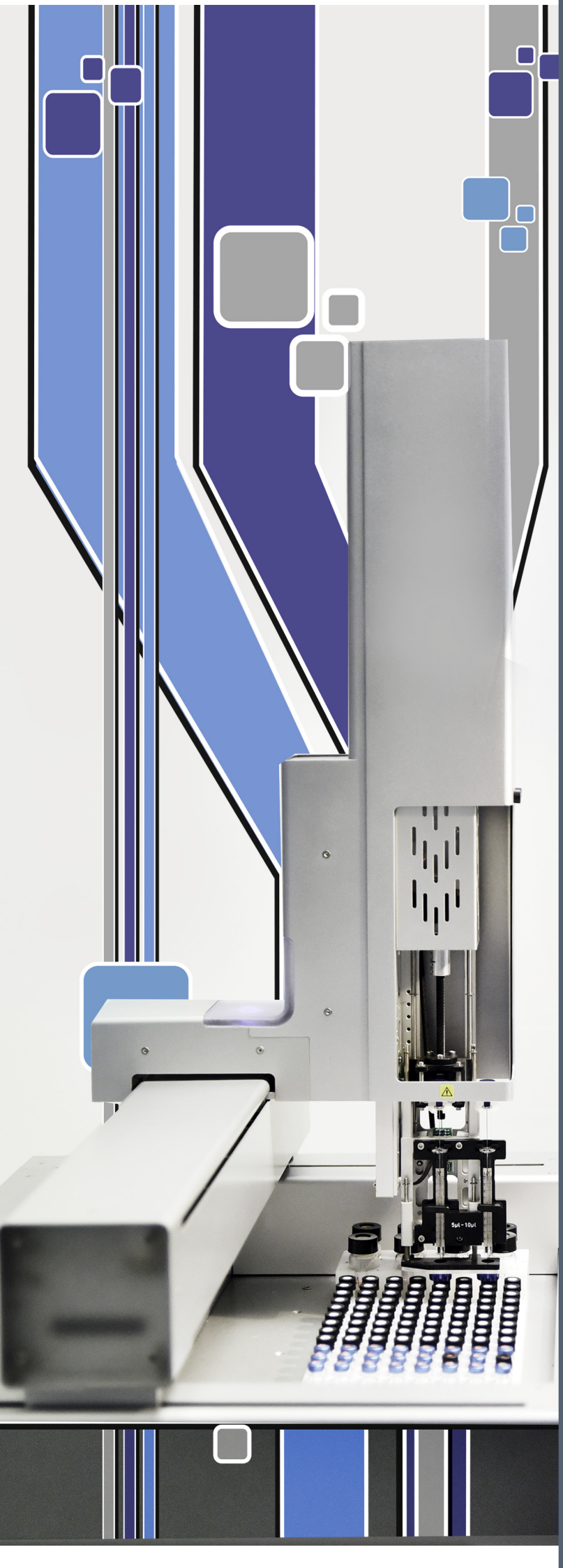
DANI

Unsophistication is the Ultimate Sophistication

# Master AS 2

Automated dual simultaneous injection

Utmost Productivity and Selectivity
through Simplicity



# Master AS 2

Automated Dual Injection

## Master AS 2
## Automated DUAL SIMULTANEOUS Injection

Dual Simultaneous Injection into two capillary columns at the same time

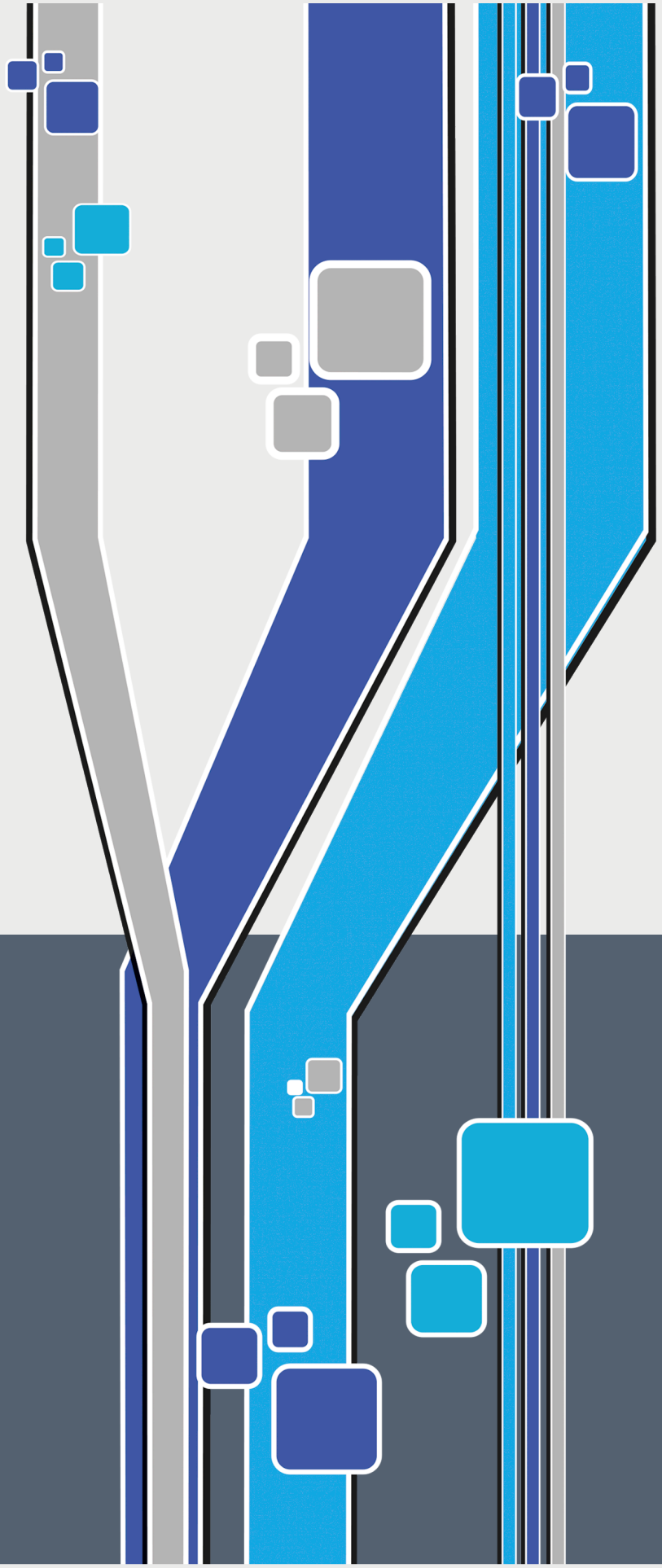
Autosamplers can significantly augment **Result Repeatability** and **Extend Analytical Capabilities**.

The Master AS 2 Double Injection provides improved **Productivity** and **Flexibility**.

# Master AS 2

## Automated
## DUAL SIMULTANEOUS Injection

Based on DANI Master AS, the Master AS 2 Dual Injection is a robotic X-Y-Z coordinate sampling system providing unique simultaneous injection into two equal or different capillary columns.



**Increased sample throughput to meet each laboratory's changing workload.**

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The Master AS Liquid Autosampler and Master AS2 Double Injection allow to process vials sequentially and unattended with enhanced precision and accuracy, providing increased sample throughput and decreased cost per sample.

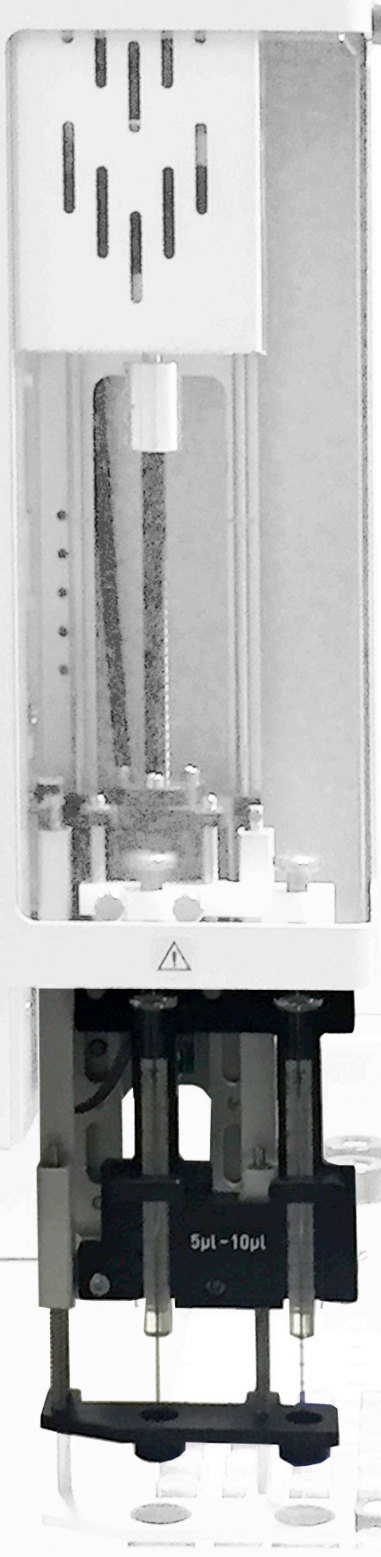
The easy-to-use liquid autosamplers are totally controlled through the Master GC touchscreen. Analysis can be performed unattended by using the straightforward interface to set all parameters and the AS sequence.

Unlike built-in rack autosamplers, the extremely flexible **Master AS** and **Master AS 2** autosamplers feature three separate and removable 2-mL vial racks for a total capacity of 160 samples.

10mL solvent and waste vials can be used allowing numerous solvent possibilities to eliminate carry-over. Additionally, the sample trays are delocalized from the GC oven, preventing possible sample degradation and solvent evaporation caused by heat exposure.

All injection parameters can be optimized according to the laboratory's needs, the sample type, and the application. Up to seven different syringe capacity from 5µL to 500µL can be used offering a great choice of injection volumes.

The Master AS autosamplers present unmatched injection capabilities. The same vial can be sampled up to 100 times and the sample can be introduced into three different injectors without requiring autosampler re-alignment or any calibration procedure.



# Automation for Accurate Results

## Flexibility & Productivity

| |
|---|
| **Double Productivity** : through two trays of 80 2mL vials each |
| **Wide range of syringes available** : 5, 10, 25, 50, 100, 250, 500 µL |
| **Injection volume range** : 0.1 µL - 500 µL |
| **Priority Sequence** |
| Internal Standard Addition |

The Master AS Double Injection provide increased Precision and Accuracy through several key implementations :

| **Parameter Controls**: | |
|---|---|
| Pre- and post- injection solvent washing | Sample/Internal standard rinse |
| Sample vial depth, Injection depth | Syringe strokes before injection |
| Plunger sampling and injection speed, | Pre- and post- injection delay |
| Solvent plug volume, | Viscosity delay |
| Internal standard addition, | Sample volume |
| Air plug volume | |

System robustness and internal design simplicity are combined to ideally perform routine and research laboratory workload providing fast, reliable, and accurate analysis.

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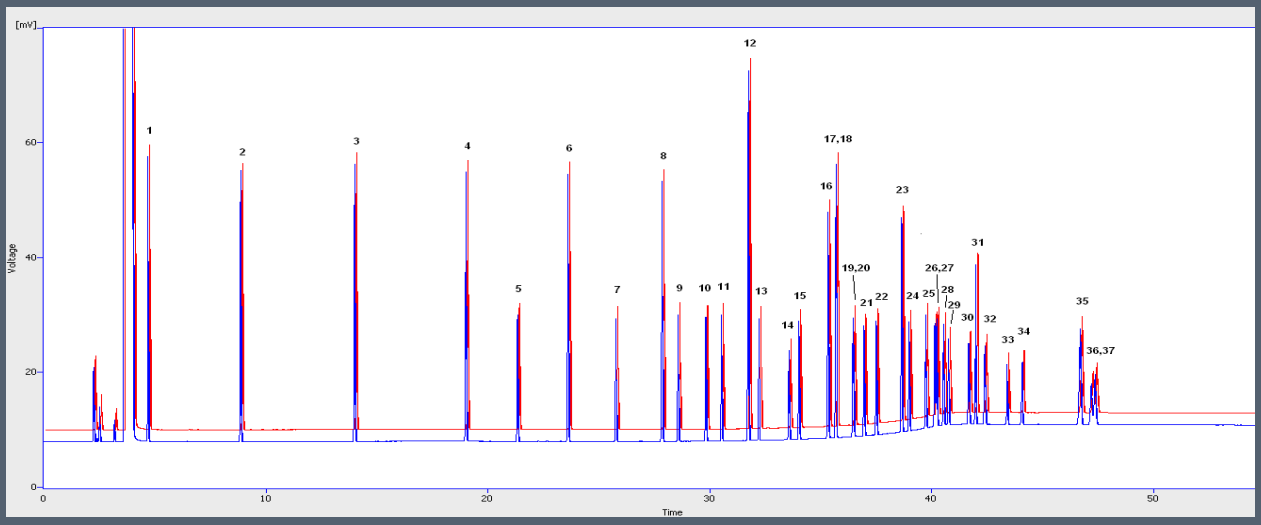
The demand of increased productivity is more and more frequent in modern laboratories along with high reproducibility and repeatability requirements.

# Fatty Acid Methyl Esters

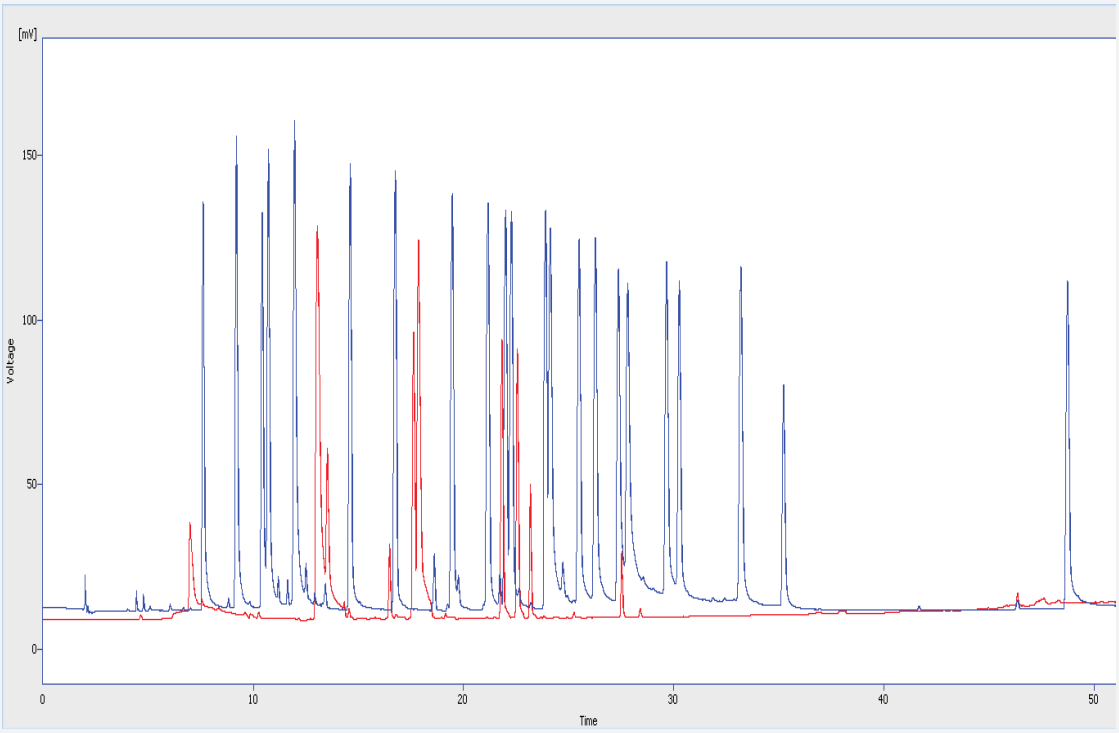



The Master AS – Dual Injection allows two samples to be simultanously injected into two differents channels, therefore performing two analyses at the same time. The determination of FAMEs demostrates the Master AS Dual Injection performance. The run time of this analysis is about 55 minutes, therefore a laboratory can process around 25 samples a day. Thanks to Dual Injection Mode, 50 analyses have been run with excellent results in terms of area and retention time repeatability

| # | FAME | RT Det A | RT Det B | RT St.Dev. Det A | RT St.Dev. Det B | Area % St.Dev. Det A | Area % St.Dev. Det B |
|---|---|---|---|---|---|---|---|
| 1 | Methyl Butyrate | 4.717 | 4.780 | 0.0062 | 0.0032 | 3.11% | 3.16% |
| 2 | Methyl Hexanoate | 8.898 | 8.961 | 0.0035 | 0.0051 | 3.57% | 2.87% |
| 3 | Methyl Octanoate | 14.021 | 14.084 | 0.0044 | 0.0022 | 3.69% | 2.99% |
| 4 | Methyl Decanoate | 19.029 | 19.092 | 0.0051 | 0.0063 | 3.95% | 3.53% |
| 5 | Methyl Undecanoate | 21.376 | 21.439 | 0.0030 | 0.0071 | 3.96% | 3.71% |
| 6 | Methyl Laurate | 23.641 | 23.704 | 0.0028 | 0.0048 | 3.99% | 3.61% |
| 7 | Methyl Tridecanoate | 25.791 | 25.854 | 0.0045 | 0.0034 | 3.86% | 3.52% |
| 8 | Methyl Tetradecanoate | 27.876 | 27.939 | 0.0063 | 0.0035 | 3.85% | 3.38% |
| 9 | Myristoleic Acid Methyl Ester | 28.591 | 28.654 | 0.0074 | 0.0027 | 3.85% | 3.38% |
| 10 | Methyl Pentadecanoate | 29.849 | 29.912 | 0.0021 | 0.0060 | 3.81% | 3.25% |
| 11 | cis-10-Pentadecenoic Acid Methyl Ester | 30.554 | 30.619 | 0.0036 | 0.0055 | 3.81% | 3.26% |
| 12 | Methyl Palmitate | 31.777 | 31.842 | 0.0051 | 0.0036 | 3.73% | 3.12% |
| 13 | Methyl Palmitoleate | 32.229 | 32.294 | 0.0033 | 0.0029 | 3.57% | 3.22% |
| 14 | Methyl Heptadecanoate | 33.578 | 33.643 | 0.0076 | 0.0061 | 3.16% | 2.95% |
| 15 | cis-10-Heptadecenoic Acid Methyl Ester | 34.038 | 34.103 | 0.0064 | 0.0047 | 3.37% | 2.94% |
| 16 | Methyl Octadecanoate | 35.357 | 35.422 | 0.0033 | 0.0028 | 3.16% | 3.18% |
| 17 | trans-9-Elaidic Acid Methyl Ester | 35.702 | 35.767 | 0.0058 | 0.0066 | 3.37% | 3.07% |
| 18 | cis-9-Oleic Acid Methyl Ester | | | | | | |
| 19 | Linolelaidic Acid Methyl Ester | 36.454 | 36.519 | 0.0050 | 0.0029 | 3.00% | 3.18% |
| 20 | Methyl Linoleate | 36.517 | 36.582 | 0.0022 | 0.0055 | 3.34% | 3.27% |
| 21 | Methyl Arachidate | 36.962 | 37.027 | 0.0039 | 0.0079 | 3.19% | 3.35% |
| 22 | gamma-Linolenic Acid Methyl Ester | 37.523 | 37.596 | 0.0073 | 0.0082 | 3.23% | 3.23% |
| 23 | Methyl cis-11-Eicosenoate | 38.683 | 38.756 | 0.0071 | 0.0068 | 3.43% | 3.32% |
| 24 | Methyl Linolenate | 38.996 | 39.069 | 0.0057 | 0.0052 | 3.29% | 3.17% |
| 25 | Methyl Heneicosanoate | 39.741 | 39.814 | 0.0045 | 0.0049 | 3.31% | 3.37% |
| 26 | cis-11,14-Eicosadienoic Acid Methyl Ester | 40.167 | 40.240 | 0.0039 | 0.0067 | 3.83% | 4.04% |
| 27 | Methyl Docosanoate | 40.249 | 40.322 | 0.0036 | 0.0044 | 2.89% | 3.17% |
| 28 | cis-8,11,14-Eicosatrienonic Acid Methyl Ester | 40.540 | 40.613 | 0.0022 | 0.0026 | 3.35% | 3.19% |
| 29 | Methyl Erucate | 40.788 | 40.861 | 0.0026 | 0.0020 | 3.34% | 3.33% |
| 30 | cis-11,14,17-Eicosatrienoic Acid Methyl Ester | 41.691 | 41.764 | 0.0034 | 0.0019 | 3.32% | 3.05% |
| 31 | Methyl Tricosanoate | 42.003 | 42.076 | 0.0071 | 0.0028 | 3.62% | 3.64% |
| 32 | Methyl cis-5,8,11,14-Eicosatetranoic | 42.417 | 42.495 | 0.0069 | 0.0044 | 3.50% | 2.92% |
| 33 | cis-13-16-Docosadienoic Acid Methyl Ester | 43.423 | 43.501 | 0.0062 | 0.0055 | 3.64% | 3.25% |
| 34 | Methyl Lignocerate | 44.090 | 44.168 | 0.0043 | 0.0068 | 3.68% | 3.59% |
| 35 | Methyl cis-5,8,11,14,17-Eicosapentaenoate | 46.717 | 46.795 | 0.0044 | 0.0088 | 3.90% | 3.49% |
| 36 | Methyl Nervonate | 47.221 | 47.299 | 0.0038 | 0.0050 | 3.71% | 3.80% |
| 37 | All cis-4-7-10-13-16-19-Docosahexaennoate | 47.381 | 47.459 | 0.0067 | 0.0062 | 3.44% | 3.92% |

# Nitro/phosphorous and Organochloride Pesticides

Chlorinated and nitrogen/phosphorus compounds are determined by two selective detectors (ECD and NPD).
These two different channels/detectors allow different classes of compounds to be simultaneously detected without affecting sensitivity like in systems where flow is split in two columns.




*ECD [in red] and NPD [in blue] chromatogram*

| Nitro/Phosphorus Pesticides |
|---|
| Tionazine |
| Phorate |
| Diazinone |
| CH3-Parathion |
| Parathion |
| Quinalphos |
| Metidathion |
| Phosdrin |
| Phonophos |
| Pirimiphos |

| Organochloride Pesticides |
|---|
| Aldrin |
| alpha-BHC |
| beta-BHC |
| Lindane |
| delta-BHC |
| delta-BHC |
| gamma-Chlordane |
| 4,4'-DDE |
| 1,1-Dichloro-2,2-bis(4-chlorophenyl)ethane |
| 4,4'-DDT |
| Decachlorobiphenyl |
| Dieldrin |
| alpha-Endosulfan |
| beta-Endosulfan |
| beta-Endosulfan |
| Endrin |
| Endrin Aldehyde |
| Endrin Ketone |
| Heptachlor |
| Heptachlor Exo-Epoxide |
| Methoxychlor |
| 2,4,5,6.Tetrachloro-m-xylene |

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