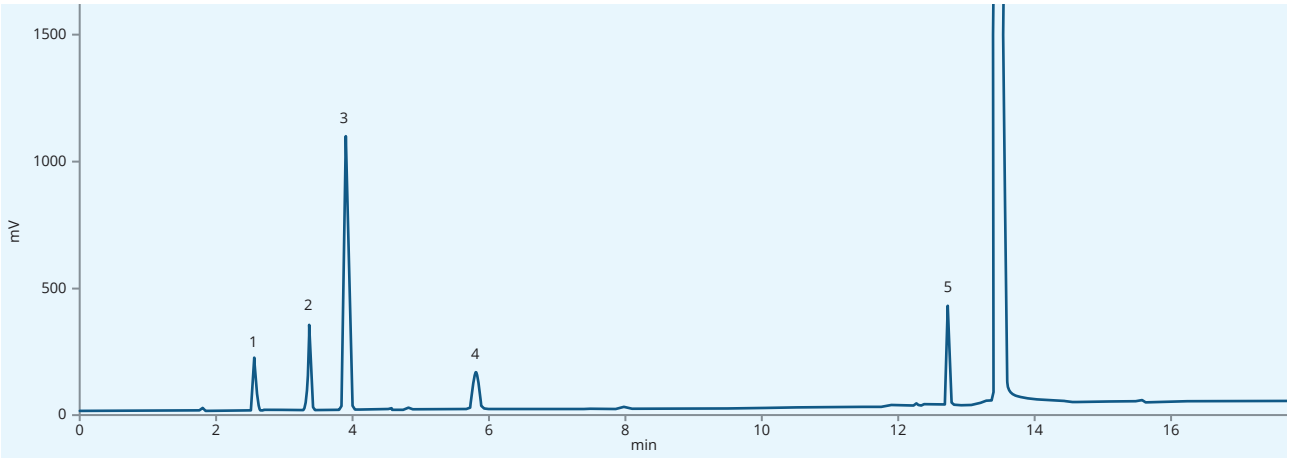
1. **Ethyl acetate**
2. **1,1-diethoxyethane**
3. **Isobutyl acetate**
4. **Ethyl butyrate**
5. **1-propanol**
6. **Isobutyl alcohol**
7. **Isoamyl acetate**
8. **1-butanol**
9. **Cyclopentanone**
10. **Isoamyl alcohol**
11. **Ethyl hexanoate**
12. **1-hexyl acetate**
13. **Acetone**
14. **Ethyl lactate**
15. **1-hexanol**
16. **(E)-3-hexen-1-ol**
17. **(Z)-3-hexen-1-ol**
18. **Ethyl octanoate**
19. **Acetic acid**
20. **Furfural**
21. **Benzaldehyde**
22. **2-nonanol**
23. **2,3-butanediol**
24. **Linalool**
25. **Isobutyric acid**
26. **2,3-butanediol**
27. **Hotrienol**
28. **Butyric acid**
29. **Ethyl decanoate**
30. **Isovaleric acid.**
31. **2-methylbutanoic acid**
32. **Diethyl succinate**
33. **Alpha-terpineol**
34. **Methionol**
35. **Nerol**
36. **2-phenylethyl acetate**
37. **Hexanoic acid**
38. **Ethyl dodecanoate**
39. **Geraniol**
40. **Benzyl alcohol**
41. **2-phenyl ethanol**
42. **4-ethylguaiacol**
43. **Diethyl malate**
44. **Octanoic acid**
45. **4-ethyl phenol**
46. **4-vinyl guaiacol**
47. **Decanoic acid**
48. **4-vinyl phenol**
49. **Dodecanoic acid**

This application was developed by the Mendel University in Brno.

Residual solvents

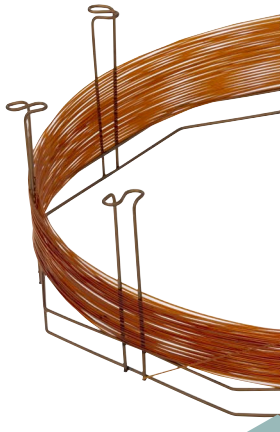
Residual solvents control is a mandatory test for active pharmaceutical ingredients. Column LION™ LN-1 provides fast, robust and reproducible separation for most commonly used solvents.

Analytes	Methanol, CAS number 67-57-1 Ethanol, CAS number 64-17-5 Acetone, CAS number 67-64-1 1-propanol, CAS number 71-23-8 Toluene, CAS number 108-88-3



Residual solvents on LION™ LN-1 column

Column	LION™ LN-1
Dimensions	50 m × 0.53 mm × 5 µm
Part number	LNI-5755-H150
Injector temp.	160 °C
Column flowrate	Carrier Gas – Helium, constant pressure 60kPa, 40 mL/min
Oven program	40 °C, hold 0 min 2 °C/min, 60 °C, hold 0 min 50 °C/min, 200 °C, hold 5 min
Solvent	Dimethylsulfoxide
Head-space oven temp.	105 °C
Heating time	30 min
Detection	FID at 250 °C
Analytes	**1. Methanol** **2. Ethanol** **3. Acetone** **4. 1-propanol** **5. Toluene**



Cross references

Standard GC phases

LION™	Agilent / Varian	Machery-Nagel	Phenomenex	Restek	SGE	Supelco	USP Method Classification
LN-1	DB-1, HP-1, CP Sil 5 CB	OPTIMA-1	ZB-1	Rtx-1	BP-1	SPB-1, Equity-1	G1, G2, G9, G38
LN-5	DB-5, HP-5, CP Sil 8 CB	OPTIMA-5	ZB-5	Rtx-5	BP-5	SPB-5, Equity-5	G27, G36
LN-13	CP Sil 13 CB	–	–	–	–	–	–
LN-20	–	–	–	Rtx-20	–	SPB-20	G28, G32
LN-35	DB-35, HP-35	–	ZB-35	Rtx-35	–	SPB-35, SPB-608	G28, G32, G42
LN-17	DB-17, HP-17, DB-608, CP Sil 24 CB	OPTIMA-17	ZB-50	Rtx-17	BPX-50	SPB-50	G3, G17
LN-200	DB-200, DB-210, VF-200 ms	OPTIMA-210	–	Rtx-200	–	–	G6
LN-624	DB-624, HP-624, VF-624ms	OPTIMA-1301, OPTIMA-624	ZB-624	Rtx-1301, Rtx-624	BP-624	SPB-624, Vocol	G43
LN-1301	DB-624, HP-624, VF-624ms	OPTIMA-1301, OPTIMA-624	ZB-624	Rtx-1301, Rtx-624	BP-624	SPB-624, Vocol	G43
LN-1701	DB-1701, HP-1701, DB-1701P, CP Sil 19 CB	OPTIMA-1701	ZB-1701	Rtx-1701	BP-10	SPB-1701, Equity-1701	G46
LN-225	DB-225, HP-225	OPTIMA-225	–	Rtx-225	BP-225	SPB-225	G7, G19
LN-WAX	DB-Wax, HP-Wax, CP Wax 52 CB	OPTIMA-WAX	ZB-WAX	Rtx-Wax	BP-20	–	G14, G15, G16, G39
LN-WAX Plus	InnoWax	–	ZB-WAX Plus	Stabilwax	–	–	G14, G15, G16, G39
LN-FFAP	DB-FFAP	–	ZB-FFAP	Stabilwax-DA	BP-21	Nukol	G25, G35
LN-WAX BA	CAM, HP-BasicWax	–	–	Stabilwax-DB	–	–	–
LN-23	DB-23, VF-23 ms	–	–	Rtx-2330	BPX-70	SP-2330, SP2331, SP2380	G8
LN-FAME	HP-88, CP Sil 88	–	ZB-FAME	Rtx-2560	BPX-70	SP-2560	G5, G8, G48

GC/MS low bleed phases

LION™	Agilent / Varian	Machery-Nagel	Phenomenex	Restek	SGE	Supelco	USP Method Classification
LN-1 MS	DB-1 ms (UI), HP-1 ms, VF-1 ms	OPTIMA-1 MS Accent	ZB-1 ms	Rxi-1 ms	BP-1	Equity-1	G1, G2, G9, G38
LN-5 MS	HP-5 ms	OPTIMA-5 MS	ZB-5 Plus	Rtx-5 MS	BPX-5	Equity-5	G27, G36
LN-5 MS Plus	DB-5 ms UI, VF-5 ms	OPTIMA-5 MS Accent	ZB-5 MS Plus, ZB-Semivoaltiles	Rxi-5 Sil MS	–	SLB-5 ms	G27, G36
LN-XLB*	DB-XLB	OPTIMA-XLB	ZB-XLB (HT)	Rtx-XLB	–	–	–
LN-35 MS	DB-35 ms (UI), VF-35 ms	OPTIMA-35 MS	ZB-MultiResidue 2 (MR-2)	Rxi-35 Sil MS	BPX-35, BPX-608	–	G28, G32, G42
LN-17 MS	DB-17 ms, VF-17 ms	OPTIMA-17 MS	–	Rxi-17 Sil MS	BPX-50	–	G3, G17
LN-225 MS	DB-225 ms	–	–	–	–	–	G7, G19
LN-624 MS LN-624 Sil MS	VF-1301 ms, VF-624 ms	OPTIMA-624 LB	–	Rxi-624 Sil MS	–	–	G43
LN-WAX MS	HP-INNOWax, VF-Wax ms	–	ZB-WAX	Stabilwax MS	–	–	G14, G15, G16, G39

* XLB phases may vary from manufacturer to manufacturer.

High temperature GC phases

LION™	Agilent / Varian	Machery-Nagel	Phenomenex	Restek	SGE	Supelco	USP Method Classification
LN-1 HT	DB-1 HT	–	ZB-1 HT inferno	Rxi-1HT	–	–	G1, G2, G9, G38
LN-5 HT	DB-5 HT	OPTIMA-5 HT	ZB-5 HT inferno	Rxi-5HT	–	–	G27, G36
LN-8 HT	–	–	-	–	HT-8	–	–
LN-35 HT	–	–	ZB-35 HT inferno	–	–	–	G28, G32, G42
LN-17 HT	DB-17 HT	–	–	–	–	–	G3, G17
LN-1701 HT	–	–	–	–	–	–	G46
LN-WAX HT	DB-HeavyWax	–	–	–	–	–	G14, G15, G16, G39
LN-65 HT	TAP-CB	–	–	Rtx-65TG	–	–	–
LN-FAME HT	–	–	–	–	–	–	G5, G8, G48

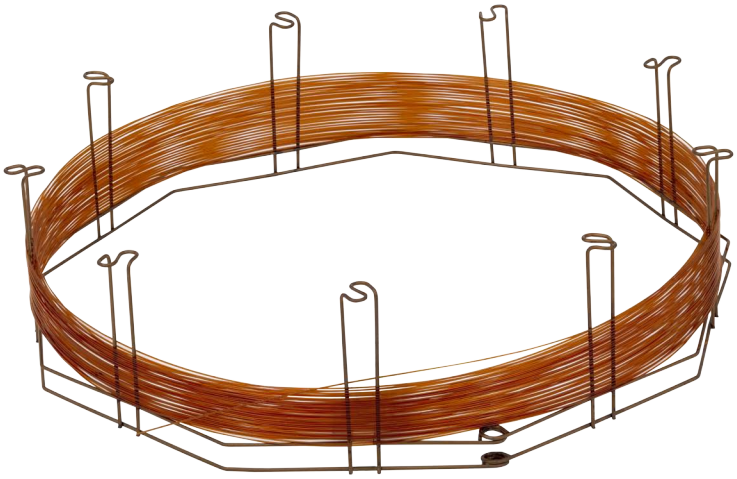
Recent developments

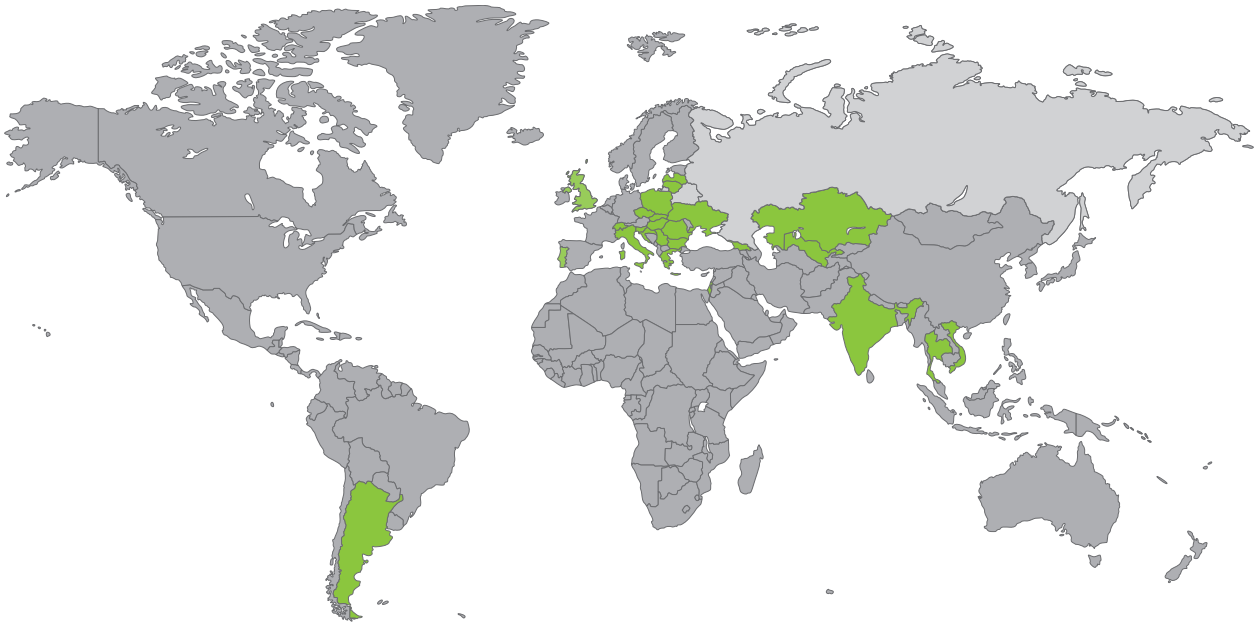
LION™ FAME HT

- Up to 280 °C
- Crossbond® 100% cyanopropyl polysiloxane phase

LION™ 624 Sil MS

- Up to 300/320 °C
- Longer lifetime
- Better stability





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