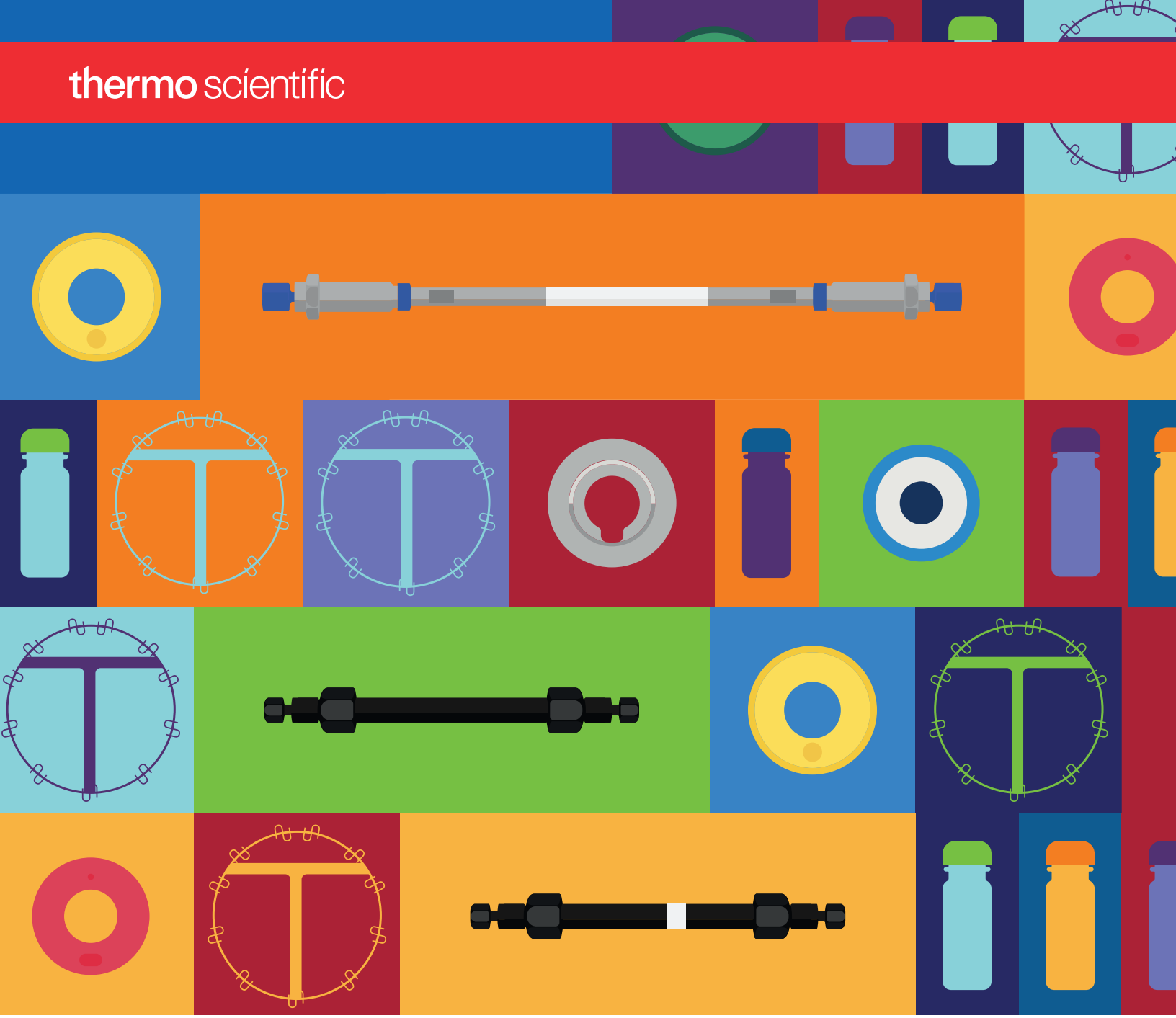
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Connected chromatography solutions

2019/2021 Chromatography Consumables Catalog

ThermoFisher SCIENTIFIC

thermo scientific



The collective power of chromatography

Expect reproducible results with sample prep, columns and vials

Maximizing your chromatography productivity and achieving reproducible results requires optimizing the whole workflow from sample to knowledge. By choosing the right tools, from your sample preparation (manual or automated) to the highest selectivity column chemistry and cleanest vials, you maintain sample integrity and achieve the highest instrument efficiency and reduce the need for costly reanalysis. With the largest portfolio of sample handling; vials, plates and closures, column chemistries in a broad range of dimensions and sample preparation, we remain a steadfast and committed partner in your endeavor to improve the world around us.

GC IC LC

C CDS SP

UNITY LAB SERVICES

Find out more at **thermofisher.com/chromatographyconsumables**

ThermoFisher SCIENTIFIC

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AD72973-EN 0419S

2019/2021 Chromatography Consumables Catalog

This PDF catalogue is designed to familiarise you with our comprehensive portfolio of Chromatography consumables, columns and accessories, designed to deliver connected chromatography solutions across Biopharma/Pharma, Food & Beverage, Environmental and Clinical workflows. We have included key workflows in the next few pages to help with your product selection.

How to use this PDF catalog

You can use the 'ctrl F' function to search for products, applications, brands or part numbers, or you can navigate by section using the contents page to guide you.

More information

For more information on Chromatography consumables, to access application notes, educational resources, selection guides and product literature, please visit **thermofisher.com/chromatographyconsumables**

Or, for more information on our Instrumentation and key applications, please visit **thermofisher.com/chromatography**

AppsLab

Gain access to our applications expertise on cloud-based Thermo Scientific™ AppsLab library of analytical applications for a comprehensive fully searchable method repository.

Visit **appslab.thermofisher.com**

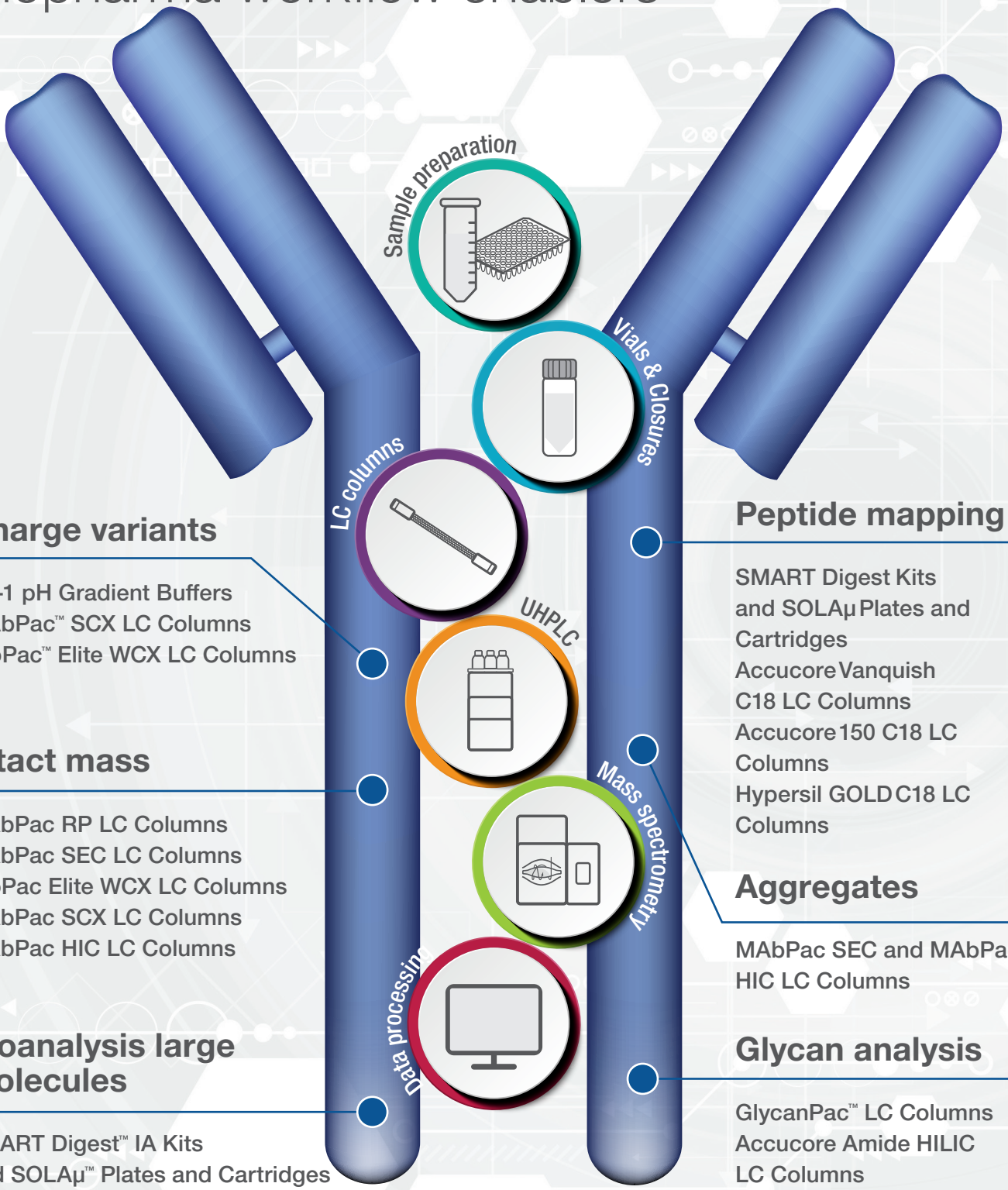
A collaboration built for Biopharma

The National Institute for Bioprocessing Research and Training (NIBRT) and Thermo Fisher Scientific are developing workflows using Thermo Fisher Scientific technology including the latest biomolecule columns.

For more information on collaboration built for BioPharma visit **thermofisher.com/NIBRT**

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Thermo Scientific™ Biopharma workflow enablers



Charge variants

CX-1 pH Gradient Buffers
MAbPac™ SCX LC Columns
ProPac™ Elite WCX LC Columns

Intact mass

MAbPac RP LC Columns
MAbPac SEC LC Columns
ProPac Elite WCX LC Columns
MAbPac SCX LC Columns
MAbPac HIC LC Columns

Bioanalysis large molecules

SMART Digest™ IA Kits
and SOLAμ™ Plates and Cartridges
Accucore™ Vanquish™ C18 LC Columns
Acclaim™ LC Columns
Hypersil GOLD™ C18 LC Columns

Peptide mapping

SMART Digest Kits
and SOLAμ Plates and Cartridges
Accucore Vanquish C18 LC Columns
Accucore 150 C18 LC Columns
Hypersil GOLD C18 LC Columns

Aggregates

MAbPac SEC and MAbPac HIC LC Columns

Glycan analysis

GlycanPac™ LC Columns
Accucore Amide HILIC LC Columns

Find out more about consumables for your Biopharma workflow here

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Thermo Scientific™ Pharmaceutical workflow enablers

Small molecules

Discovery DMPK

HyperSep™ SPE Cartridges and Plates
WebSeal™ Well Plates and Mats
Accucore™ RP-MS LC Columns
Accucore Biphenyl LC Columns
Acclaim™ VANQUISH™ C18 UHPLC Columns
Titan3™ Syringe Filters

Development DMPK / Pre Clinical

SOLA™/SOLAμ™ SPE Plates and Cartridges
WebSeal Well Plates and Mats
HyperSep SPE Cartridges and Plates
Accucore C18 LC Columns
Accucore Biphenyl LC Columns
Hypersil GOLD™ VANQUISH™ C18 UHPLC Columns

Clinical

SOLA/SOLAμ SPE Plates and Cartridges
WebSeal Well Plates and Mats
Hypersil GOLD VANQUISH C18 UHPLC Columns
Accucore C18 LC Columns
Accucore Biphenyl LC Columns

QA/QC

Titan3 Syringe Filters
Hypersil GOLD C18 UHPLC Columns
Accucore RP-MS LC Columns
Accucore Biphenyl LC Columns
TraceGOLD™ GC Columns



Large molecules

Discovery DMPK

SMART Digest™ Kits
WebSeal Well Plates and Mats
MAbPac™ LC Columns
ProPac™ Elite WCX LC Column
GlycanPac™ LC Columns
Acclaim 120 C18 Columns
CX-1 pH Gradient Buffers

Development DMPK / Pre Clinical

SMART Digest & SMART Digest ImmunoAffinity Kit
SOLA/SOLAμ SPE Plates and Cartridges
WebSeal Well Plates and Mats
Acclaim 120 C18 Columns

Clinical

SOLA/SOLAμ SPE Plates and Cartridges
WebSeal Well Plates and Mats
Acclaim 120 C18 Columns

QA/QC

Titan3 Syringe Filters
SMART Digest Kits
ProPac LC Columns
MAbPac LC Columns
CX-1 pH Gradient Buffers
Acclaim 120 C18 Columns

Find out more about consumables for your Pharmaceutical workflow here

ThermoFisher SCIENTIFIC

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Thermo Scientific™ Food and Beverage workflow enablers



Pesticides

HyperSep™ SPE Cartridges
QuEChERS
TraceGOLD™ GC Columns
GC Consumables
and Accessories
Accucore™ aQ LC Columns
Acclaim™ Carbamate
LC Columns
Acclaim Trinity Q1 LC Columns

Mycotoxins

HyperSep Retain Cartridges
Accucore aQ LC Columns
Hypersil GOLD™ LC Columns

Contaminants by GC-MS

HyperSep SPE Cartridges
TraceGOLD GC Columns
GC Consumables and
Accessories

Veterinary drug residues

QuEChERS
Target2™ PTFE Syringe
Filters
Accucore VDX LC Columns

Food quality/ Food labelling / Food fraud

HyperSep Retain Cartridges
HyperSep SPE Cartridges
Acclaim LC Columns
Accucore LC Columns
HyperREX™ LC Columns
GC Columns and
Consumables

Find out more about consumables for your Food & Beverage workflow here

ThermoFisher SCIENTIFIC

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Thermo Scientific™ Environmental workflow enablers



Persistent Organic Pollutants (POP)

HyperSep™ Cartridges
TraceGOLD™ GC Columns
LinerGOLD™ GC Liners
BTO Septa
GC Consumables and Accessories

Semi-Volatile Organic Compounds (SVOC)

HyperSep Cartridges
SPME Arrow
TraceGOLD TG-XLBMS, TG-5SilMS, TG-PAH, TG-XLBMS, TG-OCP, TG-OPP TR-Pesticide, and TR-8270 GC Columns
LinerGOLD Liners
BTO Septa
GC Consumables and Accessories

Volatile Organic Compounds (VOC)

SPME Arrow
TraceGOLD TG-VMS, TG-VRX, TG-624, TG-624SilMS, TG-VVOC B, TRACE™ TR-V1, TR-524, and TracePLOT GC Columns
LinerGOLD Liners
BTO Septa
GC Consumables and Accessories

Microcystins

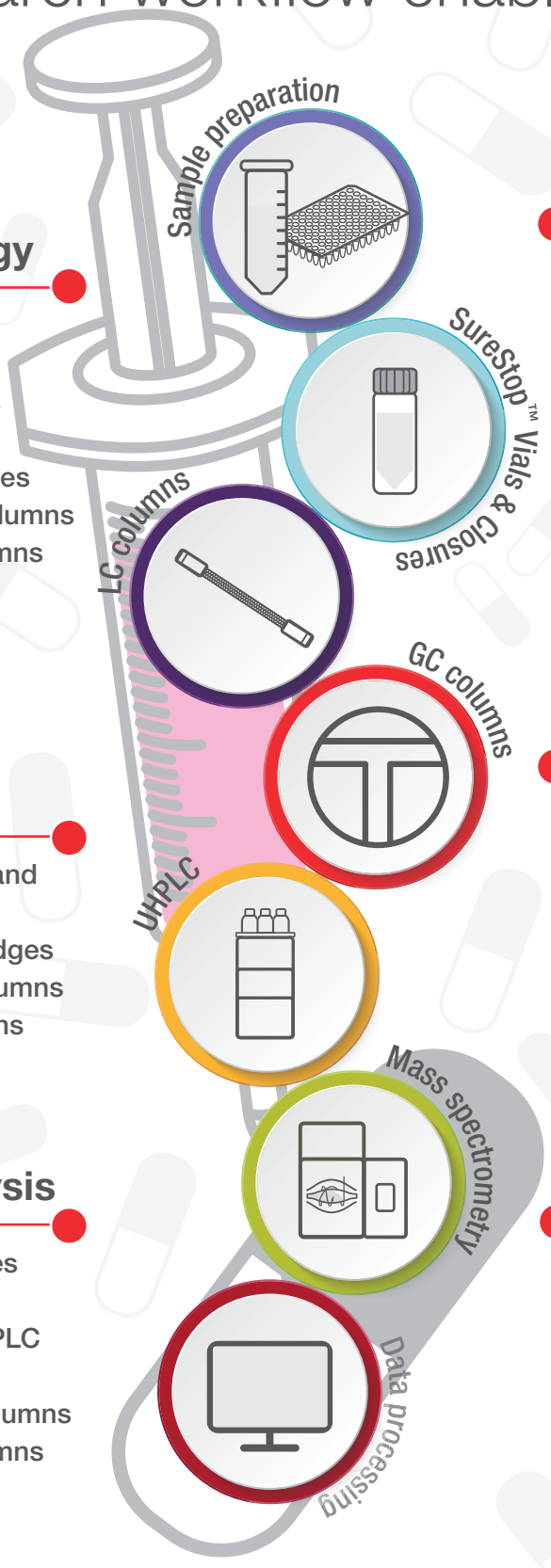
HyperSep Cartridges
Hypersil GOLD™ aQ LC Columns
Accucore™ C18 LC Columns

Find out more about consumables for your Environmental workflow here

ThermoFisher SCIENTIFIC

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Thermo Scientific™ Clinical research workflow enablers



Forensic toxicology

SOLA™/SOLAμ™ SPE Plates and Cartridges
HyperSep™ SPE Cartridges and Plates
HyperSep™ Retain Cartridges
Accucore™ Biphenyl LC Columns
Accucore RP-MS LC Columns
TraceGOLD™ GC Columns and Guard Columns

Drugs of abuse research

SOLA/SOLAμ SPE Plates and Cartridges
HyperSep Verify CX Cartridges
Accucore Biphenyl LC Columns
Hypersil GOLD™ LC Columns
TraceGOLD GC Columns

Supplement analysis

HyperSep Retain Cartridges and Plates
Hypercarb™ HPLC and UHPLC Columns
Hypersil GOLD PFP LC Columns
Accucore aQ C18 LC Columns

Amino acids, acylcarnitines, and succinylacetone research

Hypersil GOLD C18 LC Columns
Accucore aQ C18 LC Columns
Acclaim™ HILIC LC Columns
Titan3™ Syringe Filters
HyperSep SLE Plates and Cartridges
TraceGOLD GC Columns

Translational proteomics

SMART Digest™ Kits
SOLAμ SPE Plates and Cartridges
EASY-Spray™ LC Columns
PepMap™ RSLC Columns
WebSeal™ Well Plates and Mats

Drug monitoring research

SOLA/SOLAμ SPE Plates and Cartridges
WebSeal Well Plates and Mats
Acclaim 120 C18 Columns

Find out more about consumables for your Clinical workflow here

ThermoFisher SCIENTIFIC

GC columns and accessories

Thermo Scientific GC columns and accessories are designed to give optimum system performance for today's challenging analyses.

Thermo Scientific™ TraceGOLD™, Thermo Scientific™ TRACE™ and Thermo Scientific™ TracePLOT™ columns provide excellent quality and performance. Our range of GC accessories include all the tools needed by today's gas chromatographers.

For more information, visit **thermofisher.com/GCcolumns**

Featured products



LinerGOLD GC liners
The GOLD standard in GC liner performance, providing enhanced inertness, leading to increased accuracy and precision in analysis.

Page 5-017



TraceGOLD GC columns
The premium standard in GC column performance, delivering low bleed, excellent reproducibility and high levels of inertness.

Page 5-034

Section contents

Gas management	5-005
Syringes for GC instruments	5-008
Injection port septa	5-015
Injection port liners	5-017
Ferrules	5-022
Capillary accessories	5-025
GC tools	5-030
GC columns	5-033
TraceGOLD GC columns	5-034
TRACE GC columns	5-062
TracePLOT GC columns	5-074
GC reagents	5-077
Reacti-Therm heating, stirring and evaporation system	5-089
GC and GC-MS instruments	5-095



GC derivatization reagents
Making the undetectable detectable. Thermo Scientific GC Derivatization reagents provide high levels of purity and reproducibility in analysis.

Page 5-077



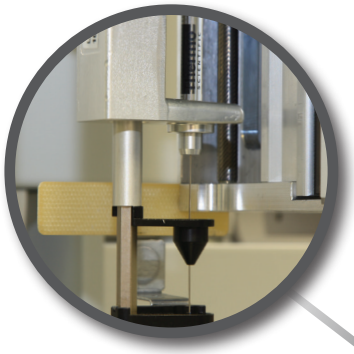
Reacti-Therm sample derivatization system
Heating, stirring and evaporation in a single system, offering a complete solution for derivatization and other small-scale reactions.

Page 089

GC columns and accessories

Product selection guide

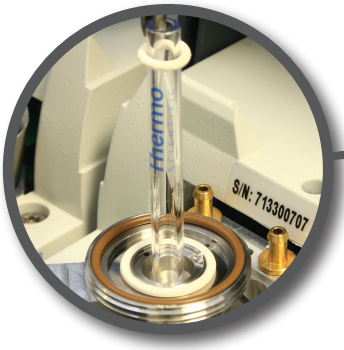
Selection of the correct GC columns and accessories is critical to ensure optimum system performance. The selection guide below is designed to simplify this process



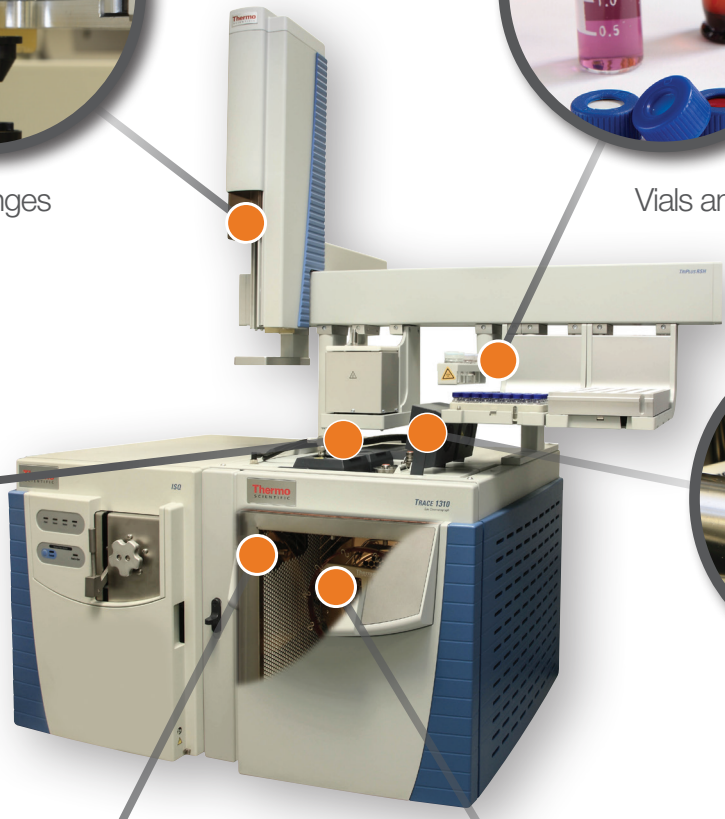
GC syringes

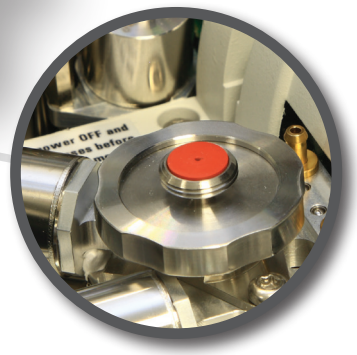


Vials and closures



GC liners

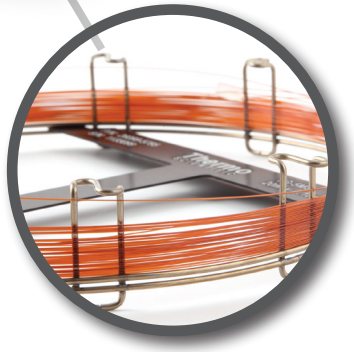




GC septa



GC ferrules



GC columns

Thermo Scientific GC consumables are available for both Thermo Scientific and Agilent instruments.

Vials and closures

Nature of sample	Vial Type Recommended
Routine samples	Clear glass (with or without patch) as SureStop 9mm screw thread or 11mm crimp vial
Light sensitive samples	Amber glass (with or without patch) as SureStop 9mm screw thread or 11mm crimp vial
Low volume samples	Micro-Inserts or Microsampling and High Recovery vials with fixed inserts or reduced internal volume
Trace levels	Silanized glass and/or Certified Kits
Ultra Trace MS analysis	MSCERT kits: The first low particle, low background chromatography vials, pre-cleaned to provide unmatched consistency; tested and certified for up to 15 critical physical characteristics affecting vial performance for mass spectrometry

GC septa

Material	Max Operating Temperature	Key Features
BTO	400 °C (330 °C for 17 mm size)	Low bleed
TR-Green	350 °C	Long lifetime
Marathon	350 °C	High mechanical durability
TR-Blue	200–250 °C	Easy to penetrate for routine applications

GC liners

Injection Method	Injection Requirements	Liner Requirements
Split	Enables rapid vaporization and effective mixing of sample	• Typically open-ended • Large surface area & volume • Design to aid mixing • Low activity
Splitless 	Sample focused onto column – minimizes sample contact with reactive metal components	• Typically tapered • Small volume to aid transfer • Low activity
PTV	Rapid heating and cooling, fast transfer to column-used for active compounds such as pesticides and large volume injections	• Small to aid sample transfer • Good thermal properties for rapid heating & cooling • Siltek coating provides highly inert surface

GC syringes

Syringe selection by needle tip style

Needle Tip Style	Features / Applications
Cone (Tapered tip)	Most versatile needle for autosampler use and resist coring of vial and inlet septa
Bevel (Sharp tip)	Typically used for manual injections. The tip shape helps reduce septa coring
Side Hole (Dome tip with a side hole for sample exit) 	Usually used for headspace and large volume injections
Blunt End or 90° (flat top)	Used for injectors that do not contain an inlet septa such as Merlin MicroSeal™
Dual Gauge 	Narrow gauge part suitable for megabore on-column injection. Wider part suitable for autosampler use

Syringe selection by needle gauge size

- Gauge is a measure of the "thickness" of the needle
- The higher the gauge number, the thinner the needle e.g. a 23 gauge is thicker than a 26 gauge
- Suffix "s" e.g. 23s refers to a needle with a narrower internal diameter
- For on-column injection ensure that the column ID is greater than the needle gauge

GC ferrules

Material	Uses	Advantages	Limitations
100% Graphite	FID, NPD, high temperature	• Easy-to-use stable seal • Higher temperature limit • Can be easily removed • Can be re-used	• Not for MS or oxygen-sensitive detectors • Soft, easily deformed or destroyed • Possible system contamination
85% Vespel / 15% Graphite	MS and oxygen-sensitive detectors	• Long lifetime • High temperature limit • MS compatible	• Cannot be re-used • Must be re-tightened after initial temperature cycles
Thermo Scientific™ SilTite™	MS and oxygen-sensitive detectors	• Long lifetime • High temperature limit • MS compatible	• Cannot be re-used

GC columns

Column Parameter	Parameters Affecting Resolution			Performance Changes
	Efficiency	Retention	Selectivity	
Column Length (m)	✔			Doubling column length increases resolution by ~ 40%
Internal Diameter (mm)	✔	✔		The smaller the column ID, the greater the efficiency and better the resolution
Film Thickness (µm)		✔		The thicker the film, the greater the retention, e.g. ideal for highly volatile compounds. The thinner the film, the sharper the peaks and lower the bleed
Stationary Phase Chemistry			✔	Altering the stationary phase can affect elution order and help separate closely, or co-eluting peaks

Gas management

Thermo Scientific™ Click-On™ inline filters

Easy-to-use format eliminates contamination

- Pure gas output 99.9999% or 6.0 grade
- No carrier gas line contamination during filter change
- Easy and fast replacement without the need for tools
- TUEV approved
- Maximum pressure 11 bar (160 psi)
- Maximum flow 25L/min



Filters	For Gas	Indicator Change	Filter Capacity (Click-On Inline)	Filter Capacity (Super Clean)
Moisture	Inert carrier, He, H_2, N_2, AR, Air		21g H_2O	7.2g H_2O
Oxygen	Inert carrier, He, H_2, N_2, AR		3L O_2	1L O_2
Hydrocarbon	Inert carrier, He, H_2, N_2, AR, Air		36g (as n-butane)	24g (as n-butane)
Combi – Moisture, Oxygen	Inert carrier, He, H_2, N_2, AR		10g H_2O, 1.5L O_2	–
Combi – Moisture, Hydrocarbons	Inert carrier, He, H_2, N_2, AR, Air		10g H_2O, 18g HCs (as n-butane)	3.5g H_2O, 12g HCs (as n-butane)
Triple – Moisture, Oxygen, Hydrocarbons	Inert carrier, He, H_2, N_2, AR		6g H_2O, 1L O_2, 12g HCs (as n-butane)	1.8g H_2O, 500mL O_2, 7g HCs (as n-butane)
Triple– Moisture, Oxygen, Hydrocarbons – He preconditioned for GC/MS	He		6g H_2O, 1L O_2, 12g HCs (as n-butane)	–
Indicating Triple – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC/MS	He	Moisture: Yellow to Clear Oxygen: Green to Gray	0.1g H_2O, 100mL O_2, 0.07g HCs (as n-butane)	–

Click-on inline filters

Type	Cat No.	Quantity
Moisture Filter	60180-801	1 Each
Oxygen Filter	60180-802	1 Each
Hydrocarbon Filter	60180-803	1 Each
Combi – Moisture, Oxygen	60180-804	1 Each
Combi – Moisture, Hydrocarbons	60180-843	1 Each
Triple – Moisture, Oxygen, Hydrocarbons	60180-805	1 Each
Triple – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC/MS	60180-806	1 Each
Indicating Triple – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC/MS	60180-808	1 Each

Connectors and accessories

Description	Cat No.	Quantity
Brass End Fitting, 0.125in.	60180-809	2 Pack
Steel End Fitting, 0.125in.	60180-810	2 Pack
Brass End Fitting, 0.25in.	60180-811	2 Pack
Steel End Fitting, 0.25in.	60180-812	2 Pack
Double Ended Connector to connect Filter to Indicator	60180-813	1 Each
Replacement O-Rings	60180-833	1 Each
Wall Mounting Clamp	60180-834	4 Pack

Super clean cartridge filters

Replace easily without tools

- 99.9999% pure gas (or 6.0 grade) output
- No carrier gas line contamination during cartridge change
- Cost effective
- TUEV approved
- Max. pressure 11 bar (160 psi)
- Max. flow 7L/min



Super clean cartridge filters

Type	Base Included	Cat. No.	Quantity
Indicating Moisture Cartridge Filter	No	60180-819	1 Each
Indicating Oxygen Cartridge Filter	No	60180-820	1 Each
Hydrocarbon Cartridge Filter	No	60180-821	1 Each
Indicating Combi Filter – Moisture, Hydrocarbons	No	60180-826	1 Each
Indicating Triple Filter – Moisture, Oxygen, Hydrocarbons	No	60180-824	1 Each
Indicating Triple Filter – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC-MS	No	60180-825	1 Each
Triple Filter – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC-MS	Yes	60180-830	1 Each
Indicating Triple Filter – Moisture, Oxygen, Hydrocarbons – He preconditioned for GC-MS	Yes	60180-829	1 Each
3 Cartridge Pack – contains 1 x Triple Filter and 2 x Combi Filter (Moisture, Hydrocarbons)	No	60180-822	1 Each
4 Cartridge Pack – contains 1 x Moisture Filter, 1 x O_2 Filter and 2 x Hydrocarbon Filter	Yes	60180-827	1 Each
3 Cartridge Pack – contains 1 x Triple Filter and 2 x Combi Filter (Moisture, Hydrocarbons)	Yes	60180-828	1 Each
High Flow Pack of 2 x Hydrocarbon Filters for LC-MS – no Indicator	No	60180-839	1 Each
High Flow Pack of 2 x Moisture Filters for LC-MS – with Indicator	No	60180-841	1 Each

Super clean cartridge filter baseplates

One-time installation procedure

- Can be configured to the individual user requirements
- Needle valves ensure gas line is not contaminated during cartridge change

Filters are not included



Type	For Use With	For Gas
Single Base	Triple Filter	Carrier Gas Only
Dual Base	2 x Combi Filter	Air and Fuel Gas
Triple Base	Triple and 2 x Combi Filter	Carrier, Make-Up, and Fuel Gas
Four-position Base	Moisture, Oxygen, 2 x Hydrocarbon	High Capacity Carrier, Fuel, Make Up
Two-position, High-flow Base	N_2 in LC/MS, H_2O in H_2/air generators	Carrier, Make Up and Fuel

Super clean cartridge filter baseplates

Type	Cat. No.	Quantity
Single Base	60180-814	1 Each
Dual Base	60180-815	1 Each
Triple Base	60180-817	1 Each
Four-position Base	60180-818	1 Each
O-rings for Base Plates	60180-837	20 Pack
Flush Cap	60180-838	2 Pack

eVol XR dispensing system

Allows precise and accurate, operator-independent dispensing for better deployment of laboratory staff

- Can be calibrated easily by user to ensure validity of results
- Intuitive interface with touch wheel and full-color screen
- Complies to GLP and GMP protocols
- Improves confidence in reported results
- Unifies two precision devices, a digitally controlled electronic drive and an Thermo Scientific™ eVol™ XCHANGE™ analytical syringe
- Integrated XCHANGE coupling allows syringes to be quickly and easily changed
- XCHANGE syringes offer exceptional versatility and functionality



eVol XR dispensing system

Description	Cat. No.	Quantity
Sample Dispensing System	66002-020	1 Each
eVol XCHANGE Syringe 5µL	66002-021	1 Each
eVol XCHANGE Syringe 50µL	66002-022	1 Each
eVol XCHANGE Syringe 100µL	66002-038	1 Each
eVol XCHANGE Syringe 500µL	66002-023	1 Each
eVol XCHANGE Syringe 1000µL	66002-039	1 Each
Sample Dispensing System Kit*	66002-024	1 Each
eVol Stand	66002-025	1 Each
Charger for eVol System	66002-026	1 Each
Charging Stand for eVol System	66002-027	1 Each
Replacement Battery for eVol System	66002-028	1 Each
Replacement Plunger for 5µL eVol Syringe	66002-029	1 Each
Replacement Plunger for 500µL eVol Syringe	66002-031	1 Each
Replacement Plunger for 1000µL eVol Syringe	66002-041	1 Each

* Sample Dispensing Kit contains 1 eVol XR unit, 1x5µL, 1x50µL and 1x500µL syringe.

Applications:

- Routine dispensing of volatile solvents, hazardous, corrosive or viscous chemicals





Syringes for GC instruments

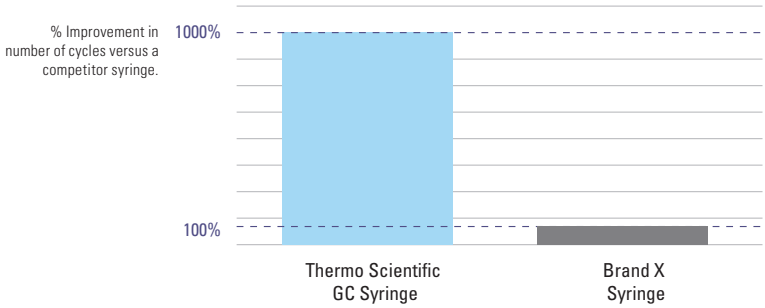
Providing durability, clarity and accuracy for your sample

Thermo Scientific syringes for GC instruments are designed to provide enhanced durability, clarity and accuracy in sample introduction. This gives confidence in analytical results, time-after-time.

Durability in your GC syringe

The enhanced design of the syringes delivers:

- Improved solvent resistance
- Greater temperature range
- Increased operational smoothness
- Longer lifetime and improved cycle life



Clarity in your GC syringe

Syringes are provided with a clear, easy-to-read black scale, which aids in consistent delivery of samples for manual syringes and easy identification of installed autosampler syringes.

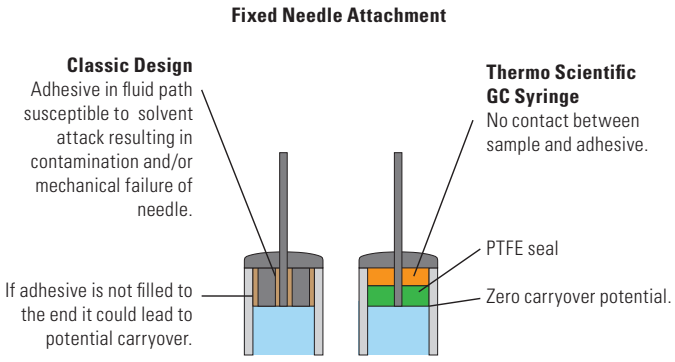


Accuracy in your GC syringe

The enhanced design of the syringe has eliminated areas where the sample can become trapped and potentially cause carryover:

- Closer fit between the plunger tip and PTFE insert at the zero position
- Tighter fit between PTFE insert and glass barrel
- Improved fixed needle attachment

In addition, the reduction in adhesive from the fluid path enhances durability and reduces the risk of sample interaction with the adhesive.



GC syringes for Thermo Scientific TriPlus RSH Autosampler

Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat. No.	Quantity	Repair Kit Cat. No.	Quantity
0.5	57	23	Cone	Split	365A0241*	1 Each	365RN617	1 Each
1	57	23	Cone	Split	365B0251*	1 Each	365RN656	1 Each

Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat. No.	Quantity
5	85	23s	Cone	Merlin Valve SSL Injector: Splitless	365C0221	1 Each
	57	23s	Cone	SSL, PTV and Merlin Adapter	365C0231*	1 Each
	85	26s	Cone	Splitless and OC	365C0241	1 Each
	57	26s	Cone	SSL and PTV	365C0251*	1 Each
10	85	23s	Cone	Merlin Valve SSL Injector: Splitless	365D0261	1 Each
	57	23s	Cone	SSL, PTV and Merlin Adapter	365D0271*	1 Each
	85	26s	Cone	Splitless and OC	365D0281	1 Each
	57	26s	Cone	SSL and PTV	365D0291*	1 Each

Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat. No.	Quantity
10	85	23s	Cone	Merlin Valve SSL Injector: Splitless	365D0301	1 Each
	57	23s	Cone	SSL, PTV and Merlin Adapter, especially suitable for volatile solvents or corrosive samples	365D0311*	1 Each
	85	26s	Cone	Splitless and OC	365D0321	1 Each
	57	26s	Cone	SSL, PTV and Merlin Adapter, especially suitable for volatile solvents or corrosive samples	365D0331*	1 Each
25	57	23s	Cone	SSL, PTV and Merlin Adapter	365F2441*	1 Each
	85	26s	Cone	Splitless and OC	365F2451	1 Each
	57	26s	Cone	SSL and PTV	365F2461*	1 Each
50	57	23s	Cone	Large Volume Injection, SSL	365G2311*	1 Each
	85	26s	Cone	LV OC	365G2321	1 Each
100	57	23s	Cone	Large Volume Injection, SSL	365H2141*	1 Each
	85	26s	Cone	LV OC	365H2151	1 Each
	57	26s	Cone	Large Volume Injection, SSL w/o Merlin Adapter	365H2161*	1 Each
	85	23	Side Hole	Variable depth LV PTV (w & w/o Merlin)	365H2171	1 Each
	57	23	Side Hole	Large Volume Injection, PTV	365H2181*	1 Each
250	85	26	Cone	LV OC	365I2321	1 Each
	57	26	Cone	LV Splitless	365I2331	1 Each
	85	23	Side Hole	Variable depth LV PTV (w & w/o Merlin)	365I2341	1 Each
	57	23	Side Hole	LV PTV (with or without Merlin valve)	365I2351	1 Each
500	85	26	Cone	LV OC	365J2411	1 Each
	57	26	Cone	Sample Preparation, i.e. dilution, derivatization	365J2421	1 Each
	57	23	Side Hole	LV PTV (with or without Merlin valve)	365J2441	1 Each
1000	65	23	Side Hole	Headspace, up to 115 deg.	365Q2121	1 Each
	57	22	LC	Sample Preparation, i.e. dilution, derivatization	365K2811	1 Each
2500	65	23	Side Hole	Headspace, up to 115 deg.	365Q2131	1 Each
	65	23	Side Hole	Headspace, up to 150 deg.	365L2321	1 Each
5000	65	22	Side Hole	Headspace up to 115 deg.	365Q2141	1 Each
10000	57	19	LC	Sample Preparation, i.e. dilution, derivatization	365N2721	1 Each

* Also suitable for use with the Thermo Scientific™ TriPlus™ 100LS Autosampler

GC syringes for Thermo Scientific instruments

Removable needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Replacement Needle Cat. No.	Quantity	Instrument Compatibility
10	75	31	Cone	Manual OC	36500520	1 Each	36550046	2 Pack	
100	50	23	Side hole	See Note	36520050	1 Each	36550040	2 Pack	TriPlus, AS200/AS800
100	50	23	Cone	LV Splitless	36500495	1 Each	36566485	5 Pack	TriPlus, AS2000, AS200/AS800
250	80	26	Cone	LVOC	36500490	1 Each	36566480	5 Pack	TriPlus, AS2000
250	50	23	Side hole	See Note	36520051	1 Each	36550040	2 Pack	TriPlus, AS2000, AS200/AS800
1000	50	23	Bevel		365K3041	1 Each	365RN235	5 Pack	AS200/AS800

Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Replacement Needle Cat. No.	Quantity	Instrument Compatibility
5	75	31	Cone	Manual OC	36500510	1 Each	36550045	2 Pack	
10	50	26	Cone		365D1841	1 Each	365RN362	2 Pack	AS3000, AS2000
10	50	23	Cone		365D3731	1 Each	365RN372	2 Pack	AS3000, AS2000, AS200/AS800
50	50	23	Cone	LV Splitless	36503015	1 Each	36566485	5 Pack	AS2000

Syringe 36520051 is to be used when performing PTV/LVI injections with a dedicated liner for thermal labile compounds (liner 45352060). Compatible with Merlin Microseal device installed on BEST PTV and with AS2000 and TriPlus autosamplers for liquids.

Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Instrument Compatibility
10	50	23	Cone		365D3741	1 Each	AS2000
100	50	25	Bevel		365H2321	1 Each	AS200/AS800
250	50	25	Bevel		365I2561	1 Each	AS200/AS800

Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Instrument Compatibility
5	50	26	Cone	Split/PTV	36504047	1 Each	TriPlus
5	50	23	Cone		365C3701	1 Each	AS3000, AS2000, AS200/AS800 AI/AS1310
5	50	26	Cone	Split/PTV	36500505	1 Each	AS3000, AS2000 AI/AS1310
5	80	26	Cone	Splitless and OC	36502025	1 Each	TriPlus
10	50	26	Cone		365D3711	1 Each	AS3000, AS200, AS200/AS800
10	50	26	Cone		365D1856	6 Pack	AS300, AS2000, AS200/AS800
10	50	25	Cone	Split/PTV	36500525	1 Each	TriPlus, AS3000, AS2000, AS200/ AS800, AI/AS1310

Fixed needle syringes (Continued)

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Instrument Compatibility
10	50	23	Cone	PTV/SSL Split	36520060	1 Each	AI/AS1310, TriPlus, AS300, AS2000, AS200/AS800
10	80	23	Cone	Merlin Valve SSL Splitless	36520061	1 Each	TriPlus, AS2000
10	50	23-26	Cone	OC in PTV Merlin Valve	36500580	1 Each	TriPlus, AS2000
10	80	26	Cone	OC and Splitless	36502019	1 Each	TriPlus, AS2000

Plunger-in-needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Type	Cat No.	Quantity	Instrument Compatibility
0.5	50	23	Cone	Split/PTV	36504045	1 Each	AI/AS1310, TriPlus, AS3000
0.5	75	31	Cone	Manual OC	36500500	1 Each	
0.5	80	26	Cone	Splitless and OC	36504046	1 Each	TriPlus

GC syringes for Agilent instruments

Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	42	23	Cone	365D1611	6 Pack

Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	42	23-26	Cone	365D0621	1 Each
		23-26	Cone	365D0626	6 Pack

Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
5	42	23	Cone	365C0951	1 Each
		23	Cone	365C0956	6 pack
		23-26s	Cone	365C0971	1 Each
		23-26s	Cone	365C0976	6 pack
10	42	23	Cone	365D1571	1 Each
		23	Cone	365D1576	6 pack
		23-26s	Cone	365D1621	1 Each
		23-26s	Cone	365D1636	6 pack

Fixed needle, super-elastic plunger syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	42	23-26s	Cone	365D5416	1 Each

GC syringes for Shimadzu instruments

Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity	Replacement Needle Cat. No.	Quantity
5	42	26s	Cone	365C6610	1 Each		
		23s	Cone			365RN661	2 Pack
	42	26s	Cone	365D6610	1 Each	365RN272	2 Pack
		23s	Cone	365D6620	1 Each		

GC syringes for CTC instruments

Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity	Replacement Needle Cat. No.	Quantity
10	50	23	Cone	365D3731	1 Each	365RN372	2 Pack
		26	Cone	365D1841	1 Each	365RN362	2 Pack

Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	50	23	Cone	365D2976	6 Pack
		26	Cone	365D2977	1 Each
		23	Cone	365D3741	1 Each
25	50	23	Cone	365F3761	1 Each
100	50	23	Cone	365H3771	1 Each
250	50	26	Cone	365H6700	1 Each
1000	50	26	Side Hole	365K8135	1 Each
2500	50	26	Side Hole	365L8635	1 Each

Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
5	50	23	Cone	365C3701	1 Each
		26	Cone	36500505	1 Each
10	50	26	Cone	365D3711	1 Each
		23	Cone	36520060	1 Each
		26	Cone	365D1856	6 Pack
		23	Cone	365D2971	6 Pack

Learn more at **thermofisher.com/GCparts**

Manual GC syringes

Removable needle, gas tight syringes

Volume a(µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity	Replacement Needle Cat. No.	Quantity
10	50	26s	Bevel	365D0811	1 Each	365RN215	5 Pack
25	50	25	Bevel	365F1931	1 Each	365RN225	5 Pack
		22s	Blunt End	365FLG31	1 Each	365RNL25	5 Pack
50	50	22s	Blunt End	365GLG41	1 Each	365RNL25	5 Pack
500	50	25	Bevel	365J2881	1 Each	365RN225	5 Pack
		22s	Blunt End	365JLG71	1 Each	365RNL25	5 Pack
1000	50	23	Bevel	365K3041	1 Each	365RN235	5 Pack
		22s	Blunt End	365KLG81	1 Each	–	
5000	50	22	Bevel	365M5212	1 Each	–	
		22s	Blunt End	365M6322	1 Each	–	
		22s	Side Hole	365M8922	1 Each	–	
10000	50	22	Bevel	365N5214	1 Each		
		22s	Side Hole	365N8923	1 Each	365RN465	2 Pack

Removable needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity	Replacement Needle Cat. No	Quantity
10	50	26	Bevel	365D1171	1 Each	365RN215	5 Pack
25	50	25	Bevel	365F1901	1 Each	365RN225	5 Pack
50	50	25	Bevel	365G2091	1 Each	365RN225	5 Pack

Fixed needle, gas tight syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
10	50	26	Bevel	365D4433	1 Each
		26s	Blunt End	365D6314	1 Each
25	50	22s	Blunt End	365F6315	1 Each
50	50	25	Bevel	365G2111	1 Each
		22s	Blunt End	365G6316	1 Each
100	50	25	Bevel	365H2321	1 Each
		22s	Blunt End	365H6317	1 Each
250	50	25	Bevel	365I2561	1 Each
500	50	25	Bevel	365J2831	1 Each
		22s	Blunt End	365J6319	1 Each
1000	50	22	Bevel	365K3051	1 Each

Fixed needle syringes

Volume (µL)	Length (mm)	Gauge	Tip Style	Cat. No.	Quantity
5	50	26	Bevel	365C0741	1 Each
10	50	26	Bevel	365D1091	1 Each
		26	Bevel	365D1096	6 Pack
25	50	25	Bevel	365F1891	1 Each
100	50	25	Bevel	365H2291	1 Each

PTFE Luer-Lok, gas tight syringes

Volume (µL)	*Cat. No.*	*Quantity*	*Needle Cat. No.*	*Quantity*
25	365F7655	1 Each	365RNL22	2 Pack
50	365G7656	1 Each	365RNL22	2 Pack
100	365H7657	1 Each	365RNL22	2 Pack
250	365I7658	1 Each	365RNL22	2 Pack
500	365J7659	1 Each	365RNL22	2 Pack
1000	365KL531	1 Each	365RNL22	2 Pack
2500	365LL541	1 Each	365RNL22	2 Pack
5000	365ML551	1 Each	365RNL22	2 Pack
10000	365NL561	1 Each	365RNL22	2 Pack
25000	365PL571	1 Each	365RNL22	2 Pack

Please note that the Luer-Lok syringes do not come with a needle and therefore the needle part number needs to be ordered separately

Luer tip, gas tight syringes

Volume (µL)	**Cat. No.**	**Quantity**
100	365H7814	1 Each
1000	365K7817	1 Each
2500	365L7818	1 Each
5000	365M7819	1 Each
10000	365N7820	1 Each



Injection port septa

Quality materials for all applications

BTO septa
- Low bleed septa - ideal for MS applications
- Excellent mechanical properties
- Maximum temperature 400°C

Marathon septa
- Pre-pierced for reliable performance
- Up to 400 injections per septa
- Maximum temperature 350°C

TR-Green septa
- Long injection lifetime
- Low injection port adhesion
- Maximum temperature 350°C

TR-Blue septa
- General purpose septa
- Easy to penetrate
- Maximum temperature 200-250°C

Septa

Material	ID (mm)	Cat. No. (Blister Pack)	Quantity (Blister Pack)	Cat. No. (Glass Jar)	Quantity (Glass Jar)
BTO	9	31303240-BP	50 Pack	31303240	50 Pack
BTO	11	31303233-BP	50 Pack	31303233	50 Pack
BTO	11.5	31303230-BP	50 Pack	31303230	50 Pack
BTO	12.7	31303250-BP	48 Pack	31303228	50 Pack
BTO	17	31303215-BP	48 Pack	31303211	50 Pack
TR-Green	9	313G3240-BP	50 Pack	313G3240	50 Pack
TR-Green	11	313G3230-BP	50 Pack	313G3230	50 Pack
TR-Green	12.7	–	48 Pack	313G3228	50 Pack
TR-Green	17	313G3215-BP	48 Pack	313G3211	50 Pack
Marathon	9	313P3240-BP	50 Pack	313P3240	50 Pack
Marathon	11	313P3233-BP	50 Pack	313P3233	50 Pack
Marathon	11.5	313P3230-BP	50 Pack	313P3230	50 Pack
Marathon	17	313P3215-BP	48 Pack	313P3211	50 Pack
TR-Blue	9	N/A	N/A	313B3240	50 Pack
TR-Blue	11	N/A	N/A	313B3233	50 Pack
TR-Blue	11.5	N/A	N/A	313B3230	50 Pack
TR-Blue	17	N/A	N/A	313B3211	50 Pack

Learn more at **thermofisher.com/GCparts**



Gold and siltek inlet base seals

- Precision machined to provide exceptional sealing properties
- Gold plating and Siltek coatings provide a surface with exceptional inertness for analysis of highly active compounds
- High grade stainless steel providing reproducible seal
- Compatible with Thermo Scientific TRACE 1300 Series GC & Agilent split/splitless injection ports



Gold inlet base seals

For Use With	ID (mm)	Cat. No.	Quantity
Single Column Installation	0.8	290GA081	10 Pack
Single Column Installation	0.8	290GA082	2 Pack
Single Column Installation (Cross Version)	0.8	290GA084	10 Pack
Single Column Installation (Cross Version)	0.8	290GA083	2 Pack
Dual Column Installation	1.2	290GA121	10 Pack
Dual Column Installation	1.2	290GA122	2 Pack

Siltek inlet base seals

For Use With	ID (mm)	Cat. No.	Quantity
Single Column Installation	0.8	290GA091	10 Pack
Single Column Installation	0.8	290GA092	2 Pack
Single Column Installation (Cross Version)	0.8	290GA094	10 Pack
Single Column Installation (Cross Version)	0.8	290GA093	2 Pack

Injection port liners

LinerGOLD GC liners

The GOLD standard in GC liner performance

- **Increased accuracy and sensitivity in analysis** – LinerGOLD prevents the loss of sensitive compounds in analysis
- **Lower detection limits** – when analyzing active and sensitive compounds
- **Excellent reproducibility** – gives confidence in your results from liner to liner – setting the GOLD standard

The GOLD standard in liner consistency

Consistency in your GC liner is of paramount importance – you expect to see a consistently high level of performance time after time. Thermo Scientific™ LinerGOLD™ GC liners are manufactured and tested to ensure that you have confidence with every liner that it installed onto your GC system.

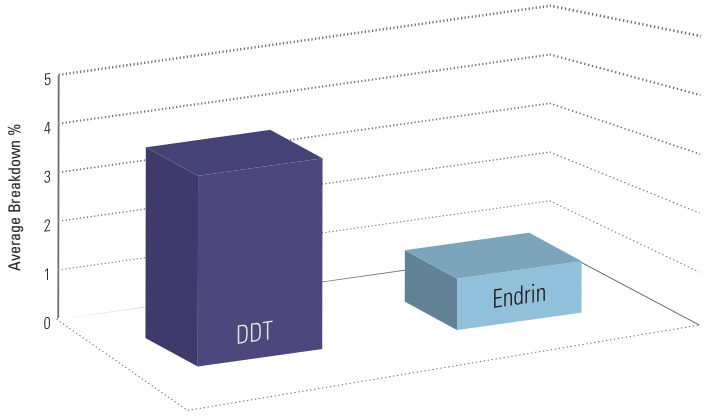


Figure 1: Endrin and DDT breakdown test results showing the lot-to-lot reproducibility and low levels of inertness of LinerGOLD

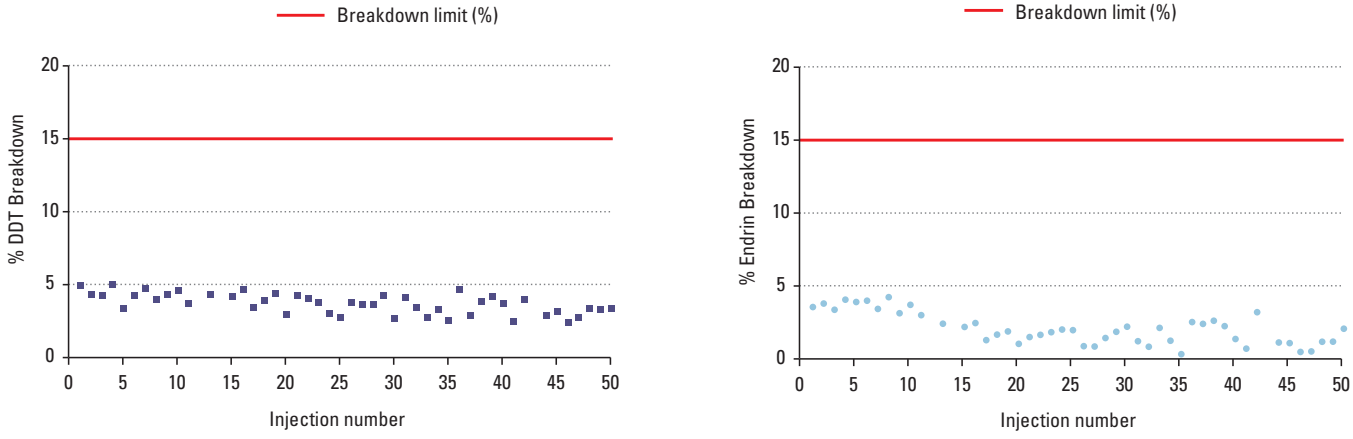


Figure 2: Compound degradation after 50 injections – LinerGOLD exhibits minimal breakdown

Learn more at **thermofisher.com/GCparts**

LinerGOLD GC liners for Thermo Scientific TRACE 1300 series and Agilent instruments, SSL injector

Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat. No. 25 Pack
Split/Splitless Liner	4 x 6.3	78.5	Quartz Wool	453A2265-UI	453A1262-UI
Split/Splitless Straight Liner	4 x 6.3	78.5	No	453A1295-UI	453A2292-UI
Splitless/Split Liner with Single Taper	4 x 6.3	78.5	No	453A1345-UI	453A2342-UI
Splitless/Split Liner with Single Taper	4 x 6.3	78.5	Quartz Wool	453A1925-UI	453A2922-UI
Splitless Liner with Double Taper	4 x 6.3	78.5	No	453A1355-UI	453A2352-UI
Precision Split/Splitless Liner	4 x 6.3	78.5	Quartz Wool	453A1255-UI	453A1252-UI
Direct Straight Liner	1 x 6.3	78.5	No	453A1335-UI	453A2332-UI
LinerGOLD Mixed Liner Pack	1 x 6.3	Mixed	Mixed	453TH002-UI	N/A

LinerGOLD GC liners for Thermo Scientific TRACE Ultra and FOCUS instruments

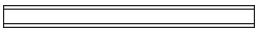
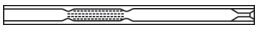
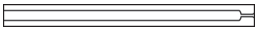
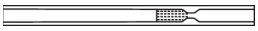
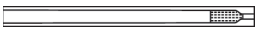
Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat. No. 25 Pack
Direct Straight Liner	5 x 8	105	No	45350030-UI	45354030-UI
Split Straight Liner	3 x 8	105	No	45350031-UI	45354031-UI
Splitless Liner	3 x 8	105	No	45350032-UI	45354032-UI
Splitless Liner	5 x 8	105	No	45350033-UI	45354033-UI
Precision Liner	5 x 8	105	Quartz Wool	453T1905-UI	453T4905-UI
Splitless Precision Liner	5 x 8	105	Quartz Wool	453T2999-UI	453T4999-UI
Baffled PTV Liner	2 x 2.75	120	No	453T2845-UI	453T4845-UI



Injection port liners for Thermo Scientific instruments

Highly deactivated and produced to exacting tolerances to ensure a high degree of reproducibility

Liners for Thermo Scientific TRACE 1300 series SSL instruments and Agilent instruments, SSL injector

	Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat No. 25 Pack
	Direct Straight Liner	1.2 x 6.3	78.5	No	453A1335	453A2332
	Split Straight Liner	4 x 6.3	78.5	Quartz Wool	453A2265	453A1262
	Split Straight Liner	4 x 6.3	78.5	No	453A1295	453A2292
	Split/Splitless FocusLiner	4 x 6.3	78.5	Quartz Wool	453A1255	453A1252
	Split/Splitless FocusLiner with Single Taper	4 x 6.3	78.5	Quartz Wool	453A1315	453A1312
	Split/Splitless Liner with Single Taper	4 x 6.3	78.5	No	453A1345	453A2342
	Split/Splitless Liner with Double Taper	4 x 6.3	78.5	No	453A1355	453A2352
	Split/Splitless Liner w/ Recessed Gooseneck	4 x 6.3	78.5	Quartz Wool	453A1305	N/A
	Splitless Liner with Single Taper	4 x 6.3	78.5	Quartz Wool	453A1925	N/A
	Split/Splitless Mini-Lam Liner	4 x 6.3	78.5	No	453A2009	N/A
	Split/Splitless Mixed Liner Sample Pack	Mixed	Mixed	Mixed	453TH002	N/A

Liners for Thermo Scientific TRACE 1300 series and TRACE ULTRA PTV instruments, PTV injector

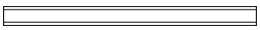
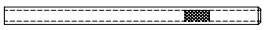
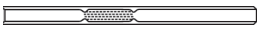
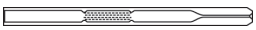
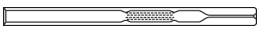
	Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 2 Pack	Cat. No. 5 Pack	Cat. No. 25 Pack
	PTV Straight Liner	1 x 2.75	120	No	N/A	45352054	N/A
	PTV Straight Liner	2 x 2.75	120	No	N/A	45352057	45354057
	PTV Straight Liner (deactivated)	2 x 2.75	120	No	45322045	N/A	N/A
	PTV Liner with Sintered Lining	1 x 2.75	120	No	N/A	45352060	N/A
	PTV Liner with Three Baffles	1 x 2.75	120	No	N/A	45352062	N/A
	PTV Siltek Metal Liner	1 x 2.75	120	No	45322046	N/A	N/A
	PTV Siltek Metal Liner	2 x 2.75	120	No	45322044	N/A	N/A
	PTV Siltek Metal Liner	2 x 2.75	120	Wool	45322056	N/A	N/A
	PTV Baffle Liner (Siltek)	2 x 2.75	120	No	N/A	453T2120	N/A
	PTV Split Liner with Recessed Gooseneck	2 x 2.75	120	Quartz Wool	N/A	45352070	N/A
	PTV Silcosteel Liner for OC	1 x 2.75	120	No	45322052	N/A	N/A

Learn more at **thermofisher.com/GCparts**

Liner sealing rings for Thermo Scientific instruments

Description	Cat. No.	Quantity
Liner Sealing Ring for TRACE 1300 Series GC SSL Injector	29001320	5 Each
Liner Sealing Ring for TRACE 1300 Series GC PTV Injector	29001318	1 Each
Liner sealing Ring for TRACE and FOCUS GC SSL Injector	29033406	10 Pack
Liner sealing Ring for TRACE PTV Injector	29013417	2 Pack

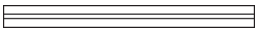
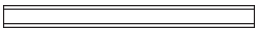
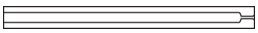
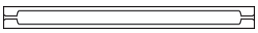
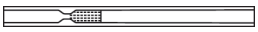
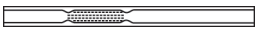
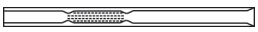
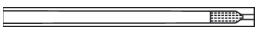
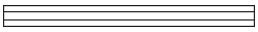
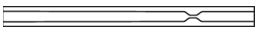
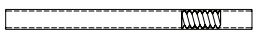
Liners for Thermo Scientific TRACE ULTRA and FOCUS SSL instruments, SSL injector

	Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat No. 25 Pack
	Split Straight Liner	5 x 8	105	No	45350030	45354030
	Split Straight Liner	3 x 8	105	No	45350031	45354031
	Split Straight Liner	5 x 8	105	CarboFrit	453T2131	N/A
	Splitless Straight Liner	3 x 8	105	No	45350032	45354032
	Splitless Straight Liner	5 x 8	105	No	45350033	45354033
	Splitless Straight Liner	5 x 8	105	CarboFrit	453T2130	N/A
	Splitless Straight Liner (Siltek)	3 x 8	105	No	453T2121	N/A
	Split FocusLiner for 50mm Needle	5 x 8	105	Quartz Wool	453T1905	453T4905
	Splitless FocusLiner for 50mm Needle	5 x 8	105	Quartz Wool	453T2999	453T4999
	Splitless FocusLiner for 70mm Needle	5 x 8	105	Quartz Wool	453T2895	453T4895
	Split/Splitless Straight Liner	0.75 x 2.75	105	No	45352083	N/A



Injection port liners for Agilent instruments

Liners for Agilent instruments

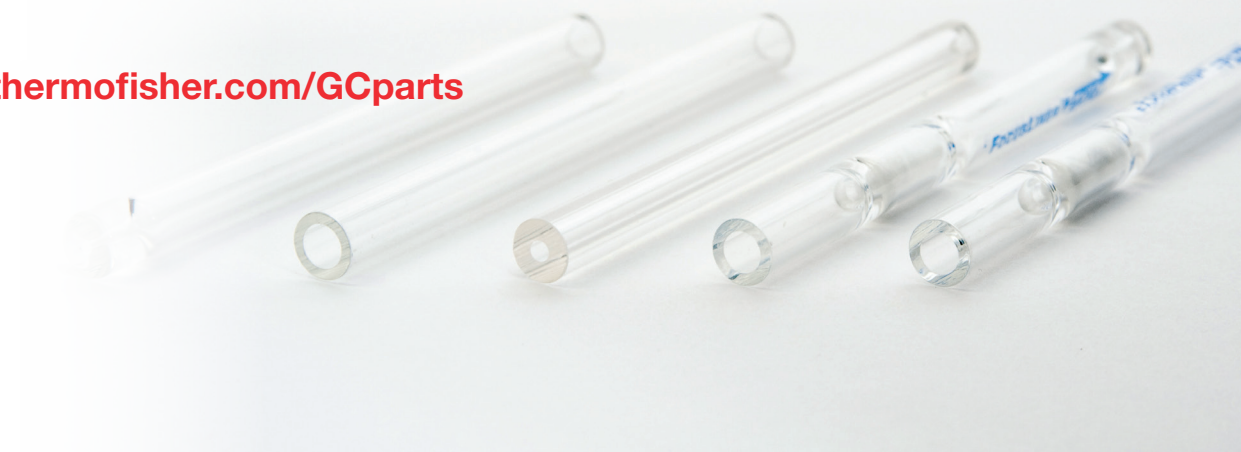
	Injection Type	ID x OD (mm)	Length (mm)	Packing	Cat. No. 5 Pack	Cat No. 25 Pack
	Direct Straight Liner	1.2 x 6.3	78.5	No	453A1335	453A2332
	Split Straight Liner	4 x 6.3	78.5	Quartz Wool	453A2265	453A1262
	Split Straight Liner	4 x 6.3	78.5	No	453A1295	453A2292
	Split/Splitless FocusLiner	4 x 6.3	78.5	Quartz Wool	453A1255	453A1252
	Split/Splitless FocusLiner with Single Taper	4 x 6.3	78.5	Quartz Wool	453A1315	453A1312
	Split/Splitless Liner with Single Taper	4 x 6.3	78.5	No	453A1345	453A2342
	Split/Splitless Liner with Double Taper	4 x 6.3	78.5	No	453A1355	453A2352
	Split/Splitless Liner w/ Recessed Gooseneck	4 x 6.3	78.5	Quartz Wool	453A1305	N/A
	Split/Splitless FAST FocusLiner	2.3 x 6.3	78.5	Quartz Wool	453A1285	453A2282
	Split/Splitless FAST FocusLiner with Single Taper	2.3 x 6.3	78.5	Quartz Wool	453A2375	453A1372
	Splitless Liner with Single Taper	4 x 6.3	78.5	Quartz Wool	453A1925	N/A
	Splitless Straight Liner	2.0 x 6.3	78.5	No	453A2275	N/A
	Splitless Liner with Recessed Gooseneck	2.0 x 6.3	78.5	No	453A2325	N/A
	Single Gooseneck (Deactivated Metal)	5.2 x 6.3	78.5	No	453A2001	N/A
	Cyclosplitter Liner (Deactivated Metal)	5.2 x 6.3	78.5	No	453A2002	N/A
	Split/Splitless Liner with Wool (Deactivated Metal)	5.2 x 6.3	78.5	No	453A2003	N/A
	Split/Splitless Mixed Liner Sample Pack	Mixed	Mixed	No	453AG001	N/A

Liner sealing rings for Agilent instrument

Description	Cat. No.	Quantity
Graphite Liner Sealing Ring for Agilent Direct Straight Liners	290GA242	10 Pack
Graphite Liner Sealing Ring for Agilent SSL Liners	290GA243	10 Pack
Graphite Liner Sealing Ring for Agilent 2.0mm Liners	290GA244	10 Pack
Viton Liner Sealing Ring for Agilent SSL Injector	290OA241	10 Pack

Thermo Scientific GC consumables are suitable for use with Agilent GC systems

Learn more at **thermofisher.com/GCparts**



Ferrules

Wide range of choices for a wide range of instruments and applications

Thermo Scientific ferrules are available in three different materials and various dimensions to match the instrument and capillary column ID. The choice of material is dependent upon the use; guidelines are given in the table.

Material Type	Suitable for GC-MS	Temp Limit (°C)	Re-usable
Graphite	No	450	Yes
Graphite/Vespel	Yes	350	No
Stainless Steel (SilTite)	Yes	500	No



100% Graphite Ferrules

Thermo Scientific 100% graphite ferrules are a soft material that is porous to oxygen, making them suitable for most applications except GC-MS interface connections. These easy-to-use ferrules form a soft grip with the column and provide a stable seal.



15% Graphite / 85% Vespel Ferrules

The mechanically robust 15% Graphite/ 85% Vespel ferrules have a long lifetime and are compatible with GC-MS. These ferrules form a strong grip with the column and cannot be reused as they form a permanent seal with the column. They have a temperature limit of 350°C, but must be re-tightened after initial temperature cycles.



SilTite Metal Ferrules

The SilTite ferrule forms a strong, permanent, airtight seal around the capillary column, eliminating leaks. The base of the ferrule is flat and forms a perfect seal with the MS interface. The ferrule's temperature tolerance is well above the limit of the injector, MS interface or GC oven. Unlike other ferrules, SilTite Ferrules do not need re-tightening after installation.

Please also see syringes on page 5-008.

All varieties of ferrules are supplied in contaminant-free, individual blister packs, allowing removal of an individual item without risk of contamination to the other supplied items.

To select the most appropriate ferrule for your GC system, refer to the table below:

	100% Graphite	15% Graphite/ 85% Vespel	SilTite
Suitable for Thermo Scientific TRACE ULTRA SSL Injector	•	•	
Suitable for Thermo Scientific TRACE 1300/1310 & Agilent SSL Injectors	•	•	•
Suitable for Thermo Scientific TRACE ULTRA non-MS detectors	•	•	
Suitable for Thermo Scientific TRACE 1300/1310 & Agilent non-MS detectors	•	•	
Suitable for all Thermo Scientific & Agilent MS Detectors		•	•
Suitable for Thermo Scientific PTV Injector	•	•	

Ferrules for Thermo Scientific instruments

For Use with	Material Type	Ferrule Size (Column ID) (mm)	Cat. No.	Quantity
Thermo Scientific TRACE 1300/1310 SSL injectors and non-MS detectors	100 % Graphite	0.1-0.32	290GA139	10 Pack
		0.45-0.53	290GA140	10 Pack
	15% Graphite/85% Vespel	0.1-0.25	290VA191	10 Pack
		0.32	290VA192	10 Pack
		0.53	290VA193	10 Pack
Capillary Column Nut for injectors and non-MS Detectors	Stainless Steel		35050458	5 Pack
Thermo Scientific TRACE Ultra SSL injectors and non-MS detectors	100 % Graphite	0.1-0.25	29053488	10 Pack
		0.32	29053487	10 Pack
		0.53	29053486	10 Pack
	15% Graphite/85% Vespel	0.1-0.25	29033461	10 Pack
		0.32	29033460	10 Pack
		0.53	29033471	10 Pack
		Packed Column 1/8" OD	290VT168	10 Pack
		Packed Column 1/4" OD	290VT165	10 Pack
	15% Graphite/85% Vespel (3.4mm length)	0.1-0.25	290VT186	10 Pack*
		0.32	290VT187	10 Pack*
		0.53	290VT188	10 Pack*
Capillary Column Nut for Graphite/Vespel Ferrules	Brass		290BT239	2 Pack
All Thermo Scientific PTV injectors	100 % Graphite	0.1-0.25	29053488	10 Pack
		0.32	29053487	10 Pack
		0.53	29053486	10 Pack
Thermo Scientific MS detectors	15% Graphite/85% Vespel	0.1-0.25	29033496	10 Pack
		0.32	29033497	10 Pack
Capillary Column Nut for MS Detector	Brass		290BT240	5 Pack
	Stainless Steel		290BT241	5 Pack
Thermo Scientific MS detectors	VESPEL SCP-5000	0.1-0.25	290VT221	5 Pack
Capillary Column Spring Loaded Nut for MS Detectors	Stainless Steel for ISQ/TSQ		1R120434-0010	1 Pack
	Stainless Steel for QE GC/Exactive GC		1R120434-0020	1 Pack
SilTite Kit for Thermo Scientific TRACE 1300/1310 GC SSL injectors	SilTite Metal	0.1-0.25	290MA215	1 Each**
		0.32	290MA216	1 Each**
		0.53	290MA217	1 Each**
SilTite Kit for Thermo Scientific ISQ GC-MS interface	SilTite Metal	0.1-0.25	290MA194	1 Each**
		0.32	290MA195	1 Each**
		0.53	290MA196	1 Each**
Replacement SilTite Ferrules for Thermo Scientific TRACE 1300/1310 SSL and ISQ GC-MS interface kits	SilTite Metal	0.1-0.25	290MA201	10 Pack
		0.32	290MA202	10 Pack
		0.53	290MA203	10 Pack
SilTite Nuts for MS interface			290MA205	5 Pack
SilTite Nuts for SSL injectors			290MA207	5 Pack
SilTite Kits for Thermo Scientific DSQ GC-MS interface	SilTite Metal	0.1-0.25	290MT229	1 Each**
		0.32	290MT230	1 Each**
		0.53	290MT231	1 Each**
		Replacement SilTite Nuts	290MT211	5 Pack
Replacement SilTite Ferrules for Thermo Scientific DSQ GC-MS interface kits	SilTite Metal	0.1-0.25	290MT221	10 Pack
		0.32	290MT222	10 Pack
		0.53	290MT223	10 Pack

* Vespel Ferrules must be used in conjunction with brass nut part number 290BT239
** SilTite Kits contain 2 SilTite nuts and 10 ferrules

Ferrules for Agilent instruments

For Use with	Material Type	Ferrule Size (Column ID) (mm)	Cat. No.	Quantity
Agilent injectors and non-MS detectors	100 % Graphite	0.1-0.32	290GA139	10 Pack
		0.45-0.53	290GA140	10 Pack
		Packed Column 1/8" OD	290GA108	10 Pack
		Packed Column 1/4" OD	290GA107	10 Pack
	15% Graphite/85% Vespel	0.1-0.25	290VA191	10 Pack
		0.32	290VA192	10 Pack
		0.53	290VA193	10 Pack
		Packed Column 1/8" OD	290VT168	10 Pack
		Packed Column 1/4" OD	290VT165	10 Pack
Capillary Column Nut for injectors and non-MS Detectors	Stainless Steel		35050458	5 Pack
Agilent MS detectors	15% Graphite/85% Vespel	0.1-0.25	29033496	10 Pack
		0.32	29033497	10 Pack
		0.53	290VP144	10 Pack
SilTite Kits for Agilent SSL injectors	SilTite Metal	0.1-0.25	290MA215	1 Each*
		0.32	290MA216	1 Each*
		0.53	290MA217	1 Each*
SilTite Nuts for MS interface			290MA205	5 Pack
SilTite Kit for Agilent MS detectors	SilTite Metal	0.1-0.25	290MA194	1 Each**
		0.32	290MA195	1 Each**
		0.53	290MA196	1 Each**
Replacement SilTite Ferrules for all SilTite Kits	SilTite Metal	0.1-0.25	290MA201	10 Pack
		0.32	290MA202	10 Pack
		0.53	290MA203	10 Pack
SilTite Nuts for SSL injectors			290MA207	5 Pack
Replacement Baseplate Seals			290MA227	2 Pack
			290MA228	10 Pack

Thermo Scientific GC consumables are suitable for use with Agilent GC systems
* Kit contains 2 nuts, 10 ferrules and 2 base seals
** Kit contains 2 nuts and 10 ferrules



Capillary accessories

SilTite µ-Union

The tiny connection for GC Columns

The SilTite µ-Union is a connector for GC capillary columns, giving zero dead volume. The product has low thermal mass – it is only 9mm in length and has a mass <0.5g. It is available in kits to connect columns from 0.1mm ID to 0.53mm ID.

- Zero dead volume – giving optimized peak shapes
- FingerTite technology – easy to install and leak-free
- Highly inert and robust



Each SilTite µ-Union kit contains the following:

- 5 x ferrules
- 2 x union fittings
- Installation jigs
- Installation instructions

SilTite µ-Union kits, ferrules and replacement unions

Column ID (mm)	2nd Column ID (mm)	SilTite µ-Union Kit Cat. No. (1 Each)	SilTite µ-Union Ferrules Cat. No. (10 Pack)	SilTite µ-Union Replacement Union Cat. No. (1 Each)
0.1 – 0.25	0.1-0.25	290SM301	290SM401	290SM321
	0.32	290SM302	290SM402	290SM321
	0.53	290SM303	290SM403	290SM322
0.32	0.32	290SM304	290SM404	290SM321
	0.53	290SM305	290SM405	290SM322

SilTite capillary column connectors

For use with capillary GC columns

- For fused silica capillary columns
- Glass lined for inertness
- Low thermal mass
- Each pack contains 1 Connector, 2 Nuts and 5 Ferrules

SilTite capillary column connectors and ferrules

Column ID (mm)	2nd Column ID (mm)	SilTite Column Connector Kit Cat. No. (1 Each)	SilTite Ferrules Cat. No. (10 Pack)	Replacement SilTite Connector Nuts* Cat. No. (5 Pack)
0.1-0.25	0.1-0.25	290MU498	290MF229	290MN211
0.32	0.32-0.53	290MU499	290MF230	290MN211
0.53	0.45-0.53	290MU500	290MF231	290MN211

* SilTite nuts must be used with SilTite ferrules

GC capillary connectors

Description	Cat. No.	Quantity
Universal Capillary Connector	64000-001	1 Each
Y Capillary Connector	64000-002	1 Each

Finger tite connectors

Easier fit, reliability and leak-free connections

- No need to re-tighten ferrules as they expand and contract with the fittin
- Easy to handle with the nut touchable even with a hot injector/detector
- No tools required



Finger tite connectors for TRACE 1300 series GC and Agilent GCs

Description	Cat. No.	Quantity
Split/Splitless and MS Starter Kit	290SA131	1 Each
Split/Splitless and FID Starter Kit	290SA132	1 Each
Split/Splitless Injector Base Seal	290SA133	2 Pack
Ferrules for 0.1-0.25mm ID Columns	290S1132	10 Pack
Ferrules for 0.32mm ID Columns	290S1131	10 Pack

Finger tite connectors for TRACE GC Ultra and FOCUS GCs

Description	Cat. No.	Quantity
Female Nut	290ST130	5 Pack
Split/Splitless and MS Starter Kit	290ST131	1 Each
Split/Splitless and FID Starter Kit	290ST132	1 Each
Ferrules for 0.1-0.25mm ID Columns	290S1132	10 Pack
Ferrules for 0.32mm ID Columns	290S1131	10 Pack

Retention gap kits

Support Thermo Scientific gas chromatography consumables

- Kit contains one union and five ferrules
- Length of deactivated fused silica tubing



Retention gap kits

Description	Cat. No.	Quantity	Replacement Union Cat. No.	Quantity
Retention Gap Kit, 0.22 – 0.32mm ID, 2m	260RG497	1 Each	290GU498	1 Each
Retention Gap Kit, 0.53mm ID, 2m	260RG499	1 Each	290GU499	1 Each
Retention Gap Kit, 0.53mm ID, 5m	260RG500	1 Each	290GU499	1 Each

Deactivated silica tubing

Description	Cat. No.	Quantity
Deactivated silica tubing, 0.32mm ID; 2m Length	260G498P	1 Each
Deactivated silica tubing, 0.53mm ID; 2m Length	260G499P	1 Each
Deactivated silica tubing, 0.25mm ID; 5m Length	260G495P	1 Each
Deactivated silica tubing, 0.32mm ID; 5m Length	260G496P	1 Each
Deactivated silica tubing, 0.53mm ID; 5m Length	260G500P	1 Each
Deactivated silica tubing, 0.53mm ID; 1m Length (Siltek)	260G401P	1 Each

Capillary GuardGOLD and HydroGOLD columns

Providing protection to the analytical column

- Protects against column contamination caused by non-volatile materials, extending the column lifetime
- Focuses target analytes at the head of the analytical column, leading to better chromatographic peak shape
- Highly deactivated to provide superior inertness, essential for analysis of active compounds
- HydroGOLD extends column lifetime by preventing degradation from harsh “steam-cleaning” water injections

Capillary Thermo Scientific™ GuardGOLD™ and HydroGOLD columns

ID (mm)	Length (m)	GuardGOLD Cat. No.	Quantity	HydroGOLD Cat. No.	Quantity
0.18	2	26050-0218	1 Each	26H50-0218	1 Each
0.25	2	26050-0225	1 Each	26H50-0225	1 Each
0.32	2	26050-0232	1 Each	26H50-0232	1 Each
0.53	2	26050-0253	1 Each	26H50-0253	1 Each
0.18	5	26050-0518	1 Each	26H50-0518	1 Each
0.25	5	26050-0525	1 Each	26H50-0525	1 Each
0.32	5	26050-0532	1 Each	26H50-0532	1 Each
0.53	5	26050-0553	1 Each	26H50-0553	1 Each
0.18	10	26050-1018	1 Each	26H50-1018	1 Each
0.25	10	26050-1025	1 Each	26H50-1025	1 Each
0.32	10	26050-1032	1 Each	26H50-1032	1 Each
0.53	10	26050-1053	1 Each	26H50-1053	1 Each

Capillary column end caps

Feature a universal fit to all GC capillary columns

- Eliminate column contamination caused by leaving a column unsealed or sealed with a septum
- Color-coordinated fittings ensure that the column is reinstalled the same way it came out
- Reusable



Capillary column end caps

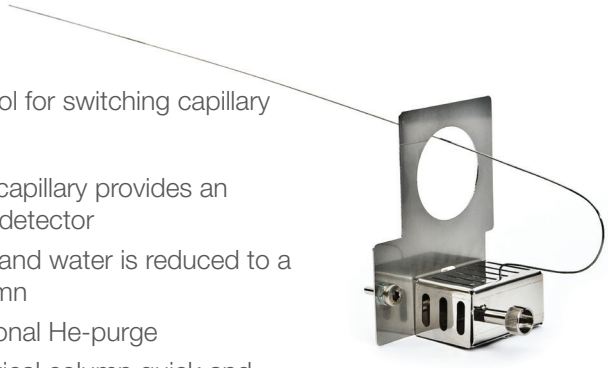
Description	Cat No.	Quantity
Capillary Column End Caps, Paired	260EC111	10 Pack

Learn more at **thermofisher.com/GCparts**

SWAP-IT GC-MS interface system

Easy to install for quick column changeovers

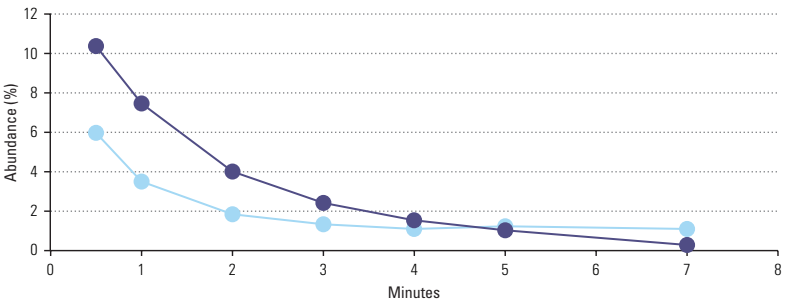
The SWAP-IT GC-MS Interface provides a powerful tool for switching capillary columns without the need to vent the MS



- Specially deactivated, robust stainless steel transfer capillary provides an interface between the analytical column and the MS detector
- Small ID of transfer capillary ensures exposure to air and water is reduced to a minimum during disconnection of the analytical column
- The system works without the requirement for additional He-purge
- Finger-tight connections make exchanging the analytical column quick and easy without the need for tools

SWAP-IT GC-MS Interface system

Description	Cat. No.	Quantity
For Thermo Scientific Instruments (ISQ GC-MS, TSQ 8000 GC-MS/MS)		
SWAP-IT GC-MS Interface Kit: SWAP-IT GC-MS Interface, Nuts, Ferrules, Accessories	60180-791	1 Each
For Thermo Scientific Instruments (DSQ GC-MS, DSQ II GC-MS, PolarisQ GC-MS, ITQ GC-MS only)		
SWAP-IT GC-MS Interface Kit: SWAP-IT GC-MS Interface, Nuts, Ferrules, Accessories	60180-790	1 Each
SWAP-IT GC-MS Interface, SWAP-IT only	60180-792	1 Each
Transfer Line Nut	290SG001	1 Each
Graphite/Vespel Ferrule for Transfer Line	290SG020	10 Pack
For Agilent Instruments		
SWAP-IT GC-MS Interface Kit: SWAP-IT GC-MS Interface, Nuts, Ferrules, Accessories	60180-794	1 Each
SWAP-IT GC-MS Interface, SWAP-IT Only	60180-796	1 Each
Transfer Line Nut	290SG004	1 Each
Graphite/Vespel Ferrule for Transfer Line	290SG021	10 Pack
SWAP-Tight Nut and Adaptor for S/SL Injector	290SG003	1 Each
Accessories		
SWAP-Tight Nut	290SG002	1 Each
SWAP-Tight Ferrules, Blank	290SG000	10 Pack
SWAP-Tight Ferrules, 0.1 – 0.25mm	290SG025	10 Pack
SWAP-Tight Ferrules, 0.32mm	290SG032	10 Pack

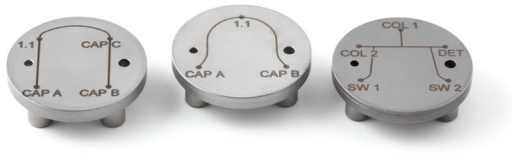


Removal of water and nitrogen to levels less than 2% is obtained within 3-4 minutes after column replacement

3-Port SilFlow device

Switch your GC column without the need to vent

- Allows column switching in GC-MS without the need to vent
- Utilizes a make up gas module and a microfluidic device
- SilTite FingerTite fittings for easy set up and a reliable seal



3-Port SilFlow device

Description	Cat. No.	Quantity
3 Port SilFlow MCD (0.25/0.32)	60201-398	1 Each

3-Port SilFlow repacement parts

Description	Cat. No.	Quantity
SilFlow Fingertight Ferrules for 0.25mm ID Columns	29063466	10 Pack
SilFlow Fingertight Ferrules for 0.32mm ID Columns	29063467	10 Pack
SilFlow Fingertight Tool	60201-401	1 Each
SilFlow Nuts	290SF302	10 Pack
Blanking Ferrule	290ST414	5 Pack
170µm Deactivated Tubing 0.363mm OD 60cm Length	60201-390	1 Each
75µm Untreated Fused Silica Tubing 0.363mm OD 30cm Length	60201-391	1 Each
170µm Deactivated Tubing 0.363mm OD 120cm Length	60201-394	1 Each
75µm Untreated Fused Silica Tubing 0.363mm OD 80cm Length	60201-395	1 Each

GC tubing

GC tubing for plumbing GC systems

GC tubing

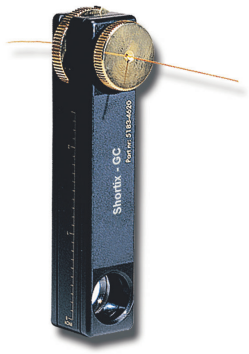
Material	OD (in)	ID (in)	Length (ft)	Cat. No.	Quantity
Copper	1/8	0.065	50	60181-632	1 Each
	1/4	0.19	50	60181-633	1 Each
Stainless Steel	1/16	0.01	25	60181-634	1 Each
		0.02	25	60181-635	1 Each
		0.03	25	60181-636	1 Each
		0.04	25	60181-637	1 Each
	1/8	0.085	25	60181-638	1 Each
	1/4	0.21	25	60181-639	1 Each

GC tools

Support GC applications

GC tools

Description	Cat. No.	Quantity
Straight-Tipped Forceps	60180-770	1 Each
Angle-Tipped Forceps	60180-771	1 Each
0.35mm Drill Bit	60180-779	1 Each
0.45mm Drill Bit	60180-780	1 Each
0.70mm Drill Bit	60180-781	1 Each
Adjustable Spanner	60180-782	1 Each
Shortix Capillary Column Cutter	60180-835	1 Each
Shortix Capillary Column Cutter Repair Kit	60180-836	1 Each
Ceramic Column Cutter	60201-318	1 Each



GC tool kits

Includes: Wrench sets, flashlight, brushes, mini-drill set and other tools for maintaining your GC system performance

GC tool kits

Description	Cat. No.	Quantity
Capillary Tool Kit for Thermo Scientific GCs	60180-784	1 Each
Capillary Tool Kit for Agilent GCs	60180-786	1 Each

GC installation kit

Includes:

- Tubing cutter
- 1/8 x 1/4in. reamer
- 7/16in. wrench
- 1/2in. wrench
- 1/8in. brass tees, 4
- 1/8in. brass nuts, 10
- Brass front and back ferrules, 10
- 15.2m instrument-grade, cleaned 1/8in. copper tubing



GC installation kit

Description	Cat. No.	Quantity
GC Installation Kit	60180-888	1 Each

GLD pro gas leak detector

Aids in quickly locating and identifying gas leaks

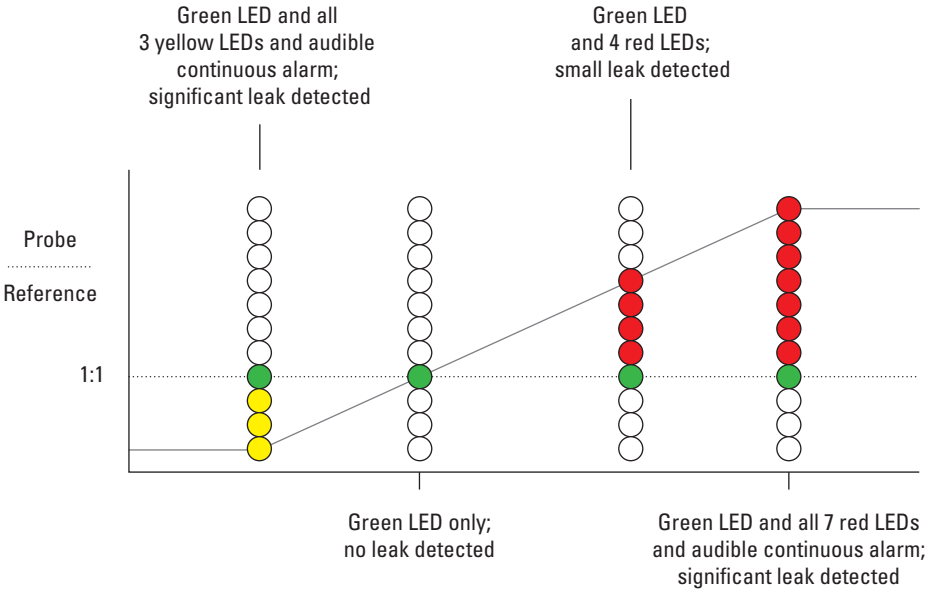
The Thermo Scientific™ GLD Pro Gas Leak Detector is specifically designed for use with gas chromatography instruments. Detection of leaks allows the user to reduce detector noise, provide a stable baseline, reduce carrier gas by minimizing waste, and maximize the lifetime of the analytical column by minimizing the presence of oxygen and other impurities in the carrier gas.

- Suitable for detection of a wide range of laboratory gases
- Push button on/off switch
- Push button zero function
- Automatic shutoff (5 minutes)
- LED light indicator for intensity of leak
- Rechargeable battery (up to 6 hrs. operation)
- Durable storage case
- Probe holder
- One year warranty



GLD Pro gas leak detector

Description	Cat. No.	Quantity
GLD Pro Leak Detector	66002-001	1 Each
Small Probe Adaptor	66002-003	1 Each
Soft-Sided Carry Case (Leak Detector not included)	66002-002	1 Each



Learn more at **thermofisher.com/GCtools**

GFM pro electronic flowmeter

Measure and monitor flow quickly and efficiently

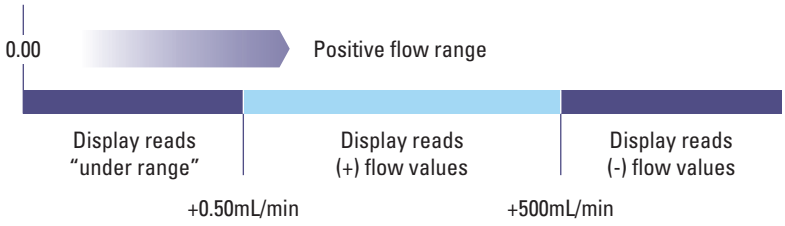
The Thermo Scientific™ GFM Pro Flowmeter is specifically designed for use with gas chromatography instruments. This versatile product is an electronic device capable of measuring volumetric flow for all types of gases. Real-time measurements can be made for various types of flow paths including continually changing gas types. The unit is portable so it can be hand-held or it also has an optional stand for bench-top convenience.

- Compact ergonomic design features side grips for added durability
- Easy-to-use interface features over-range warning indicator and auto-shutoff
- Measurement range of 0.5-500mL/min
- Accuracy of +/- 2% of flow or +/- 0.2mL/min, whichever is greater
- Data output via USB port
- Calibration: traceable to NIST primary standards
- Explosion-proof rating for flammable and explosive gases
- CE certified
- Uses 2-AA batteries
- Re-calibration service available



GFM Pro electronic flowmeter

Description	Cat. No.	Quantity
GFM Pro Flowmeter	66002-010	1 Each
Soft-Sided Carry Case (Flowmeter not included)	66002-002	1 Each
GFM Pro Flowmeter Re-Calibration	66002-GFMCAL	1 Each



GC columns

A comprehensive column range providing excellent quality and performance, with guaranteed reproducibility

Get reliable, reproducible results for GC and GC-MS with our comprehensive portfolio of GC columns that meet all of your analytical needs.

TraceGOLD

- Offering a leap forward in column performance delivering low bleed and superior inertness

TRACE

- For excellent quality and reproducibility for a wide range of applications

UltraFast

- Short, narrow-bore columns for use with the Thermo Scientific™ UltraFast™ instrument

TracePLOT

- Providing reproducible analyses of permanent gases, hydrocarbons and solvents



For more information visit
thermofisher.com/GCcolumns

TraceGOLD GC columns

TraceGOLD GC columns offer you a leap forward in column performance delivering low bleed and superior inertness ideally suited to MS applications.

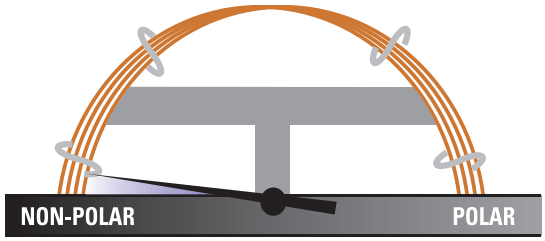
TG-1MS	035	TG-624SilMS	045	TG-XLBMS	055
TG-5MS	036	TG-1701MS	046	TG-VRX	056
TG-5SilMS	037	TG-17MS	047	TG-VMS	057
TG-5MS AMINE	038	TG-17SilMS	048	TG-OCP I / TG OCP II	058
TG-5HT	039	TG-225MS	049	TG-OPP I / TG-OPP II	059
TG-SQC	040	TG-200MS	050	TG-ALC Plus I / TG-ALC Plus II	060
TG-35MS	041	TG-WaxMS	051	TG-Dioxin	061
TG-35MS AMINE	042	TG-WaxMS A	052		
TG-1301MS	043	TG-WaxMS B	053		
TG-624	043	TG-POLAR	054		



TraceGOLD TG-1MS GC columns

Exceptionally low bleed for optimal signal-to-noise ratio, sensitivity and MS integrity

- Non-polar
- Equivalent to USP G2



Phase:	100% dimethyl polysiloxane
Max. Temps.:	330°C/350°C for Standard Columns 430°C for Metal Columns
USP Listing:	G2

TraceGOLD TG-1MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.10	10	0.1	26099-0200	1 Each
0.20	12	0.33	26099-5820	1 Each
0.15	20	0.15	26099-2760	1 Each
	40	0.15	26099-2940	1 Each
0.18	20	0.18	26099-5780	1 Each
0.25	15	0.25	26099-1300	1 Each
		0.5	26099-2110	1 Each
		1.0	26099-2840	1 Each
	30	0.25	26099-1420	1 Each
		0.5	26099-2230	1 Each
		1.0	26099-2960	1 Each
	30 with 5m SafeGuard	0.25	26099-1425	1 Each
	60	0.25	26099-1540	1 Each
		0.5	26099-2350	1 Each
		1.0	26099-3080	1 Each
0.32	15	0.25	26099-1310	1 Each
		1.0	26099-2850	1 Each
	30	0.25	26099-1430	1 Each
		0.5	26099-2240	1 Each
		1.0	26099-2970	1 Each
		3.0	26099-4840	1 Each
	60	0.25	26099-1550	1 Each
		0.5	26099-2360	1 Each
		1.0	26099-3090	1 Each
0.53	15	0.5	26099-2130	1 Each
		1.0	26099-2860	1 Each
		1.5	26099-3340	1 Each
	30	0.5	26099-2250	1 Each
		1.0	26099-2980	1 Each
		1.5	26099-3360	1 Each
	30 with 5m SafeGuard	1.0	26099-2985	1 Each

Applications:

- Hydrocarbons
- Solvent impurities
- PCB congeners
- Aroclor mixes
- Simulated distillation
- Drugs of abuse
- Natural gas odorants
- Essential oils
- Pesticides

Similar to:

- Rxi-1ms
- DB-1
- DB-1ms
- HP-1
- HP-1ms
- Ultra-1
- SPB-1
- Equity-1
- VF-1ms
- CP-Sil 5 CB Low Bleed/MS

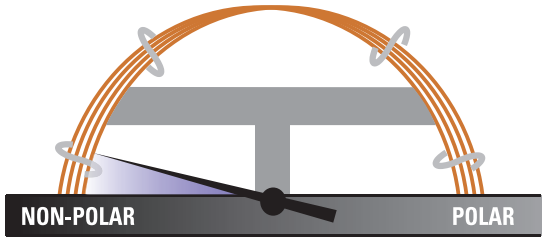
TraceGOLD TG-1MT Metal GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26M99-1300	1 Each
	30	0.25	26M99-1420	1 Each
0.53	5	0.1	26M99-4130	1 Each
		0.88	26M99-4120	1 Each
	6	0.15	26M99-4100	1 Each

TraceGOLD TG-5MS GC columns

The most widely used MS phase in gas chromatography

- Low polarity phase
- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Exceptional inertness ideal for analysis of active compounds
- Equivalent to USP G27 phase



Phase:	5% diphenyl / 95% dimethyl polysiloxane
Max. Temps.:	330°C/350°C for Standard Columns 430°C for Metal Columns
USP Listing:	G27, G36

TraceGOLD TG-5MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.10	10	0.1	26098-0200	1 Each
0.15	20	0.15	26098-2760	1 Each
	40	0.15	26098-2940	1 Each
0.18	20	0.18	26098-5780	1 Each
	20 with 5m SafeGuard	0.18	26098-5785	1 Each
0.25	15	0.25	26098-1300	1 Each
	15 with 5m SafeGuard	0.25	26098-1305	1 Each
	30	0.25	26098-1420	1 Each
		0.5	26098-2230	1 Each
		1.0	26098-2960	1 Each
	30 with 5m SafeGuard	0.1	26098-0475	1 Each
		0.25	26098-1425	1 Each
	60	0.25	26098-1540	1 Each
		0.5	26098-2350	1 Each
		1.0	26098-3080	1 Each
0.32	15	1.0	26098-2850	1 Each
	30	0.25	26098-1430	1 Each
		0.5	26098-2240	1 Each
		1.0	26098-2970	1 Each
	30 with 5m SafeGuard	0.25	26098-1435	1 Each
	60	0.25	26098-1550	1 Each
		0.5	26098-2360	1 Each
		1.0	26098-3090	1 Each
0.53		0.5	26098-2130	1 Each
		1.0	26098-2860	1 Each
		1.5	26098-3340	1 Each
	30	0.25	26098-1440	1 Each
		0.5	26098-2250	1 Each
		1.0	26098-2980	1 Each
		1.5	26098-3360	1 Each
	60	5.0	26098-4100	1 Each

Applications:

- Semi-volatiles
- Phenols
- Amines
- Residual solvents and solvent impurities
- Drugs of abuse
- Pesticides
- PCB cogeners
- Aroclor mixes

Similar to:

- Rxi-5ms
- DB-5
- HP-5
- HP-5ms
- Ultra-2
- SPB-5
- Equity-5
- CP-Sil 8

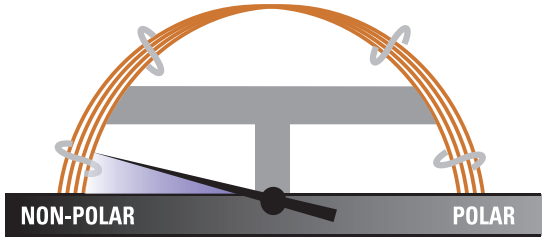
TraceGOLD TG-5MT Metal GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.1	26M98-0350	1 Each
		0.25	26M98-1300	1 Each
	30	0.25	26M98-1420	1 Each
	60	0.25	26M98-1540	1 Each

TraceGOLD TG-5SilMS GC columns

Incorporate phenyl groups in the polymer backbone for improved thermal stability, reduced bleed and reduced susceptibility to oxidation

- Low polarity, silarylene phase
- Designed for low bleed and outstanding inertness



Phase:	5% phenyl / 95% dimethyl arylene polysiloxane
Max. Temps.:	330°C/350°C
USP Listing:	G27, G36

TraceGOLD TG-5SilMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.15	20	0.15	26096-2760	1 Each
0.18	20	0.18	26096-5780	1 Each
0.25	15	0.25	26096-1300	1 Each
	15 with 10m SafeGuard	0.25	26096-1301	1 Each
	30	0.25	26096-1420	1 Each
		0.5	26096-2230	1 Each
		1.0	26096-2960	1 Each
	30 with 5m SafeGuard	0.25	26096-1425	1 Each
		0.5	26096-2235	1 Each
	30 with 10m SafeGuard	0.25	26096-1421	1 Each
	60	0.25	26096-1540	1 Each
		1.0	26096-3080	1 Each
0.32	30	0.25	26096-1430	1 Each
		0.5	26096-2240	1 Each
		1.0	26096-2970	1 Each
0.53	30	1.5	26096-3360	1 Each

Applications:

- GC-MS applications using ion-trap systems
- Polycyclic aromatics
- Hydrocarbons including chlorinated hydrocarbons
- Phthalates
- Phenols
- Amines
- Organophosphate

Similar to:

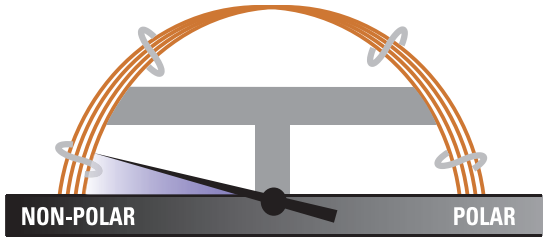
- DB-5ms Ultra Inert
- VF-5ms
- CP-Sil 8 Low-Bleed/MS
- Rxi-5SilMS
- BPX5
- ZB-5ms
- Optima-5MS
- SLB-5

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-5MS AMINE GC columns

Analysis of ppm levels of amines without column priming

- Low polarity phase, base optimized
- Tubing surface is chemically altered to reduce tailing of active basic compounds
- Also allows analysis of neutral or weakly acidic compounds (e.g. phenols) and compounds susceptible to hydrogen bonding
- Low bleed at maximum operating temperature



Phase:	Modified 5% diphenyl / 95% dimethyl polysiloxane for basic compounds
Max. Temps.:	300°C / 315°C
USP Listing:	N/A

TraceGOLD TG-5MS AMINE GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26097-1300	1 Each
		1.0	26097-2840	1 Each
	30	0.25	26097-1420	1 Each
		0.5	26097-2230	1 Each
		1.0	26097-2960	1 Each
0.32	30	1.0	26097-2970	1 Each
0.53	30	1.0	26097-2980	1 Each
		3.0	26097-3960	1 Each

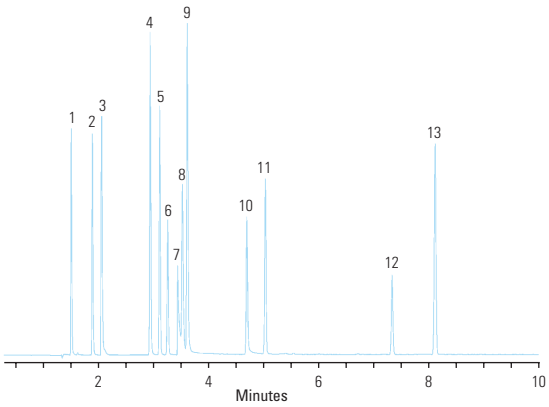
Applications:

- Amines and other basic compounds, including alkylamines, diamines, triamines, ethanolamines
- Nitrogen-containing heterocyclics

Similar to:

- Rtx-5 Amine

Amines and phenols



TG-5MS Amine 30m x 0.32mm x 1.0µm

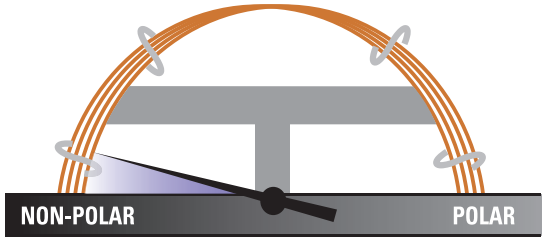
Temperature:	120°C to 220°C at 10°C/minute
Detector Type:	FID
Carrier Gas:	Hydrogen
Flow Rate:	40cm/min
Injection Volume:	1.0µL
Injection Mode:	Split 25:1, 300°C

1. diethylamine
2. pyridine
3. morpholine
4. phenol
5. aniline
6. 2-chlorophenol
7. diethylenetriamine
8. octylamine
9. 1-methyl-2-pyrrolidone
10. 2-nitrophenol
11. 2,6-dimethylaniline
12. nicotine
13. 2-nitroaniline

TraceGOLD TG-5HT GC columns

Offers extended operation up to 400°C, ideal for high temperature extended GC applications

- Low polarity
- Lower bleed and better inertness than comparable high-temperature columns
- Special design of fused silica tubing extends column lifetime by up to 40%



Phase:	5% diphenyl / 95% dimethyl polysiloxane
Max. Temps.:	380°C/400°C
USP Listing:	G27, G36

TraceGOLD TG-5HT GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.1	26095-0350	1 Each
		0.25	26095-1300	1 Each
	30	0.1	26095-0470	1 Each
		0.25	26095-1420	1 Each
0.32	15	0.1	26095-0360	1 Each
	30	0.1	26095-0480	1 Each
		0.25	26095-1430	1 Each
0.53	10	0.15	26095-1640	1 Each
	30	0.15	26095-0620	1 Each

Applications:

- Phenols
- Residual solvents
- Solvents
- Semivolatiles
- Pesticides
- PCBs
- Solvent impurities

Similar to:

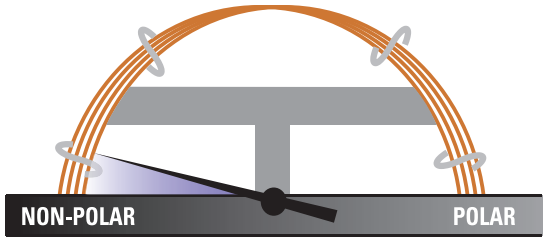
- Rxi-5HT
- BP-5HT
- VF-5HT
- ZB-5HT

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-SQC GC columns

Ensure the quality of a Thermo Scientific instrument when installed on site

- Optimized for system qualification tests for new GC-MS installations or during service/maintenance of an existing instrument
- We recommend reserving this column for benchmark testing only



Phase:	Proprietary
Max. Temps.:	330°C/350°C

TraceGOLD TG-SQC GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26070-1300	1 Each
	30	0.25	26070-1420	1 Each

Applications:

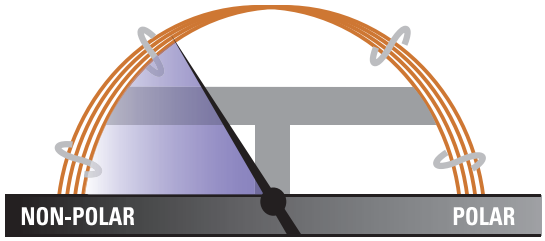
- System Qualification Tests (Thermo Scientific GC-MS)



TraceGOLD TG-35MS GC columns

Higher phenyl content for useful elution order and retention time changes

- Mid-polarity phase
- Equivalent to USP G42 phase



Phase:	35% diphenyl / 65% dimethyl polysiloxane
Max. Temps.:	300°C/320°C
USP Listing:	G42

TraceGOLD TG-35MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26094-1300	1 Each
	30	0.25	26094-1420	1 Each
		0.5	26094-2230	1 Each
0.32	30	0.25	26094-1430	1 Each
		0.5	26094-2240	1 Each
0.53	15	0.5	26094-2130	1 Each
	30	1.0	26094-2980	1 Each
		1.5	26094-3360	1 Each

Applications:

- Organochlorine pesticides and herbicides
- Pharmaceuticals
- PCB cogeners
- Aroclor mixes
- Sterols
- Rosin acids
- Phthalate esters

Similar to:

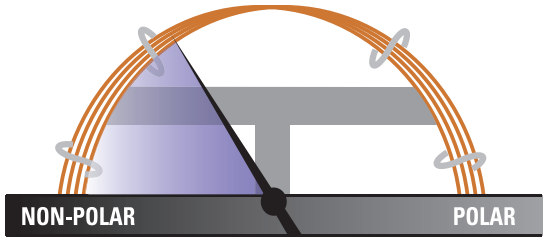
- Rtx-35
- BP-35
- HP-35
- SPB-35
- SPB-608

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-35MS AMINE GC columns

Chemically altered tubing surface reduces tailing and eliminates the need for column priming

- Mid-polarity phase, base optimized
- Developed for analysis of active basic compounds without derivatization
- Also allows analysis of neutral compounds and adsorptive compounds with oxygen groups susceptible to hydrogen bonding
- Low bleed at maximum operating temperature



Phase:	Modified 35% diphenyl / 65% dimethylpolysiloxane for basic compounds
Max. Temps.:	220°C
USP Listing:	N/A

TraceGOLD TG-35MS AMINE GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.5	26092-2230	1 Each
		1.0	26092-2960	1 Each
0.32	30	1.0	26092-2970	1 Each
		1.5	26092-3350	1 Each
0.53	15	1.0	26092-2860	1 Each
	30	1.0	26092-2980	1 Each

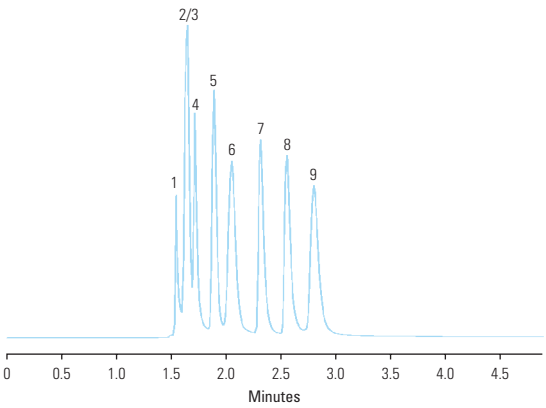
Applications:

- Amines including alkylamines, diamines, triamines and ethanolamines
- Nitrogen-containing heterocyclics

Similar to:

- Rtx-35 Amine

Primary amines



TG-35MS AMINE 30m x 0.53mm x 1.0µm

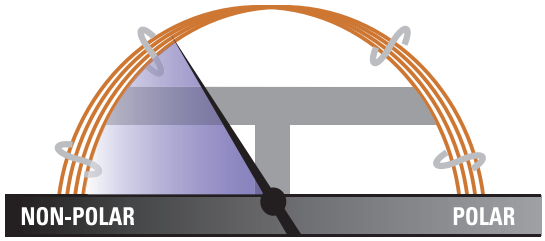
Temperature:	35°C (5 minute hold) Isothermal
Detector Type:	FID
Carrier Gas:	He
Flow Rate:	35cm/sec
Injection Volume:	1.0µL
Injection Mode:	Split (10:1), 250°C

1. methylamine
2. dimethylamine
3. trimethylamine
4. ethylamine
5. isopropylamine
6. tert-butylamine
7. n-propylamine
8. diethylamine
9. sec-butylamine

TraceGOLD TG-1301MS GC columns

Low bleed, excellent reproducibility and column-to-column consistency even with sensitive detectors like ECD and MS

- Mid-polarity phase
- Long lifetime
- Excellent inertness
- Equivalent to USP G43 phase



Phase:	6% cyanopropyl phenyl / 94% dimethyl polysiloxane
Max. Temps.:	260°C/280°C
USP Listing:	G43

TraceGOLD TG-1301MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26091-1420	1 Each
		1.0	26091-2960	1 Each
	60	0.25	26091-1540	1 Each
		1.0	26091-3080	1 Each
0.32	30	0.25	26091-1430	1 Each
		1.0	26091-2970	1 Each
		1.5	26091-3350	1 Each
		1.8	26091-3390	1 Each
	60	1.8	26091-3410	1 Each
0.53	30	1.0	26091-2980	1 Each
		3.0	26091-3960	1 Each
	60	3.0	26091-4080	1 Each

Applications:

- Alcohols
- Volatile organics
- Oxygenates
- Residual solvents

Similar to:

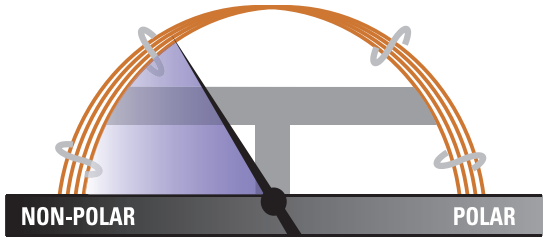
- Rtx-1301
- DB-1301
- BP-624
- HP-1301
- HP-624
- SPB-1301
- SPB-624
- VP-1301
- BF-624ms
- CP-1301
- CP-Select™ 624 CB

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-624 GC columns

Offers 90+% resolution of the first six gases in EPA Method 8260 and EPA Method 524.2 for volatile organics analysis

- Mid-polarity phase
- Ideal for EPA methods 624 and 608
- Allows resolution of 2-nitropropane from 1,1-dichloropropanone under EPA Method 524.2 revision IV



Phase:	6% cyanopropyl phenyl / 94% dimethyl polysiloxane
Max. Temps.:	240°C
USP Listing:	G43

TraceGOLD TG-624 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	1.0	26085-4950	1 Each
	40	1.0	26085-4960	1 Each
0.25	30	1.4	26085-3320	1 Each
	60	1.4	26085-3330	1 Each
0.32	30	1.8	26085-3390	1 Each
	60	1.8	26085-3410	1 Each
0.53	30	3.0	26085-3960	1 Each
	60	3.0	26085-4080	1 Each
	75	3.0	26085-4900	1 Each
	105	3.0	26085-4090	1 Each

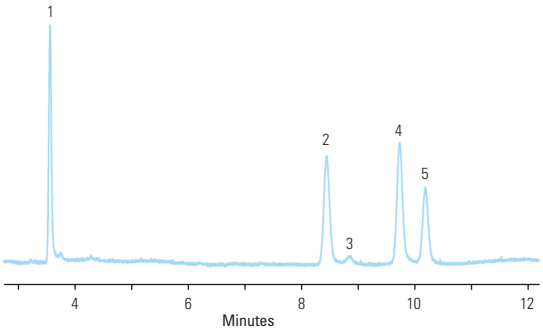
Applications:

- Residual Solvents
- Volatile Organic Compounds
- Alcohols
- Oxygenates

Similar to:

- DB-1301
- DB-624
- HP-1301
- HP-624
- SPB-1301
- SPB-624
- VF-1301
- VF-624ms
- CP-1301
- CP-Select 624 CB
- Rtx-624
- BP-624
- ZB-624
- Optima-1301
- Optima-624
- AT-624
- 007-1301

Residual solvents class 1



TG-624 30m x 0.32mm x 1.80µm

Temperature:	40°C (20 minute hold) to 240°C at 10°C/min (20 minute hold)
Detector Type:	FID
Carrier Gas:	He
Flow Rate:	2.15mL/min
Injection Volume:	1mL
Injection Mode:	Headspace, Split (1:5), 140°C

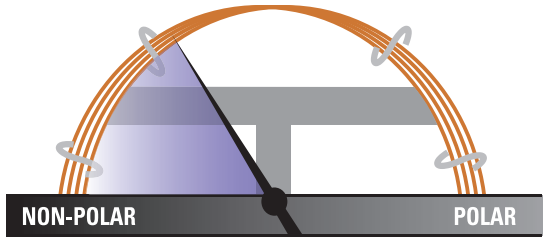
1. 1,1-dichloroethane
2. 1,1,1-trichloroethane
3. carbon tetrachloride
4. benzene
5. 1,2-dichloroethane



TraceGOLD TG-624SilMS GC Columns

High thermal stability column ideal for volatile organics analysis

- Mid-polarity phase
- High thermal stability – maximum temperatures up to 320°C
- Highly inert – excellent peak shape for a wide range of compounds



Phase:	6% cyanopropylphenyl / 94% dimethyl arylene polysiloxane
Max. Temps.:	320°C
USP Listing:	G43

TraceGOLD TG-624SilMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	1.0	26059-4950	1 Each
0.25	30	1.4	26059-3320	1 Each
	60	1.4	26059-3330	1 Each
0.32	30	1.8	26059-3390	1 Each
	60	1.8	26059-3410	1 Each
0.53	30	3.0	26059-3960	1 Each
	60	3.0	26059-4080	1 Each

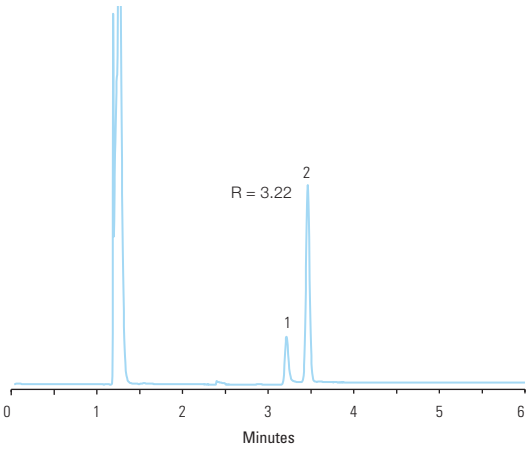
Applications:

- Residual Solvents
- Volatile Organic Compounds
- Alcohols
- Oxygenates

Similar to:

- DB-624 Ultra Inert
- VF-624ms
- CP-Select 624 CB
- ZB-624

Acetonitrile and Dichloromethane



TG-624SilMS 30m x 0.32mm x 1.8µm

Temperature:	40°C for 6 minutes
Detector Type:	MS (ISQ); m/z 40,41 for Acetonitrile (1), m/z 49, 84 for Dichloromethane (2)
Carrier Gas:	Helium
Flow Rate:	1.5 mL/min
Injection Volume:	500µL
Injection Mode:	Headspace, Split (20:1) 220°C

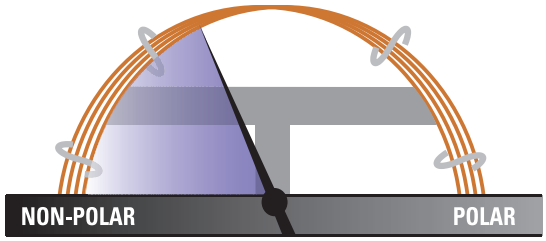
1. Acetonitrile
2. Dichloromethane

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-1701MS GC columns

Feature a mix of cyano and phenyl groups for increased polarity and a different elution order relative to less polar columns

- Mid-polarity phase, 14% cyanopropylphenyl methylpolysiloxane
- Fully characterized for long-term reproducibility, column-to-column consistency and low bleed
- Optimal for confirmation analysis
- Equivalent to USP G46 phase



Phase:	14% cyanopropyl phenyl / 86% dimethyl polysiloxane
Max. Temps.:	260°C/280°C
USP Listing:	G46

TraceGOLD TG-1701MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26090-1420	1 Each
		0.5	26090-2230	1 Each
		1.0	26090-2960	1 Each
	60	0.25	26090-1540	1 Each
		1.0	26090-3080	1 Each
0.32	15	0.25	26090-1310	1 Each
	30	0.25	26090-1430	1 Each
		0.5	26090-2240	1 Each
		1.0	26090-2970	1 Each
	60	0.25	26090-1550	1 Each
		1.0	26090-3090	1 Each
0.53	30	0.25	26090-1440	1 Each
		1.0	26090-2980	1 Each
		3.0	26090-3960	1 Each

Applications:

- Alcohols
- Pesticides
- Oxygenates
- PCB cogeners
- Aroclor mixes

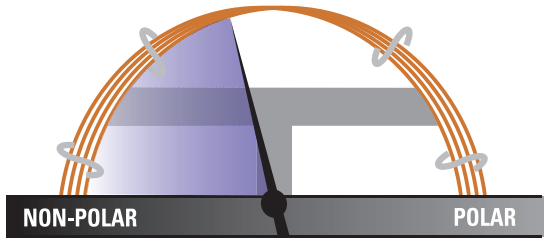
Similar to:

- Rtx-1701
- DB-1701
- HP-1701
- SPB-1701
- VF-1701
- CP-Sil™ 19 CB

TraceGOLD TG-17MS GC columns

Particularly suited to GC-MS applications that require more polarity than a 5% phenyl phase

- Mid-polarity phase
- Ideal for confirmational analysis
- Excellent inertness for active compounds such as pesticides
- Very low bleed ideal for analysis by GC-MS



Phase:	50% diphenyl / 50% dimethyl polysiloxane
Max. Temps.:	300°C/320°C
USP Listing:	G43

TraceGOLD TG-17MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26089-1300	1 Each
	30	0.25	26089-1420	1 Each
		0.5	26089-2230	1 Each
		1.0	26089-2960	1 Each
	60	0.25	26089-1540	1 Each
0.32	30	0.25	26089-1430	1 Each
		0.5	26089-2240	1 Each
		1.0	26089-2970	1 Each
0.53	30	0.25	26089-1440	1 Each
		1.0	26089-2980	1 Each
		1.5	26089-3360	1 Each

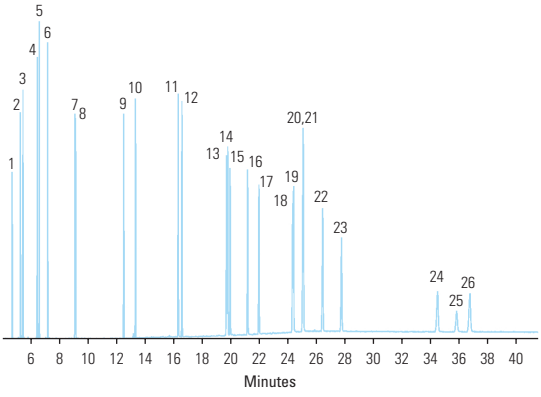
Applications:

- Pesticides and herbicides
- Rosin acids
- Phthalate esters
- Triglycerides
- Sterols

Similar to:

- Rxi-17
- DB-17
- DB-608
- VF-17ms
- CP-Sil 24 CB

Polycyclic aromatic hydrocarbons



TG-17MS 30m x 0.25mm x 0.25µm

Temperature:	90°C (1.0 minute hold) to 215°C (0.5 minute hold) at 25°C/minute to 235°C at 4°C/minute to 280°C/ minute at 15°C/minute to 320°C (20 minute hold) at 4°C/minute
Detector Type:	MS
Carrier Gas:	He
Flow Rate:	1.2mL/min
Injection Volume:	1.0µL
Injection Mode:	Splitless, 300°C

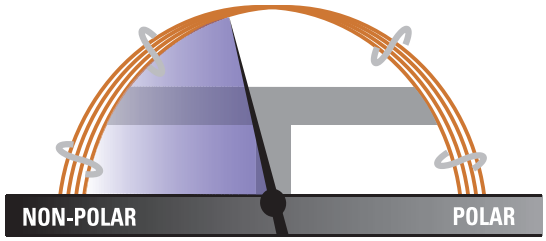
1. naphthalene
2. 1-methylnaphthalene
3. 2-methylnaphthalene
4. acenaphthylene
5. acenaphthene
6. fluorene
7. phenanthrene
8. anthracene
9. fluoranthene
10. pyrene
11. benzo(a)anthracene
12. chrysene
13. benzo(b)fluoranthene
14. benzo(k)fluoranthene
15. benzo(j)fluoranthene
16. benzo(a)pyrene
17. 3-methylcholanthrene
18. dibenzo(a,h)acridine
19. dibenzo(a,j)acridine
20. indeno(1,2,3-cd)pyrene
21. dibenzo(a,h)anthracene
22. benzo(ghi)perylene
23. 7H-dibenzo(c,g)carbazole
24. dibenzo(a,e)pyrene
25. dibenzo(a,i)pyrene
26. dibenzo(a,h)pyrene

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-17SilMS GC columns

Excellent separation of active environmental compounds

- Mid-polarity phase
- High thermal stability – maximum temperatures up to 340/360°C
- Excellent inertness for active environmental compounds such as PAHs



Phase:	50% phenyl / 50% dimethyl arylene polysiloxane
Max. Temps.:	340/360°C
USP Listing:	G3

TraceGOLD TG-17SilMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.15	10	0.15	26072-2750	1 Each
0.18	20	0.18	26072-5780	1 Each
0.25	30	0.25	26072-1420	1 Each
0.32	30	0.25	26072-1430	1 Each

Applications:

- PAHs
- Pesticides and herbicides
- Phthalate esters
- Triglycerides

Similar to:

- DB-1 7ms
- VF-17ms
- CP-Sil 24 CB
- ZB-50
- BPX-50

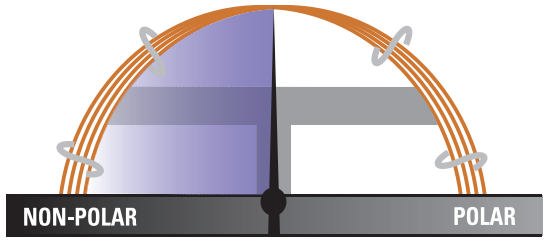
Learn more at **thermofisher.com/GCcolumns**



TraceGOLD TG-225MS GC columns

Offers better thermal stability than comparable columns

- Polar phase
- Innovative deactivation process for siloxane reduces tailing and improves efficiency over comparable columns
- Equivalent to USP G7, G19 phases



Phase:	50% cyanopropyl / 50% phenyl methyl polysiloxane
Max. Temps.:	220°C/240°C
USP Listing:	G7, G19

TraceGOLD TG-225MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26083-1420	1 Each
	60	0.25	26083-1540	1 Each
0.32	30	0.25	26083-1430	1 Each

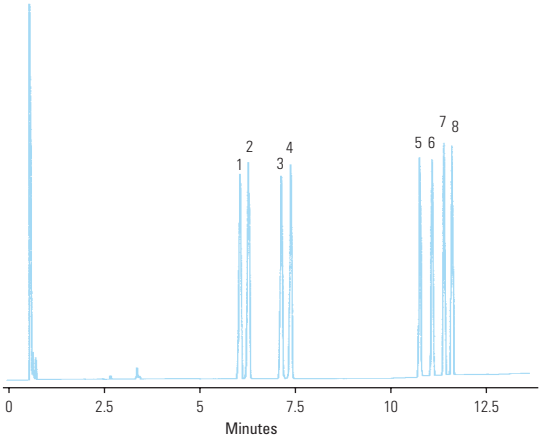
Applications:

- FAMEs
- Carbohydrates
- Sterols
- Flavor compounds

Similar to:

- Rtx-225
- DB-225
- HP-225
- SPB-225

Sugars



TG-225MS 15m x 0.25mm x 0.25µm

Temperature:	190°C (5 minute hold) to 250°C at 8°C/min (5 minute hold)
Detector Type:	FID
Carrier Gas:	Hydrogen
Flow Rate:	45cm/sec
Injection Volume:	0.5µL
Injection Mode:	Split (35:1), 260°C

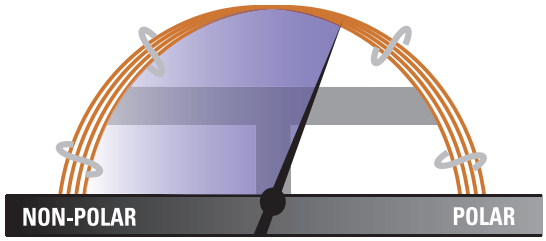
1. rhamnitol
2. fucitol
3. ribitol
4. arabinitol
5. mannitol
6. galactitol
7. glucitol
8. inositol

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-200MS GC columns

Exceptionally inert mid-polarity columns with selectivity and elution order optimized for difficult separations

- Polar phase,trifluoropropyl methylpolysiloxane solid phase resolves compounds that phenyl and cyano phases cannot
- Outstanding thermal stability and low bleed
- Suitable for use with sensitive detectors including ECD, NPD and MS
- Confirmation column in combination with another GC column



Phase:	TrifluoropropylmethyI PolysiIoxane
Max. Temps.:	320°C/340°C
USP Listing:	G6

TraceGOLD TG-200MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.15	20	0.15	26084-2760	1 Each
0.25	30	0.25	26084-1420	1 Each
		1.0	26084-2960	1 Each
0.32	30	0.25	26084-1430	1 Each
		0.5	26084-2240	1 Each
		1.0	26084-2970	1 Each

Applications:

- Solvents
- Fluorocarbons
- Alcohols and ketones
- Silanes
- Glycols

Similar to:

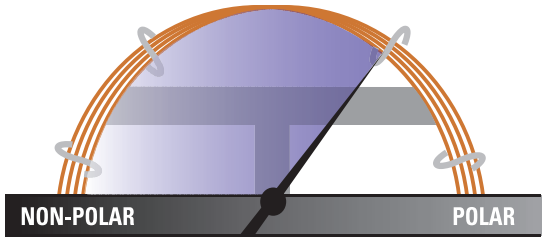
- Rtx-200MS
- DB-200
- DB-210



TraceGOLD TG-WaxMS GC columns

Manufactured for better column-to-column reproducibility

- Polar phase, polyethylene glycol
- Polar-deactivated surface tightly binds polymer for excellent thermal stability
- Resists oxidative damage, damage from strongly acidic or basic volatiles better than silicone solid phases



Phase:	Polyethylene Glycol (PEG)
Max. Temps.:	240/260°C
USP Listing:	G14, G15, G20, G39

TraceGOLD TG-WaxMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.1	10	0.1	26088-0200	1 Each
0.25	15	0.25	26088-1300	1 Each
	30	0.25	26088-1420	1 Each
		0.5	26088-2230	1 Each
	30 with 5m SafeGuard	0.25	26088-1421	1 Each
	60	0.25	26088-1540	1 Each
		0.5	26088-2350	1 Each
0.32	15	0.5	26088-2120	1 Each
	30	0.25	26088-1430	1 Each
		0.5	26088-2240	1 Each
		1.0	26088-2970	1 Each
	30m with 5m SafeGuard	0.25	26088-1435	1 Each
	60	0.25	26088-1550	1 Each
		0.5	26088-2360	1 Each
		1.0	26088-3090	1 Each
0.53	15	0.5	26088-2130	1 Each
		1.0	26088-2860	1 Each
	30	0.25	26088-1440	1 Each
		0.5	26088-2250	1 Each
		1.0	26088-2980	1 Each
		1.5	26088-3360	1 Each
	60	0.25	26088-1560	1 Each
		0.5	26088-2370	1 Each
		1.0	26088-3100	1 Each

Applications:

- FAMEs
- Flavor compounds and essential oils
- Solvents
- Xylene isomers
- EPA Method 603 for Acrolein/ Acrylonitrile

Similar to:

- DB-WAX
- DB-WAXetr
- HP-Wax
- HP-Innowax
- Supelcowax 10
- CP-Wax 52 CB
- Stabilwax
- Rtx-Wax
- BP20
- ZB-Wax
- Optima Wax
- AT-Wax

TraceGOLD TG-WaxMT Metal GC columns

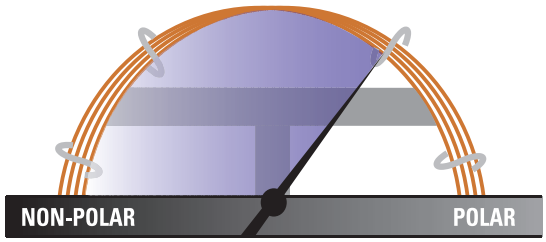
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26M88-1420	1 Each
	60	0.25	26M88-1540	1 Each

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-WaxMS A GC columns

Acidic functionality in the polymer structure allows analysis of acidic compounds without derivatization

- Polar phase, acid-deactivated polyethylene glycol
- Resists oxidative damage and adsorption of acids
- Excellent peak shapes for high MW acids
- Equivalent to USP G25, G35 phases



Phase:	Modified Polyethylene Glycol (PEG) for Acidic Compounds
Max. Temps.:	240°C / 250°C
USP Listing:	G25, G35

TraceGOLD TG-WaxMS A GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	26087-1300	1 Each
	30	0.25	26087-1420	1 Each
		0.5	26087-2230	1 Each
	60	0.25	26087-1540	1 Each
0.32	15	0.25	26087-1310	1 Each
	30	0.25	26087-1430	1 Each
		0.5	26087-2240	1 Each
		1.0	26087-2970	1 Each
0.53	15	1.0	26087-2860	1 Each
	30	0.25	26087-1440	1 Each
		1.0	26087-2980	1 Each

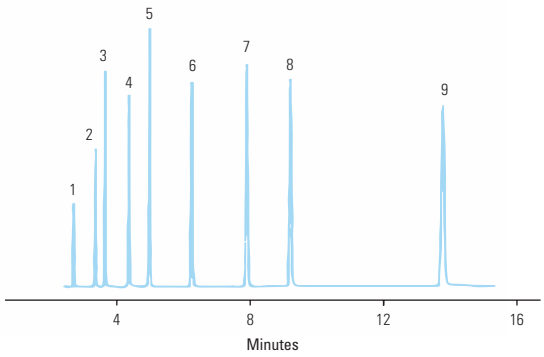
Applications:

- Organic acids
- Free fatty acids
- Alcohols

Similar to:

- DB-FFAP
- HP-FFAP
- NUKOL
- OV-351
- CP-Wax 58 CB
- FFAP
- Stabilwax-DA
- BP-21
- Optima FFAP

Free fatty acids



TG-WaxMS A 30m x 0.25mm x 0.25µm

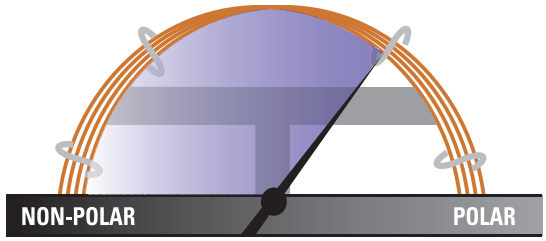
Temperature:	145°C Isothermal
Detector Type:	FID
Carrier Gas:	Hydrogen
Flow Rate:	40cm/sec
Injection Volume:	1.0µL
Injection Mode:	Split (50:1), 250°C

1. acetic acid
2. propionic acid
3. isobutyric acid
4. n-butyric acid
5. isovaleric acid
6. n-valeric acid
7. isocaproic acid
8. caproic acid
9. heptanoic acid

TraceGOLD TG-WaxMS B GC columns

Base deactivation allows analysis of basic analytes without derivatization or column priming

- Polar phase, base deactivated polyethylene glycol
- Reduced absorption and improved responsiveness for basic compounds
- Not suitable for use with water or alcohols



Phase:	Modified Polyethylene Glycol (PEG) for Basic Compounds
Max. Temps.:	200°C/220°C
USP Listing:	N/A

TraceGOLD TG-WaxMS B GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26086-1420	1 Each
		0.5	26086-2230	1 Each
0.32	30	0.25	26086-1430	1 Each
0.53	30	1.0	26086-2980	1 Each

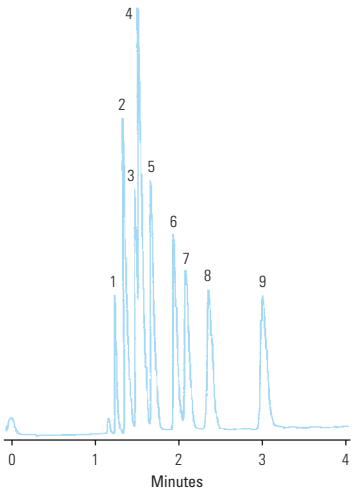
Applications:

- Amines
- Alkylamines
- Diamines
- Other basic compounds

Similar to:

- CAM
- Carbowax™ Amine
- CP Wax51
- Stabilwax-DB

Amines



TG-WaxMS B 30m x 0.53mm x 1.0µm

Temperature:	45°C Isothermal
Detector Type:	FID
Carrier Gas:	Hydrogen
Flow Rate:	40cm/sec
Injection Volume:	1µL
Injection Mode:	Direct Injection, 250°C

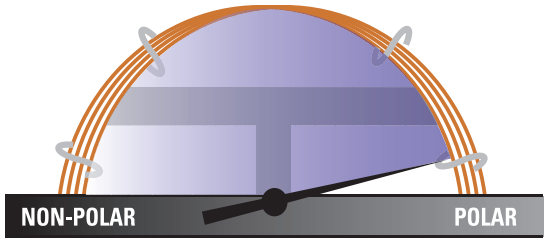
1. trimethylamine
2. dimethylamine
3. ethylamine
4. methylamine
5. isopropylamine
6. n-propylamine
7. tert-butylamine
8. diethylamine
9. sec-butylamine

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-POLAR GC columns

Specifically designed polymer and surface treatment overcome traditional problems with high-polarity columns

- Highly polar phase
- Strong dipole moment and high selectivity for cis/trans compounds or compounds with conjugated double bonds
- Equivalent to USP G8 and G48



Phase:	90% biscyanopropyl / 10% cyanopropyl phenyl polysiloxane
Max. Temps.:	260°C/275°C
USP Listing:	G8, G48

TraceGOLD TG-POLAR GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.1	26082-0470	1 Each
		0.2	26082-5010	1 Each
	60	0.1	26082-0590	1 Each
		0.2	26082-5020	1 Each
	105	0.1	26082-5000	1 Each
		0.2	26082-5030	1 Each
0.32	30	0.2	26082-5040	1 Each
	60	0.2	26082-5050	1 Each

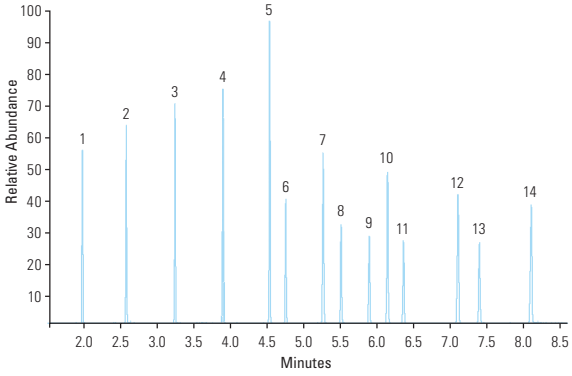
Applications:

- Cis/Trans FAMEs
- Dioxins

Similar to:

- DB-23
- HP-23
- Rtx-2330
- SP-2330
- SP-2380
- SPB-2560
- HP-88
- Silar 10c
- CP-Sil 88 FAME
- CP-Sil 88
- BPX 70
- BPX 90

FAMEs C8-C24



TG-POLAR 30m x 0.25mm x 0.2µm

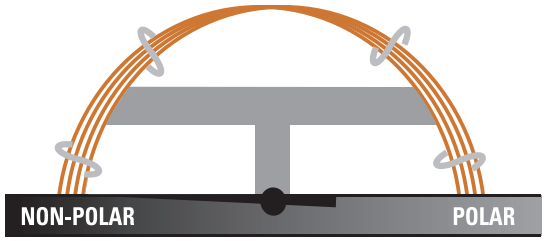
Temperature:	100°C (0.5 minute hold) to 195°C at 25°C/minute (1 minute hold) to 250°C at 10°C/minute (3 minute hold)
Detector Type:	MS
Carrier Gas:	He
Flow Rate:	1.2mL/min
Injection Volume:	0.1µL
Injection Mode:	Split (100:1), 250°C

1. Methyl octanoate
2. Methyl decanoate
3. Methyl decanoate
4. Methyl myristate
5. Methyl palmitate
6. Methyl palmitoleate
7. Methyl stearate
8. Methyl oleate
9. Methyl linoleate
10. Methyl linolenate
11. Methyl arachidate
12. Methyl behenate
13. Methyl cis-13-docosenoate
14. Methyl tetracosanoate

TraceGOLD TG-XLBMS GC columns

General purpose columns exhibiting extremely low bleed

- Low polarity phase, proprietary
- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Ideal for analysis of active, high molecular weight compounds with sensitive GC-MS systems



Phase:	Proprietary
Max. Temps.:	340°C/360°C
USP Listing:	N/A

TraceGOLD TG-XLBMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	0.18	26079-5780	1 Each
0.25	15	0.25	26079-1300	1 Each
	30	0.25	26079-1420	1 Each
		0.5	26079-2230	1 Each
	60	0.25	26079-1540	1 Each
0.32	30	0.25	26079-1430	1 Each

Semi-Volatile organic compounds (SVOC) application kit

Description	Cat. No	Quantity
Semi-Volatile Organic Compounds (SVOC) Application kit	60181-736	1 Each
Contains the following:		
TG-5MS GC COLUMN 30MX0.25MMX 0.50MM	26098-2230	1 Each
BTO Septa 11mm Diameter (Blister Pack)	31303233-BP	50 Pack
LINERGOLD PRECISION LINER, WOOL, 4X6.3X78.5MM 5PK	453A1255-UI	5 Pack
LinerGOLD Splitless Liner, Single Taper, Wool 4x6.5x78.5mm	453A1925-UI	5 Pack
Gold Plated Inlet Seals, 0.8mm	290GA082	2 Pack
Liner Sealing Ring for SSL / 5pk	29001320	5 Pack
Column Nut for SSL & SSLBackflush	35050458	5 Pack
15/85 GRAPH/VESP Ferrule for 0.1-0.25mmID column	290VA191	10 Pack
SILANIZED AMB TARGET DP-IDVIAL, 100/PK	c4000-s2w	100 Pack
AVCS BLUE CAP&TS SEPTA100/PK,1000/CS	c5000-54b	100 Pack
10UL FN SYRINGE, 50MM LENGTH23 GAUGE, CONE 1/PK	36520060	1 Each

Applications

- Pesticides
- PCB congeners
- PAHs
- Aroclor mixes

Similar to:

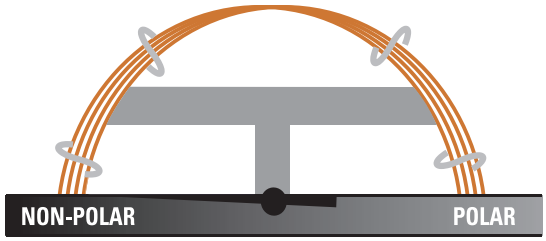
- Rxi-XLB
- DB-XLB
- VF-Xms

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-VRX GC columns

Application specific column for volatile organic pollutants

- Highly stable polymer phase
- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Excellent resolution for analysis of volatile compounds
- Fast analysis times for volatile compounds



Phase:	Proprietary
Max. Temps.:	260°C
USP Listing:	N/A

TraceGOLD TG-VRX GC columns

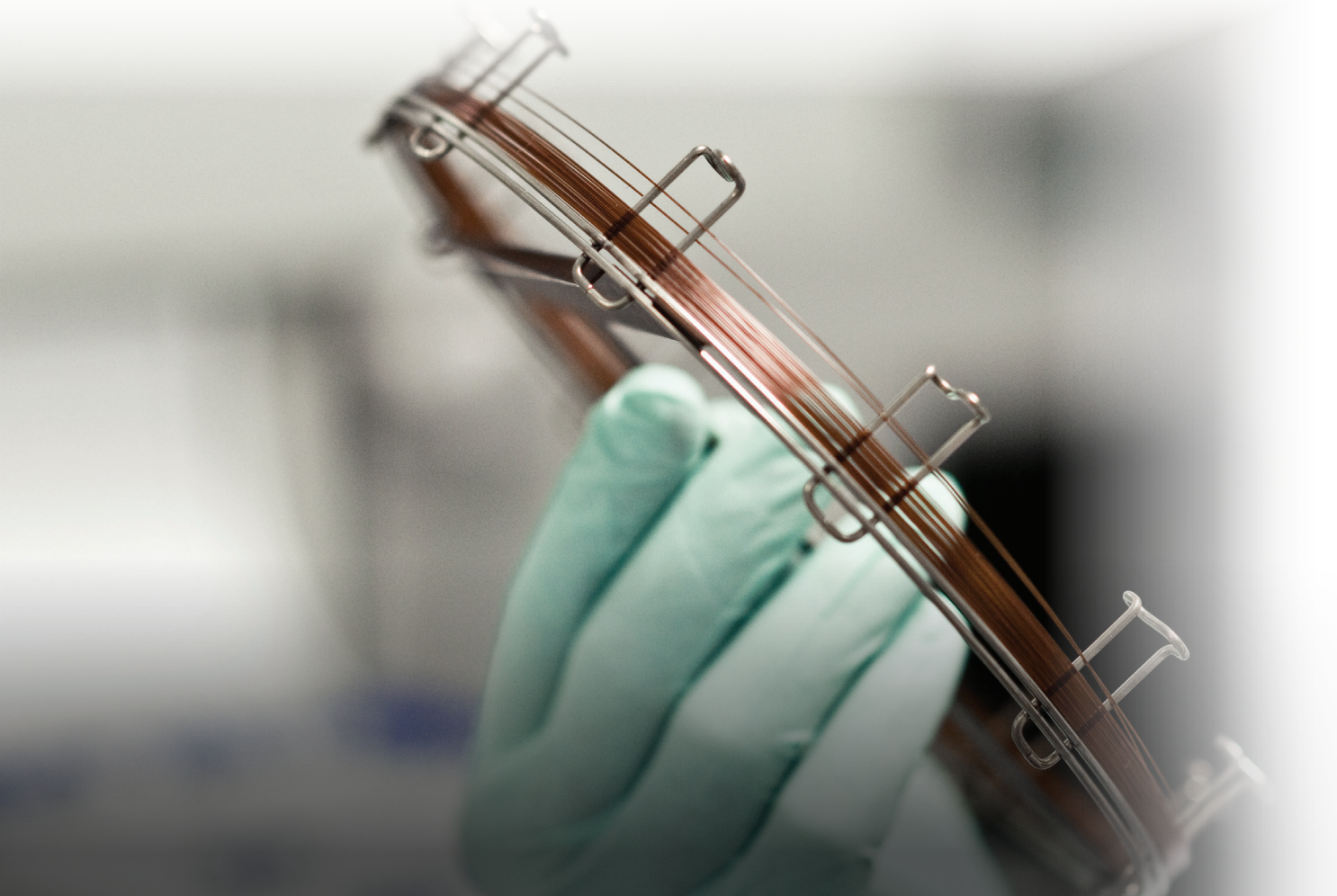
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	1.0	26081-4950	1 Each
	40	1.0	26081-4960	1 Each
0.25	30	1.4	26081-3320	1 Each
	60	1.4	26081-3330	1 Each
0.32	30	1.8	26081-3390	1 Each
	60	1.8	26081-3410	1 Each

Applications:

- Volatile organic pollutants
- US EPA Method 8021 compounds

Similar to:

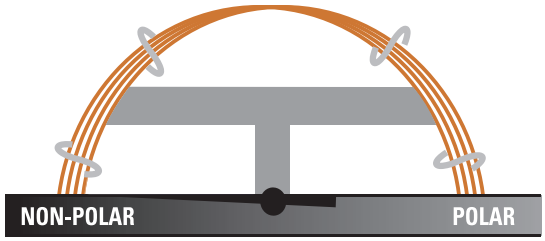
- Rtx-VRX
- DB-VRX



TraceGOLD TG-VMS GC columns

Application specific column for volatile organic pollutants

- Highly stable polymer phase
- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Excellent resolution for analysis of volatile compounds
- Fast analysis times for volatile compounds



Phase:	Proprietary
Max. Temps.:	260°C
USP Listing:	N/A

TraceGOLD TG-VMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	1.0	26080-4950	1 Each
0.25	30	1.4	26080-3320	1 Each
	60	1.4	26080-3330	1 Each
0.32	60	1.8	26080-3410	1 Each

Applications:

- Volatile organic pollutants
- US EPA Method 8260B compounds

Similar to:

- Rtx-VMS

Volatile organic compound (VOC) application kit

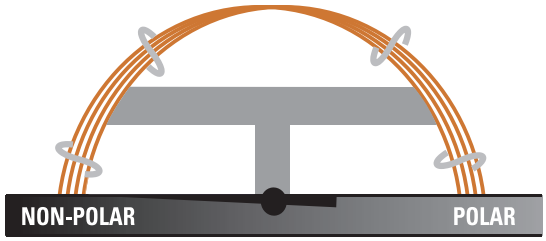
Description	Cat. No.	Quantity
Volatile Organic Compound(VOC) Apps Kit	60181-734	1 Each
Contains the following:		
TG-VMS GC Column,20mx0.18mmx 1.00µm	26080-4950	1 Each
BTO Septa 11mm Diameter (Blister Pack)	31303233-BP	50 Pack
LinerGOLD Split Liner 1x6.3x78.5mm	453A1335-UI	5 Pack
LinerGOLD Splitless Liner, Single Taper, Wool 4x6.5x78.5mm	453A1925-UI	5 Pack
Gold Plated Inlet Seals, 0.8mm	290GA082	2 Pack
Liner Sealing Ring for SSL	29001320	5 Pack
Column Nut for SSL & SSLBackflush	35050458	5 Pack
15/85 GRAPH/VESP Ferrule for 0.1-0.25mmID column	290VA191	10 Pack
SILANIZED AMB TARGET DP-IDVIAL,	c4000-s2w	100 Pack
AVCS BLUE CAP&TS SEPTA	c5000-54b	100 Pack
CLR 40ML EPA ASM VIAL KIT,1000 CLASS,	B7950	100 Pack

Learn more at **thermofisher.com/GCcolumns**

TraceGOLD TG-OCP I / TG-OCP II GC columns

Application-specific columns for organochlorine pesticides and herbicides

- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Fast analysis time giving full separation of chlorinated pesticides
- Ideal for US EPA methods 8081, 608 and CLP



Phase:	Proprietary
Max. Temps.:	340°C
USP Listing:	N/A

TraceGOLD TG-OCP I GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26078-1420	1 Each
0.32	30	0.32	26078-5760	1 Each

TraceGOLD TG-OCP II GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	0.14	26077-5690	1 Each
0.25	30	0.2	26077-5720	1 Each
0.32	30	0.25	26077-1430	1 Each

Applications:

- Organochlorine pesticides
- Herbicides

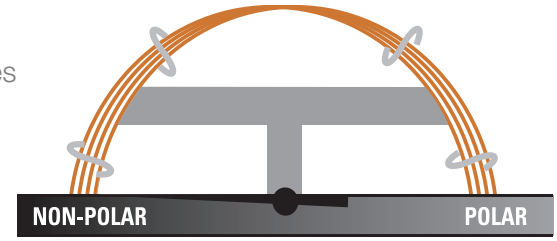
Similar to:

- Rtx-CLPesticides/ Rtx-CLPesticides2

TraceGOLD TG-OPP I / TG-OPP II GC columns

Application-specific columns for organophosphorus pesticides

- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Fast analysis time giving full separation of organophosphorus pesticides
- Ideal for US EPA methods 8141A



Phase:	Proprietary
Max. Temps.:	330°C
USP Listing:	N/A

TraceGOLD TG-OPP I GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26076-1420	1 Each
0.32	30	0.5	26076-2240	1 Each

TraceGOLD TG-OPP II GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	26075-1420	1 Each
0.32	30	0.32	26075-5760	1 Each
0.53	30	0.5	26075-2250	1 Each

Applications:

- Organophosphorus pesticides

Similar to:

- Rtx-OPPesticides/ Rtx-OPPesticides2

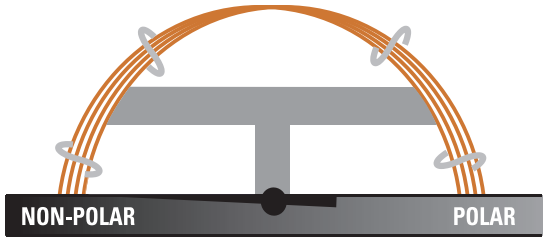
Learn more at **thermofisher.com/GCcolumns**



TraceGOLD TG-ALC Plus I / TG-ALC Plus II GC columns

Application-specific columns for blood alcohol analysis

- Low bleed for excellent signal-to-noise ratio, sensitivity and mass spectral integrity
- Fast analysis time giving full separation of blood alcohols



Phase:	Proprietary
Max. Temps.:	260°C
USP Listing:	N/A

TraceGOLD TG-ALC Plus I GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	30	1.8	26063-3390	1 Each
0.53	30	3.0	26063-3960	1 Each

TraceGOLD TG-ALC Plus II GC columns

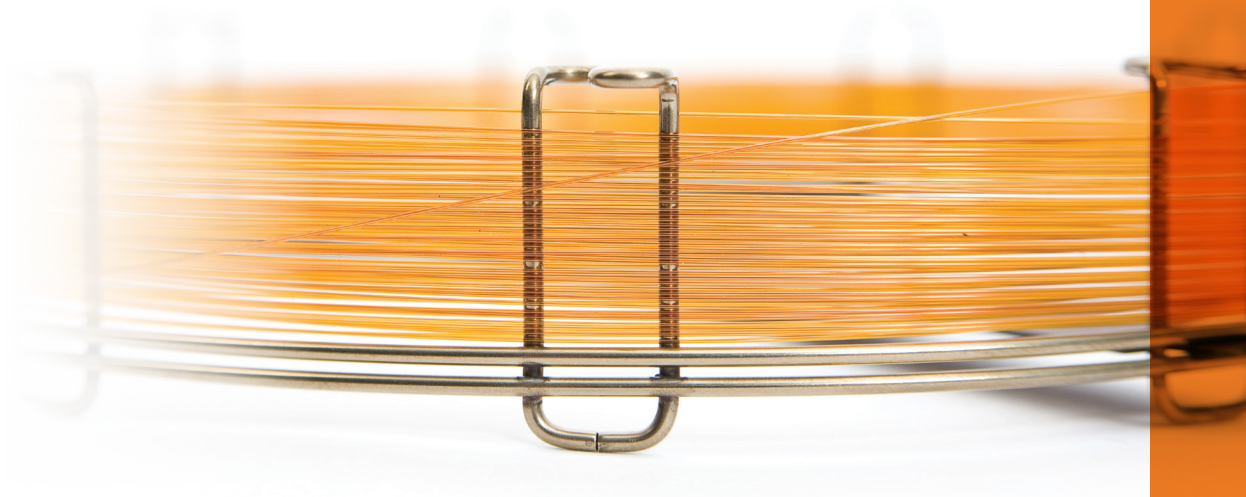
ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	30	0.5	26063-2240	1 Each
0.53	30	1.0	26063-2980	1 Each

Applications:

- Blood alcohol analysis
- Abused inhalent anesthetics
- γ-hydroxybutyrate (GHB)
- γ-butyrolactone (GBL)
- Glycols
- Common industrial solvents

Similar to:

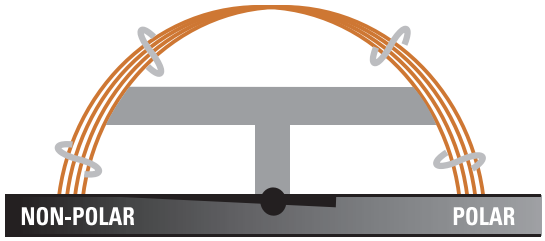
- Rtx BAC Plus 1 / Rtx BAC Plus 2



TraceGOLD TG-Dioxin GC columns

Excellent separation of toxic dioxin and furan congeners

- Isomer specificity for 2,3,7,8-TCDD and 2,3,7,8-TCDF achieved with a single GC column
- High thermal stability – maximum temperatures up to 340°C
- Unique selectivity for toxic dioxin and furan congeners allows use as a confirmation GC column



Phase:	Proprietary
Max. Temps.:	340°C
USP Listing:	N/A

TraceGOLD TG-Dioxin GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	40	0.18	26066-4800	1 Each
0.25	60	0.25	26066-1540	1 Each

Persistent organic pollutants (POPs) confirmation kit

Description	Cat. No	Quantity
Persistent Organic Pollutants (POPs) Confirmation kit	TS-MKITG503	1 Each
Contains the following:		
TG-Dioxin GC Column 60m x0.25mmx0.25µm	26066-1540	1 Each
BTO Septa 11mm Diameter (Blister Pack)	31303233-BP	50 Pack
LINERGOLD PRECISION LINER, WOOL, 4X6.3X78.5MM 5PK	453A1255-UI	5 Pack
LinerGOLD Splitless Liner, Single Taper, Wool 4x6.5x78.5mm	453A1925-UI	5 Pack
GOLD PLATED INLET SEALS, FORAGILENT GC'S, 0.8MM, 2PK	290GA082	2 Pack
Liner Sealing Ring for SSL	29001320	5 Pack
Column Nut for SSL & SSLBackflush	35050458	5 Pack
15/85 GRAPH/VESP Ferrule for 0.1-0.25mmID column	290VA191	10 Pack
1.1ML SCREW VIAL 500/PK CLR TAPERED 12x32MM	1.1-STVG	500 Pack
8mm SCREW CAP 500/PK PREFI WITH SILICONE/ TEFLON LINER	8-SC-ST15	500 Pack
10UL FN SYRINGE, 57MM LENGTH23S GAUGE, CONE 1/PK	365D0271	1 Each

Applications:

- Dioxins
- Furans

Similar to:

- Rtx-Dioxin2
- DB-Dioxin

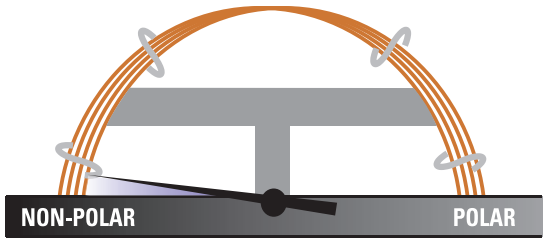
Learn more at **thermofisher.com/GCcolumns**

TRACE GC columns

TRACE TR-1 GC columns

Designed for method development

- Non-polar phase, 100% dimethyl polysiloxane
- High operating temperature



Phase:	100% Dimethyl Polysiloxane
Max. Temps.:	340°C/360°C
USP Listing:	G1, G2, G38

TRACE TR-1 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	260A130P	1 Each
	30	0.1	260A047P	1 Each
		0.25	260A142P	1 Each
	60	0.25	260A154P	1 Each
0.32	15	0.25	260A131P	1 Each
	30	0.25	260A143P	1 Each

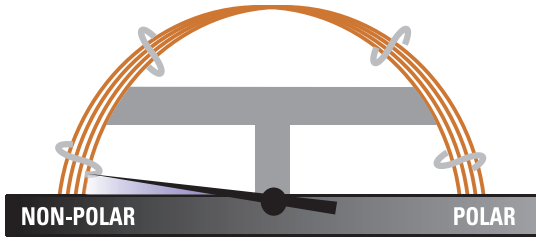
Applications:

- Chlorinated and nitroaromatic compounds
- Environmental analyses

TRACE TR-1MS GC columns

Extremely low-bleed non-polar columns suitable for GC-MS applications

- Non-polar phase, 100% dimethyl polysiloxane
- High operating temperature
- Inert phase suited for environmental analyses



Phase:	100% Dimethyl Polysiloxane
Max. Temps.:	340°C/360°C
USP Listing:	G1, G2, G38

TRACE TR-1MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.1	260B047P	1 Each
		0.25	260B142P	1 Each
	60	0.25	260B154P	1 Each
0.32	30	0.25	260B143P	1 Each
	60	0.25	260B155P	1 Each
		1.0	260B309P	1 Each

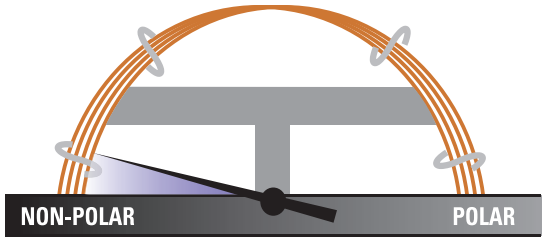
Applications:

- Chlorinated and nitroaromatic compounds
- GC-MS environmental analyses

TRACE TR-5 GC columns

Excellent starting columns for method development, capable of performing most required separations

- Non-polar phase, 5% phenyl methyl polysiloxane
- High operating temperature and extremely low bleed
- Widely used in a variety of applications



Phase:	5% Phenyl Methylpolysiloxane
Max. Temps.:	320°C/340°C for films ≤1.5µm 280°C/300°C for films >1.5µm
USP Listing:	G27, G36

TRACE TR-5 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	260E130P	1 Each
	30	0.25	260E142P	1 Each
		0.5	260E223P	1 Each
	60	0.25	260E154P	1 Each
0.32	7	0.25	260E113P	1 Each
	15	0.25	260E131P	1 Each
	30	0.25	260E143P	1 Each
		0.5	260E224P	1 Each
		1.0	260E297P	1 Each
	60	0.25	260E155P	1 Each
	100	0.5	260E242P	1 Each
0.53	30	0.5	260E225P	1 Each
		1.0	260E298P	1 Each
		1.5	260E336P	1 Each
		5.0	260E470P	1 Each

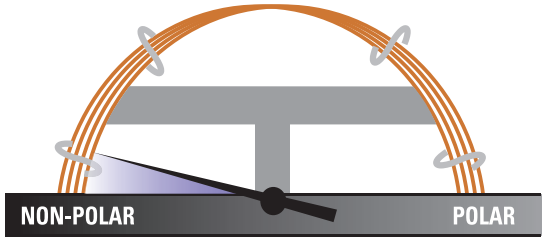
Applications:

- Alcohols
- Free fatty acids
- Aromatics
- Flavors
- Low polarity pesticides

TRACE TR-5HT GC columns

Feature upper temperature limits as high as 400°C

- Non-polar phase, 5% phenyl polycarborane siloxane
- Allow the elution of higher-boiling hydrocarbons up to C100
- Low bleed even at elevated temperatures



Phase:	5% Phenyl Polycarborane Siloxane
Max. Temps.:	380°C/400°C
USP Listing:	G27, G36

TRACE TR-5HT GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.1	260H035P	1 Each
	30	0.1	260H047P	1 Each
		0.25	260H142P	1 Each
0.32	12	0.1	260H030P	1 Each

Applications:

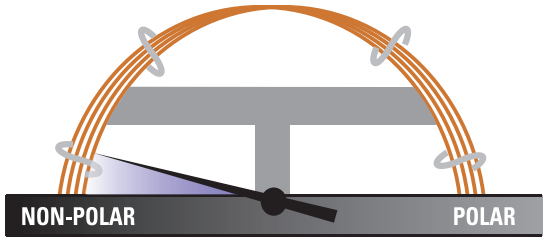
- Hydrocarbons
- Solvents
- Pesticides
- Herbicides
- Phenols
- Amines

Learn more at **thermofisher.com/GCcolumns**

TRACE TR-5MS GC columns

Features a popular GC-MS phase for many applications

- Non-polar phase, 5% phenyl polysilphenylene-siloxane
- Low bleed and high stability
- High signal-to-noise ratio for increased sensitivity
- High robustness to oxygen and water contamination



Phase:	5% Phenyl Polysilphenylene-siloxane
Max. Temps.:	360°C/370°C for films ≤1.5µm 350°C/360°C for films >1.5µm
USP Listing:	G27, G36

TRACE TR-5MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.10	10	0.1	260F020P	1 Each
0.18	20	0.18	260F578P	1 Each
0.25	15	0.1	260F035P	1 Each
		0.25	260F130P	1 Each
	30	0.1	260F047P	1 Each
		0.25	260F142P	1 Each
		0.25	260F142J	1 Each
		0.5	260F223P	1 Each
		1.0	260F296P	1 Each
	60	0.25	260F154P	1 Each
		1.0	260F308P	1 Each
0.32	15	1.0	260F285P	1 Each
	30	0.25	260F143P	1 Each
		0.5	260F224P	1 Each
		1.0	260F297P	1 Each
0.53	30	0.5	260F225P	1 Each
		1.0	260F298P	1 Each
		1.5	260F336P	1 Each
		3.0	260F396P	1 Each

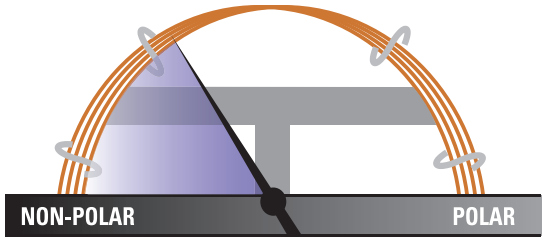
Applications:

- Hydrocarbons
- Solvents
- Pesticides
- Herbicides
- Phenols
- Amines

TRACE TR-35MS GC columns

Mid-polarity columns excellent for many applications

- Mid-polarity phase, 35% phenyl polysilphenylene-siloxane
- Exceptionally low surface activity
- Low bleed even at elevated temperatures



Phase:	35% Phenyl Polysilphenylene-siloxane
Max. Temps.:	330°C/360°C
USP Listing:	G42

TRACE TR-35MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	260C130P	1 Each
	30	0.25	260C142P	1 Each
	60	0.25	260C154P	1 Each
0.32	30	0.25	260C143P	1 Each
0.53	15	1.0	260C286P	1 Each
	30	1.0	260C298P	1 Each

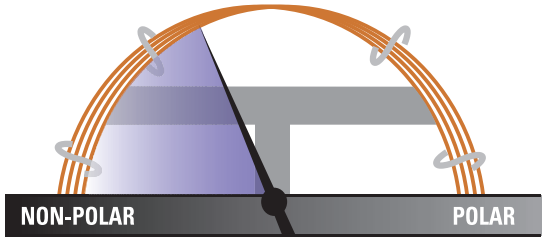
Applications:

- Pesticides
- Herbicides
- Drugs of abuse
- PAHs
- Pharmaceuticals

TRACE TR-1701 GC columns

Mid-polarity column with alternative selectivity

- Mid-polarity phase, 14% cyanopropylphenyl polysiloxane
- Low bleed even at a high operating temperature
- Excellent starting point for method development
- Suitable for a wide variety of applications



Phase:	14% Cyanopropylphenyl Polysiloxane
Max. Temps.:	280°C/300°C
USP Listing:	G46

TRACE TR-1701 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260Q142P	1 Each
	60	0.25	260Q154P	1 Each
0.32	15	0.25	260Q131P	1 Each
	30	0.25	260Q143P	1 Each
	60	1.0	260Q309P	1 Each
		0.25	260Q155P	1 Each
0.53	30	1.0	260Q298P	1 Each

Applications:

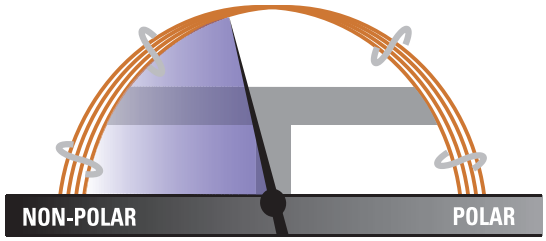
- Pesticides
- PCBs
- PAHs
- Organic acids
- Drugs
- Steroids
- EPA 608, 8081

Learn more at **thermofisher/GCcolumns**

TRACE TR-50MS GC columns

Mid-polarity columns well-suited to GC-MS applications

- Mid-polarity phase, 50% phenyl polysilphenylene-siloxane
- Low bleed decreases MS contamination
- Particularly useful for applications requiring a higher temperature and more polarity than a 5% phenyl column
- Column inertness results in minimal peak tailing and decreased breakdown of sensitive samples



Phase:	50% Phenyl Polysilphenylene-siloxane
Max. Temps.:	360°C/370°C
USP Listing:	G3

TRACE TR-50MS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260R142P	1 Each
0.32	30	0.25	260R143P	1 Each

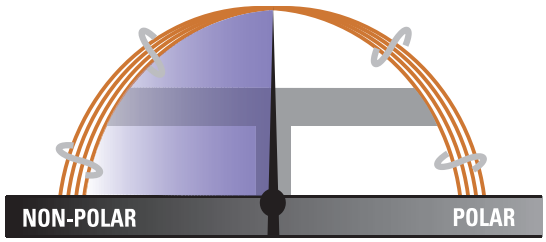
Applications:

- Herbicides
- Drugs of abuse
- EPA 604, 608, 8060, 8081
- Pharmaceuticals

TRACE TR-225 GC columns

Reliable and reproducible performance

- Mid-polarity phase, 50% cyanopropylphenyl polysiloxane
- Low bleed even at elevated temperatures
- Outstanding robustness for difficult separations
- Manufactured to minimize risk of damage from contaminated carrier gas



Phase:	50% Cyanopropylphenyl Polysiloxane
Max. Temps.:	230°C / 250°C
USP Listing:	G7

TRACE TR-225 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260Y142P	1 Each

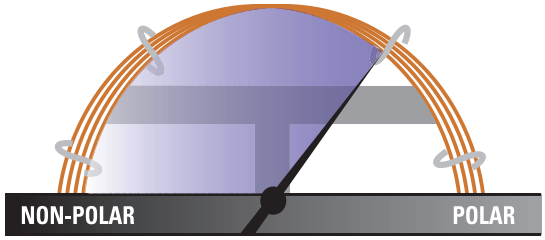
Applications:

- Fatty Acid Methyl Esters (FAMEs)
- Carbohydrates
- Neutral sterols

TRACE TR-Wax GC columns

General purpose, high-polarity columns

- Polar phase, polyethylene glycol
- Highly crosslinked and fully deactivated
- Solvent washable



Phase:	Polyethylene Glycol (PEG)
Max. Temps.:	260°C/280°C for films <1.0µm 240°C/260°C for 1.0µm films
USP Listing:	G16, G20

TRACE TR-Wax GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260W142P	1 Each
		0.5	260W223P	1 Each
		1.0	260W296P	1 Each
	60	0.25	260W154P	1 Each
0.32	15	0.25	260W131P	1 Each
	30	0.25	260W143P	1 Each
		0.5	260W224P	1 Each
		1.0	260W297P	1 Each
	60	0.25	260W155P	1 Each
		1.0	260W309P	1 Each
0.53	15	1.0	260W286P	1 Each
	30	0.5	260W225P	1 Each
		1.0	260W298P	1 Each
	60	1.0	260W310P	1 Each

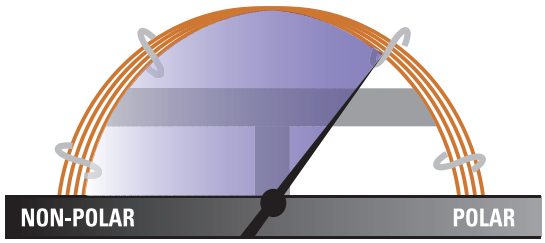
Applications:

- Esters
- Alcohols
- Ketones
- Glycols
- Aromatic isomers

TRACE TR-WaxMS GC columns

Feature a high-polarity phase designed for mass spectrometry detectors

- Polar phase, polyethylene glycol
- Proprietary bonding method expands operating temperatures
- Extremely low bleed improves sensitivity and library matches
- High stability with oxygen and water



Phase:	Polyethylene Glycol (PEG)
Max. Temps.:	260°C/280°C
USP Listing:	G16

TRACE TR-WaxMS GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	30	0.25	260X142P	1 Each
		0.5	260X223P	1 Each
		1.0	260X296P	1 Each
	60	0.25	260X154P	1 Each
0.32	30	0.25	260X143P	1 Each
		0.5	260X224P	1 Each
	60	0.25	260X155P	1 Each

Applications:

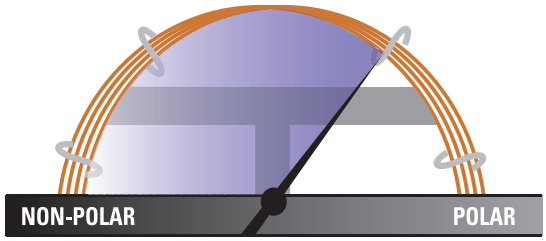
- Aromatic hydrocarbons
- Food additives
- Essential oils
- Alcohols
- Esters
- Aldehydes
- Ketones

Learn more at **thermofisher.com/GCcolumns**

TRACE TR-FFAP GC columns

High-polarity phase optimized for FFAP analysis

- Polar phase, TPA modified polyethylene glycol
- Bonded FFAP phase
- Quality tested for acidic compound analysis



Phase:	TPA Modified Polyethylene Glycol (PEG)
Max. Temps.:	240°C/250°C
USP Listing:	G25, G35

TRACE TR-FFAP GC Columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.25	15	0.25	260N130P	1 Each
	30	0.25	260N142P	1 Each
	60	0.25	260N154P	1 Each
0.32	30	0.25	260N143P	1 Each
	50	0.5	260N230P	1 Each
0.53	30	0.5	260N225P	1 Each
		1.0	260N298P	1 Each

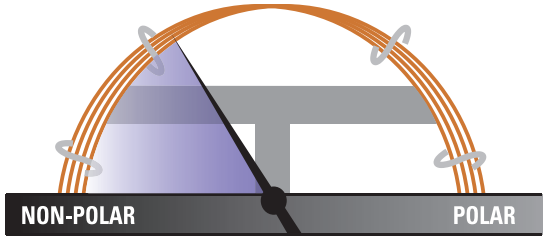
Applications:

- FFAP analysis
- Acidic compound analysis

TRACE TR-V1 GC columns

Mid-polarity, thick-film columns

- Mid-polarity phase, 6% cyanopropylphenyl polysiloxane
- Thick films for the analysis of volatile analytes
- Low bleed suitable for MS detection



Phase:	6% Cyanopropylphenyl Polysiloane
Max. Temps.:	280°C/300°C
USP Listing:	G43

TRACE TR-V1 GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.18	20	1.0	260V495P	1 Each
0.25	30	1.4	260V332P	1 Each
	60	1.4	260V333P	1 Each
0.32	30	1.8	260V339P	1 Each
	60	1.8	260V341P	1 Each
0.53	30	3.0	260V396P	1 Each

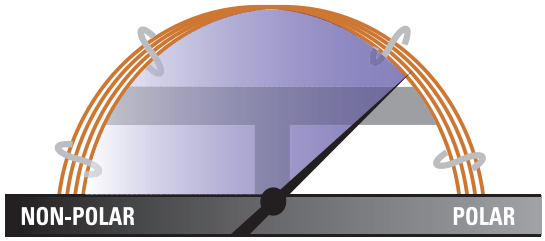
Applications:

- Volatile organics
- Alcohols
- EPA 502.2, 608 and 624

TRACE TR-FAME GC columns

High-polarity phase optimized for FAME analysis

- Polar phase, 70% cyanopropyl polysilphenylene-siloxane
- High operating temperature compared to competitor columns
- Low bleed for mass spectrometry use



Phase:	70% Cyanopropyl Polysilphenylene-siloxane
Max. Temps.:	250°C/260°C
USP Listing:	N/A

TRACE TR-FAME GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.10	10	0.2	260M096P	1 Each
0.22	25	0.25	260M135P	1 Each
	30	0.25	260M141P	1 Each
	50	0.25	260M147P	1 Each
	60	0.25	260M153P	1 Each
0.25	30	0.25	260M142P	1 Each
	60	0.25	260M154P	1 Each
	100	0.20	260M154P	1 Each
	100	0.20	260M238P	
	120	0.25	260M166L	1 Each
0.32	25	0.25	260M137P	1 Each
	30	0.25	260M143P	1 Each
	60	0.25	260M155P	1 Each

Applications:

- Fatty Acid Methyl Esters (FAMEs)
- FAMEs Cis/Trans Isomers

Learn more at **thermofisher.com/GCcolumns**

TRACE GC columns for EPA methods

Low bleed and temperature-stable performance tailored to specific EPA methodologies

- TRACE TR-524 and TRACE TR-525 Columns: US EPA Drinking Water Test Methods 524 or 525
- TRACE TR-527 Columns: US EPA Drinking Water Test Method 527, features the robust, low-bleed performance required for analysis of pesticides and flame retardants
- TRACE TR-8270 Columns: US EPA Solid Waste Test Method 8270
- TRACE TR-8095 Columns: US EPA Method 8095 for Explosives Testing featuring high max temperature and low surface activity

TRACE GC columns for EPA methods

Phase	ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
TR-524	0.18	20	1.0	26RV495P	1 Each
TR-525	0.25	30	0.25	26RX142P	1 Each
TR-8095	0.32	12	0.25	260P123P	1 Each
TR-8270	0.25	30	0.5	26RF223P	1 Each

Applications:

- Volatile Organic Compounds (VOCs)
- Pesticides
- Flame retardants
- Explosives

TRACE GC columns for pesticides

Specifically designed and tested for analysis of pesticides

- Low bleed decreases MS contamination
- Particularly useful for applications requiring a higher temperature
- Column inertness results in minimal peak tailing and decreased breakdown of sensitive samples

Applications:

- Organophosphate pesticides
- Organochlorine pesticides
- Pyrethroid pesticides
- Herbicides

TRACE GC columns for pesticides

Phase	ID (mm)	Length (m)	Film Thickness (µm)	Guard	Cat. No.	Quantity
TR-Pesticide	0.25	30	0.25	5m guard column attached	26RF142F	1 Each
TR-Pesticide II	0.25	30	0.25	5m guard column attached	26RD142F	1 Each
TR-Pesticide III	0.25	30	0.25	5m guard column attached	26RC142F	1 Each
TR-Pesticide IV	0.25	30	0.25	–	26RC142P	1 Each

TRACE GC columns for dioxin and PCB analysis

Designed to meet the requirements of high resolution GC-MS methods

- TRACE TR-Dioxin 5MS Columns; Specifically designed for Dioxin and Furan testing
- Wide coverage of the 17 cogeners with the highest toxicological significance
- TRACE TR-PCB 8MS Columns; meets the requirements for HR GC-MS analysis of PCBs
- Low bleed

TRACE GC Columns for dioxin and PCB analysis

Phase	ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
TR-PCB 8MS	0.25	50	0.25	26AJ148P	1 Each
TR-Dioxin 5MS	0.25	60	0.25	26AF154P	1 Each
TR-Dioxin 5MS	0.25	30	0.1	26AF047P	1 Each
TR-Dioxin 5MS	0.25	60	0.1	26AF059P	1 Each

Applications:

- Dioxins (PCDDs)
- Furans (PCDFs)
- PCB congeners

TRACE GC columns for biodiesel analysis

Designed for use in carbon neutral fuels development applications

- GC columns designed for specific EN methods and ASTM methods
- Specific columns for the determination of methanol, FAMEs or glycerides

Applications:

- Biodiesel
- ASTM D-6584
- EN14214

TRACE GC Columns for biodiesel analysis

Phase	Method	ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
TR-BioDiesel (M)	EN 14110	0.32	30	3.0	26AA395P	1 Each
TR-BioDiesel (G)	EN 14105	0.32	10	0.1	26AF024P	1 Each
TR-BioDiesel (F)	EN 14103	0.25	30	0.25	26AX142P	1 Each
TR-BioDiesel (G) ASTM	ASTM D-6584	0.32	10	0.1	26RF024P	1 Each

TRACE GC columns for drugs of abuse

Specifically designed for the analysis of common drugs of abuse

- TRACE TR-DoA 5MS Columns; widely used for the analysis and determination of a range of toxicological target compounds including amphetamines, codeine and morphine
- TRACE TR-DoA 35MS Columns; the recommended column for use in drug testing labs for the confirmation of THC

TRACE GC columns for drugs of abuse

Phase	ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
TR-DoA35	0.20	15	0.33	26AC497P	1 Each
TR-DoA5	0.25	15	0.25	26AF130P	1 Each

Applications:

- Amphetamines, codeine and morphine

Learn more at **thermofisher.com/GCcolumns**

UltraFast GC columns

The huge demand of samples to be analyzed every day by labs in industries such as environmental and petrochemical requires an increased speed of analysis

A significant gain in analysis speed compared to conventional GC procedures is obtained through UltraFast Gas Chromatography. UltraFast GC utilizes short (2-10m) narrow bore capillaries and temperature programming conditions usually faster than 2°C/s. This leads to peak widths in the 50-200ms range. The analysis times are in the range of 1 minute or even less.

Benefits of Thermo Scientific™ UltraFast™ GC columns

- Dramatically shorter analysis times – typically a minute or less
- Ideal for applications in petrochemical and environmental markets
- Long column lifetimes

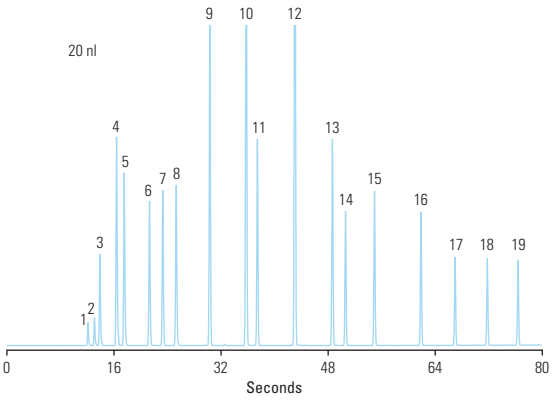
UFC-1 10m x 0.32mm x 3um

Temperature:	40°C (6 sec hold) to 300°C (6 sec hold) at 180°C/min
Detector Type:	FID
Carrier Gas:	Helium
Flow Rate:	0.5mL/min
Injection Mode:	Split/Splitless

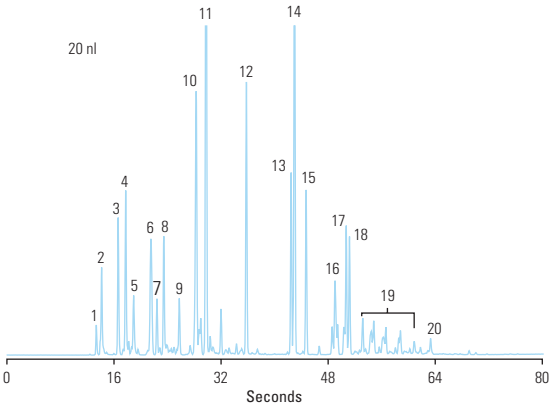
Application – UltraFast Analysis of Pure Petroleum Products through Nanovolumes Injection

The analyses were performed in the UltraFast GC mode using a TRACE GC Ultra System equipped with a Split/Splitless injector (SSL) and a Digital Pressure and Flow Controller, as well as a FAST FID detector. The GC System was also equipped with an UltraFast Module (UFM).

Split injections were performed with a AS3000 Autosampler using a 0.5µL plunger-in-needle syringe p/n 36504045. A minimum penetration depth in the injector (cold needle mode) was set, and 0.3µL of air was automatically withdrawn after the sample to ensure that the part of the needle inserted into the injector was empty. A 3mm ID upper-tapered empty liner with an 8mm long and 1mm wide restriction at the top was installed. The SSL injector was set to 225°C and the FID to 320°C.



1. propane
2. methyl-propane
3. butane
4. methyl-butane
5. pentane
6. methyl-pentane
7. hexane
8. dimethyl-pentane
9. heptane
10. toluene
11. octane
12. p-xylene
13. propyl-benzene
14. n-decane
15. butyl-benzene
16. n-dodecane
17. n-tridecane
18. n-tetradecane
19. n-pentadecane



1. methyl-propane
2. butane
3. 2-methyl-butane
4. pentane
5. ter-butyl alcohol
6. methyl-pentane
7. 3-methyl-pentane
8. hexane
9. dimethyl-pentane
10. cyclohexane
11. dimethyl-hexane
12. toluene
13. ethyl-benzene
14. p-xylene
15. m-xylene
16. propyl-benzene
17. tetramethyl-octane
18. 1,2,4-trimethyl-benzene
19. tri/tetramethyl-benzene isomers
20. naphthalene

UltraFast GC columns

Short, narrow-bore columns for use with the Thermo Scientific TRACE GC UltraFast instrument

- Dramatically shorter analysis times
- Increase sample throughput by a factor of 20
- Lengthen column lifetimes

Applications:

- Chemical
- Petrochemical
- Environmental
- Flavors and fragrances

UltraFast GC columns

Phase	ID (mm)	Length (m)	Film Thickness (µm)	Uses	Cat. No.	Quantity
UFC-1	0.10	5	0.1	General	UFMC00001010401	1 Each
	0.32	5	0.25	ISO 9377-2	UFMC00001070404	1 Each
UFC-5	0.10	5	0.4	General	UFMC00200000000	1 Each
		5	0.1	General	UFMC00300000000	1 Each
		10	0.4	General	UFMC00502010006	1 Each
UFC-WAX	0.10	5	0.1	FAMES, Essential Oils	UFMC00001010501	1 Each
		5	0.2	General	UFMC00001010503	1 Each
UFC-264	0.10	10	0.5	Volatiles	UFMC00002010207	1 Each
UFC-M1	0.32	5	0.25	General	UFMC00001070904	1 Each



Learn more at **thermofisher.com/GCcolumns**

TracePLOT GC columns

Thermo Scientific™ TracePLOT™ TG-BOND Alumina GC columns: Na_2SO_4 and KCl deactivation

Optimized for linear and quantitative analysis of polar unsaturated hydrocarbons

- Strong bonding to prevent particle generation suits these columns in valve-switching operations without damage to injection and detection systems from particle release
- Columns to which water has adsorbed may be regenerated to restore full efficiency and selectivity
- Each column has been tested to ensure proper film thickness (1,3-butadiene), selectivity (propadiene and methyl acetylene), resolution (trans-2-butene and 1-butene) and coating efficiency (1,3-butadiene)

TracePLOT TG-BOND Alumina GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
Na_2SO_4 Deactivation				
0.32	30	5	26001-6020	1 Each
	50	5	26001-6050	1 Each
0.53	30	10	26001-6080	1 Each
	50	10	26001-6110	1 Each
KCl Deactivation				
0.32	30	5	26002-6020	1 Each
	50	5	26002-6050	1 Each
0.53	30	10	26002-6080	1 Each
	50	10	26002-6110	1 Each

Applications:

- C1-C5 hydrocarbons
- Unsaturated hydrocarbon isomers

TracePLOT TG-BOND Sieve 5A GC columns

Designed for separation of Ar/O_2 and other permanent gases

- Specially designed coating and deactivation procedures for chromatographic efficiency and the integrity of the coating porous layer
- Deactivation process yields a sharp peak for CO elution rather than the tailing commonly seen in other columns
- High retention of molecular sieve permits separation of permanent gases at temperatures above ambient
- Uniform particles remain adherent to the tubing even following continuous valve-cycling

TracePLOT TG-BOND Sieve 5A GC Columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	15	30	26003-6010	1 Each
	30	30	26003-6040	1 Each
0.53	15	50	26003-6070	1 Each
	30	50	26003-6100	1 Each
	50	50	26003-1630	1 Each

Applications:

- Permanent gases
- Refinery or natural gases

TracePLOT TG-BOND Q GC Columns

Non-polar columns for oxygenated compounds and solvents

- Non-polar 100q% divinyl benzene phase
- Particles incorporated into the walls of the tubing for essentially no particle release

TracePLOT TG-BOND Q GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	15	10	26004-6000	1 Each
	30	10	26004-6030	1 Each
0.53	15	20	26004-6060	1 Each
	30	20	26004-6090	1 Each

Applications:

- C1 to C3 isomers and alkanes up to C12
- Separation of CO_2, methane and $O_2/N_2/CO$
- Analysis of oxygenated compounds and solvents

TracePLOT TG-BOND Q+ GC columns

Intermediate polarity columns for baseline separation of ethane, ethylene and acetylene

- Intermediate polarity, porous divinyl benzene homopolymer
- Particles incorporated into the walls of the tubing for essentially no particle release

TracePLOT TG-BOND Q+ GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	15	10	26005-6000	1 Each
	30	10	26005-6030	1 Each
0.53	15	20	26005-6060	1 Each
	30	20	26005-6090	1 Each

Applications:

- Separation of ethane, ethylene and acetylene to baseline

Learn more at **thermofisher.com/GCcolumns**

TracePLOT TG-BOND S GC columns

Columns for analysis of non-polar and mid-polar compounds

- Mid-polarity, divinylbenzene 4-vinylpyridine solid phase
- Particles incorporated into the walls of the tubing for essentially no particle release

TracePLOT TG-BOND S GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	15	10	26006-6000	1 Each
	30	10	26006-6030	1 Each
0.53	30	20	26006-6090	1 Each

Applications:

- Non-polar and mid-polar compounds

TracePLOT TG-BOND U GC columns

Columns for analysis of polar compounds

- Polar, divinylbenzene ethylene glycol/dimethylacrylate phase
- Particles incorporated into the walls of the tubing for essentially no particle release

TracePLOT TG-BOND U GC columns

ID (mm)	Length (m)	Film Thickness (µm)	Cat. No.	Quantity
0.32	15	10	26007-6000	1 Each
	30	10	26007-6030	1 Each
0.53	30	20	26007-6090	1 Each

Applications:

- Analysis of polar compounds

TracePLOT particle traps for GC instruments

Provides a safeguard from dislodged particles entering the detector

- Provides a safeguard from dislodged particles entering the detector

TracePLOT particle traps for GC instruments

Description	ID (mm)	Cat. No.	Quantity
PLOT Particle Trap 2.5m x 0.25mm	0.25	60180-862	1 Each
PLOT Particle Trap 2.5m x 0.32mm	0.32	60180-860	1 Each
PLOT Particle Trap 2.5m x 0.53mm	0.53	60180-861	1 Each

GC reagents

Making the undetectable, detectable

Improve separation and detection for GC and GC-MS applications with our selection of derivatization reagents.



The ideal derivatization procedure will:

- Accomplish the desired modification.
- Proceed quantitatively, or at least reproducibly.
- Produce products that are readily distinguishable and separable from the starting materials.
- Proceed rapidly with simple and straightforward laboratory techniques that will be both selective and applicable to a number of similar compounds.
- Involve reagents and reactions that present no unusual hazards.

Why derivatize:

- To make a compound that otherwise could not be analyzed by a particular method suitable for analysis.
- To improve the analytical efficiency of the compound.
- To improve the detectability of the compound.

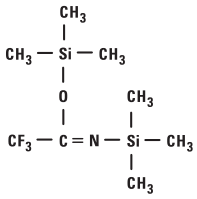
For more information visit **thermofisher.com/GCreagents**

Silylation reagents

BSTFA and BSTFA + TMCS

For excellent chromatographic separations and difficult-to-silylate compounds

- Increased volatility makes it possible to derivatize smaller molecules with which the TMS derivatives elute with the byproducts from BSA
- Excellent for derivatizing fatty acid amides, slightly hindered hydroxyls and other compounds
- Catalyzed formulation is stronger than BSTFA alone



BSTFA
MW 257.4
bp 40°C/12 mm
d_4^{20} 0.961

BSTFA and BSTFA + TMCS

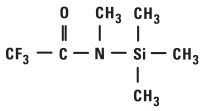
Description	Quantity		Cat. No.	Quantity
BSTFA	10 × 1mL ampules		TS-38830	1 Pack
	25g		TS-38828	1 Each
	100g	X	TS-38829	1 Each
BSTFA + 1% TMCS	10 × 1mL ampules		TS-38831	1 Pack
	10g		TS-38832	1 Each
	25g		TS-38833	1 Each
	100g	X	TS-38834	1 Each
BSTFA + 10% TMCS	10 × 1mL ampules		TS-38840	1 Pack

X in the ordering table indicates that hazardous shipping charges apply.

MSTFA and MSTFA + 1% TMCS

Offers maximum volatility

- Trimethylsilyl donor strength comparable to BSA and BSTFA
- Reacts to replace labile hydrogens on a wide range of polar compounds with a $Si(CH_3)_3$ group
- Used to prepare volatile and thermally stable derivatives for GC and GC-MS
- Addition of Thermo Scientific TMCS aids derivatization of amides, secondary amines and hindered hydroxyls not derivatized by MSTFA alone



MSTFA
MW 199.1
bp 70°C/75 mm
d_4^{20} 1.11

MSTFA and MSTFA + 1% TMCS

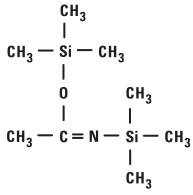
Description	Quantity		Cat. No.	Quantity
MSTFA	10 × 1mL ampules		TS-48910	1 Pack
	10g		TS-48911	1 Each
	25mL		TS-48913	1 Each
	100mL	X	TS-48914	1 Each
MSTFA + 1% TMCS	10 × 1mL ampules		TS-48915	1 Pack

X in the ordering table indicates that hazardous shipping charges apply.

BSA

The perfect reagent for rapid silylation reactions

- Highly reactive trimethylsilyl donor that reacts quantitatively to form volatile, stable TMS derivatives
- Reacts quickly and quantitatively under mild conditions with a variety of compounds
- Derivatizes alcohols, amines, amides, carboxylic acids, phenols, steroids, biogenic amines and alkaloids



BSA
MW 203.4
bp 71-73°C/35 mm
d_4^{20} 0.832

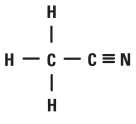
BSA

Description	Quantity	Cat. No.	Quantity
BSA	10 x 1mL	TS-38836	1 Pack

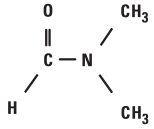
Silylation grade solvents

Manufactured to meet your exact silylation needs

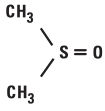
- Purified, dried and packaged under nitrogen in convenient 50mL Hypo-Vial Sample Storage Vials
- Supplied with elastomer septa, allowing immediate access to the sample without exposure to moisture and oxygen
- Use polar solvents (acetonitrile, dimethylformamide, dimethylsulfoxide, pyridine, tetrahydrofuran) to facilitate reactions; nonpolar organic solvents may be used, but they will not accelerate the rate of reaction



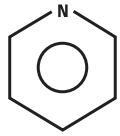
Acetonitrile
MW 41.05
bp 81.6°C



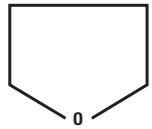
Dimethylformamide
MW 73.09
bp 153°C



Dimethylsulfoxide
MW 78.13
bp 189°C



Pyridine
MW 79.10
bp 115.2°C



Tetrahydrofuran
MW 72.10
bp 66°C

Silylation grade solvents

Description	Quantity		Cat. No.	Quantity
Acetonitrile	50mL	X	TS-20062	1 Each
Dimethylformamide (DMF)	50mL	X	TS-20672	1 Each
Dimethylsulfoxide (DMSO)	50mL	X	TS-20684	1 Each
Pyridine	50mL	X	TS-27530	1 Each
Tetrahydrofuran (THF)	50mL	X	TS-27860	1 Each

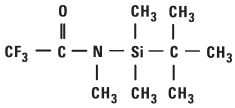
X in the ordering table indicates that hazardous shipping charges apply.

Learn more at **thermofisher.com/GCsreagents**

MTBSTFA and MTBSTFA + 1% TBDMCS

Offers stable TBDMS (tert-butyldimethylsilyl) derivatization

- Derivatizes hydroxyl, carboxyl, thiol and primary and secondary amines
- Typical yields are >96%
- Reaction byproducts are neutral and volatile
- Silylating potential increased by adding 1% TBDMCS



MTBSTFA
MW 241.3
bp 168-170°C
d_4^{20} 1.121

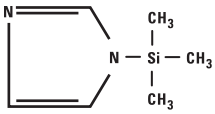
MTBSTFA and MTBSTFA + 1% TBDMCS

Description	Quantity	Cat. No.	Quantity
MTBSTFA	5mL ampules	TS-48920	1 Each
MTBSTFA + 1% TBDMCS	10 × 1mL	TS-48927	1 Pack

TMSI (N-Trimethylsilylimidazole)

The strongest silylator available for carbohydrates and steroids

- Reacts quickly and smoothly with hydroxyls and carboxylic acids, but not with amines
- Used in the derivatization of alcohols, phenols, organic acids, steroids, hormones, glycols, nucleotides and narcotics
- Excellent for C1 through C5 fatty acids in serum and urine



TMSI
MW 140.26
bp 99°C/14 mm Hg
d_4^{20} 0.957

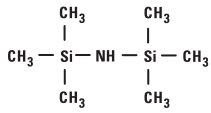
TMSI

Description	Quantity	Cat. No.	Quantity
TMSI (N-Trimethylsilylimidazole)	10 × 1mL ampules	TS-88623	1 Pack
	25g	TS-88625	1 Each
	100g	TS-88626	1 Each

HMDS (Hexamethyldisilazane)

The popular choice for silylation of sugars and related substances

- Greatly extends the practical range of GC, improving chromatographic results
- Suitable for deactivating and coating chromatographic supports
- Monofunctional, making polymerization not possible and eliminating surface moisture



HMDS
MW 161.4
bp 125°C
n_d^{20} 1.4071

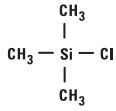
HMDS

Description	Quantity	Cat. No.	Quantity
HMDS (Hexamethyldisilazane)	25g	**TS-84770**	1 Each

TMCS (Trimethylchlorosilane)

An excellent catalyst for difficult-to-silylate compounds

- Excellent adjunct for forming trimethylsilyl ethers for GC determinations
- Used to prepare TMS derivatives of organic acids



TMCS
MW 108.7
bp 57.6°C
d_4^{20} 0.858

TMCS

Description	Quantity	Cat. No.	Quantity
TMCS	25g	TS-88530	1 Each

MOX (Methoxamine) reagent

Useful for preparing oximes of steroids and ketoacids prior to silylation

- 2% methoxyamine HCl (M.W. 83.51) in pyridine
- Prevents formation of multiple derivatives when enols are present during silylation

MOX Reagent

Description	Quantity	Cat. No.	Quantity
MOX (Methoxamine) Reagent (2% methoxyamine HCl in pyridine)	10mL	TS-45950	1 Each

Learn more at **thermofisher.com/GCsreagents**

Tri-Sil HTP (HMDS:TMCS:Pyridine) reagent

Reagent-catalyst mixture for one-step derivatization

- Derivatizes carbohydrates, phenols, steroids, sterols, organic acids, alcohols and some amines
- Useful for rapid production of TMS derivatives of polar compounds for gas chromatographic determination and biochemical synthesis
- The versatility, speed and ease of use of Tri-Sil HTP Reagent has made it the most widely used silylation formulation available

Tri-Sil HTP reagent

Description	Quantity		Cat. No.	Quantity
Tri-Sil HTP Reagent HMDS:TMCS:Pyridine (2:1:10)	10 × 1mL ampules		TS-48999	1 Pack
Tri-Sil HTP Reagent HMDS:TMCS:Pyridine (2:1:10)	50mL	X	TS-49001	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

Tri-Sil BP (BSA:Pyridine) reagent

Derivatizes alcohols, phenols, organic acids, aromatic amides and amines

Tri-Sil BP Reagent reacts with:

- Alcohols, phenols, some enols and other hydroxyl and polyhydroxyl compounds to from trimethylsilyl esters
- Organic acids to form trimethylsilyl esters
- Aromatic amides to form N-trimethylsilyl derivatives
- Amino acids to form both N- and O-trimethylsilyl derivatives
- Amines to form N-trimethylsilyl derivatives

Tri-Sil BP reagent

Description	Quantity	Cat. No.	Quantity
Tri-Sil BP Reagent (2.5mEq/mL BSA in pyridine)	25mL	TS-49012	1 Each

Tri-Sil TBT (TMSI:BSA:TMCS) reagent

A catalyzed silylation reagent formulation containing three parts TMSI, three parts BSA and two parts TMCS

- Converts all classes of hydroxyl groups to TMS ethers
- Under usual conditions, the reaction is complete in a short period of time at 60 to 80°C, although very hindered hydroxyls may require several hours

Tri-Sil TBT reagent

Description	Quantity	Cat. No.	Quantity
Tri-Sil TBT Reagent TMSI:BSA:TMCS (3:3:2)	10 × 1mL ampules	TS-49016	1 Pack

Tri-Sil TP (TMSI:Pyridine) reagent

Derivatizes hydroxyl compounds, particularly carbohydrates

- Silylates alcohols and phenols, organic acids, hydroxylamines, amino acids, carbohydrates, flavonoids, glycols and polyglycols, nucleotides, steroids, hydroxyl acids, barbiturates, narcotics, indoles and vitamins
- Does not react with amines
- May be used with water as long as there is enough reagent present to react with both the water and the sample

Tri-Sil TP reagent

Description	Quantity	Cat. No.	Quantity
Tri-Sil TP Reagent TMSI: Pyridine (1:4)	10 × 1mL ampules	TS-49230	1 Pack
Tri-Sil TP Reagent TMSI: Pyridine (1:4)	25mL	TS-49231	1 Each

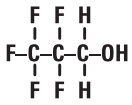
Learn more at **thermofisher.com/GCsreagents**

Acylation reagents

Pentafluoropropanol

Purified for GC-MS applications

- Addition of fluorine atoms into compounds greatly enhances the sensitivity of certain detectors for all those materials
- Carboxylic acids can be derivatized using a two-step reaction involving reaction with anhydride, followed by a fluorinated alcohol



Pentafluoropropanol
MW 150.05
bp 80.6°C
d_4^{20} 1.2880

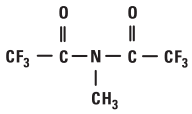
Pentafluoropropanol

Description	Quantity	Cat. No.	Quantity
Pentafluoropropanol	10 x 1mL ampules	TS-65195	1 Pack

MBTFA

For trifluoroacylating primary and secondary amines, hydroxyl and thiol groups and carbohydrates

- Reacts under non-acidic conditions
- Principle byproduct from the derivatization reaction is N-methyltrifluoroacetamide, which is stable, volatile and does not present problems in subsequent GC
- Produces very volatile derivatives of carbohydrates
- Can be used to selectively acylate amines in the presence of hydroxyl and carboxyl groups that have been protected by silylation



MBTFA
MW 223.08
bp 123-124°C
d_4^{20} 1.55

MBTFA

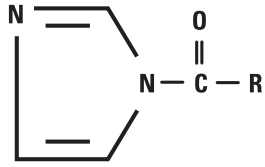
Description	Quantity		Cat. No.	Quantity
MBTFA [N-Methyl-bis(trifluoroacetamide)	10 × 1mL ampules		TS-49700	1 Pack
	25mL		TS-49703	1 Each
	100mL	X	TS-49704	1 Each
	5g		TS-49701	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

Perfluoroacylimidazoles (HFBI and TFAI)

Offer effective acylation of hydroxyl groups and primary and secondary amines

- Reactions are smooth, quantitative and produce no acid byproducts
- Excellent for FID and ECD techniques
- Derivatives are volatile, despite size of group
- Closely bound fluorines contribute to stability



R	Name	M.W.	Boiling Point
C_3F_7	HFBI	264.10	57 to 58°C/10mm
CF_3	TFAI	164.08	38 to 40°C/14mm

Perfluoroacylimidazoles (HFBI and TFAI)

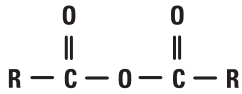
Description	Quantity		Cat. No.	Quantity
HFBI	5g	❄	TS-44211	1 Each
TFAI	10 x 1mL ampules		TS-48882	1 Pack

❄ indicates that additional dry ice and/or freight charges apply.

Perfluoro acid anhydrides (TFAA, PFAA and HFAA)

Highly purified for optimal preparation of fluoracyl derivatives

- Used to prepare fluoracyl derivatives for GC-MS
- Produce stable volatile derivatives for FID and ECD techniques



Perfluoro acid anhydrides

Description	Quantity		Cat. No.	Quantity
TFAA (Trifluoroacetic Acid Anhydride)	100g	X	TS-67363	1 Each
PFAA (Pentafluoropropionic Acid Anhydride)	10 × 1mL ampules		TS-65193	1 Pack
PFAA	25g	X	TS-65192	1 Each
PFAA	100g	X	TS-65191	1 Each
HFAA (Heptafluorobutyric Acid Anhydride)	10 × 1mL ampules		TS-63164	1 Pack
HFAA	25g	X	TS-63163	1 Each
HFAA	100g	X	TS-63162	1 Each

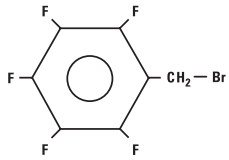
X in the ordering table indicates that hazardous shipping charges apply.

Alkylation reagents

Pentafluorobenzyl bromide (PFBBr)

For electron capture GC analysis of carboxyl acids, phenols and sulfonamides

- Fast reaction times for extraction alkylation technique: ~20 minutes
- Derivatives are highly EC-sensitive
- Analysis of trace organics in asphalt



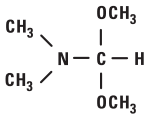
PFBBr
MW 260.9
bp 174-175°C
d_4^{20} 1.86

Methylate reagent (DMFDMA)

For easy, effective preparation of methyl esters from fatty acids and amino acids

Advantages for preparation of methyl esters for gas chromatography:

- Speed: the reaction is complete upon dissolution (except long chain solid acids)
- No water washing, extraction or concentration of derivatives required
- No water formed
- Convenient: ready-to-use reagent contains 2mEq/mL pyridine



Methylate Reagent
MW 119.17
bp 102-104°C
d_4^{20} 0.897

Methylate reagent

Description	Quantity	Cat. No.	Quantity
Methylate Reagent (N, N-Dimethylformamide dimethyl acetal)	25mL	TS-49350	1 Each



MethElute reagent (TMPAH)

Provides accurate sensitive on-column methylation

- 0.2M trimethylanilinium hydroxide (TMPAH) in methanol solution
- For quantitative methylation and detection of barbiturates, sedatives, xanthine bases, phenolic alkaloids and phenytoin by gas chromatography
- Single quantitative peak for each substance
- Comparable to or better than UV/TLC method (when phenobarbitol and phenytoin are present, GC is superior to UV/TLC)
- Coefficient of variation is 5% or less
- Detects barbiturates to 0.2mg/dL

MethElute reagent

Description	Quantity	Cat. No.	Quantity
MethElute Reagent (TMPAH)	10mL	TS-49300	1 Each
MethElute Reagent (TMPAH)	12 × 1mL ampules	TS-49301	1 Pack

Learn more at **thermofisher.com/GCsreagents**



Siliconizing fluids

Water-soluble siliconizing fuid

Attaches the silane polymer, octadecyltrialkosilane, to make the surface inert or polymerizes to create an inert film

- Easy-to-use silane monomer solution that is supplied as a 20% solid solution in a mixture of diacetone alcohol and tertiary butyl alcohol
- Greater resistance to base hydrolysis than other surface treatments
- Can be used on plastic surfaces

Water-soluble siliconizing fluid

Description	Quantity		Cat. No.	Quantity
Siliconizing Fluid-Water Soluble	120mL	X	TS-42799	1 Each

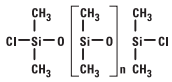
X in the ordering table indicates that hazardous shipping charges apply.

Hydrocarbon-soluble siliconizing fluid

Attaches a short-chain silane polymer to make the surface inert or polymerizes to create an inert film

When applied to glass, quartz or similar materials, the unhydrolyzed chlorines present on the chain react with surface silanols to form a neutral, hydrophobic and tightlyCbonded film over the entire surface.

- Soluble in organic solvents
- Excellent for modifying metals, glass, ceramics and fiber optics
- Can be used for certain plastic surfaces
- Well-suited for treatment of GC injection port liners



Siliconizing Fluid – Hydrocarbon Soluble

Hydrocarbon-soluble siliconizing fluid

Description	Quantity		Cat. No.	Quantity
Siliconizing Fluid-Hydrocarbon Soluble	120mL	X	TS-42800	1 Each
Siliconizing Fluid-Hydrocarbon Soluble	480mL	X	TS-42801	1 Each

X in the ordering table indicates that hazardous shipping charges apply.

Reacti-Therm heating and stirring modules

Reliable and easy-to-use for constant temperatures

- Uniform, stable heating: steady temperature incubation between ambient plus 10°C to 200°C
- LED display: match digital display to in-block thermometer to calibrate temperature set-point
- Modular design: switch aluminum blocks and vials; attach compatible evaporator manifold
- In-block temperature control option by Remote Temperature Probe, an optional accessory to allow temperature regulation from block wells or actual sample vials
- Magnetic stirrers for heating / stirring module for simultaneous stirring of samples in multiple vials

Applications:

- General sample incubation and evaporation in a variety of tube and vial sizes
- Silylation, alkylation and acylation derivatization reactions for GC sample preparation
- Protein hydrolysis and vacuum hydrolysis reactions for amino acid analysis by HPLC

Thermo Scientific™ Reacti-Therm™ Heating Modules

Type	Size of Unit	Cat. No.	Quantity
Heating Function	Single-block	TS-18822	1 Each
	Triple-block	TS-18824	1 Each
Remote Temperature Probe		TS-18820	1 Each

Reacti-Therm heating and stirring modules

Type	Size of Unit	Cat. No.	Quantity
Heating and Stirring Function	Single block	TS-18821	1 Each
	Triple-block	TS-18823	1 Each
Magnetic Stirrers for 3.0, 5.0 & 10.0mL Thermo Scientific™ Reacti-Vial™		TS-16000	6 Pack
Magnetic Stirrers for 0.3 and 1mL Small Reaction Vials		TS-16010	6 Pack



Reacti-Vap evaporators

Manifolds for easy sample evaporation

- Integrated pressure-relief valve protects against excessive gas-flow and dangerous pressure build up
- Easy set-up: attach to corresponding Reacti-Therm Module, attach tubing from gas supply, and lower into position over samples and start gas flow
- Choose 9-port or 27-port model for compatibility with single-block and triple-block Reacti-Therm Modules, respectively

Applications:

- General sample incubation and evaporation in a variety of tube and vial sizes
- Silylation, alkylation and acylation derivatization reactions for GC sample preparation

Thermo Scientific™ Reacti-Vap™ Evaporators

No. of Ports	For Use With	Cat. No.	Quantity
9	Single-block Reacti-Therm Module	TS-18825	1 Each
27	Triple-block Reacti-Therm Module	TS-18826	1 Each

Gas regulators

Description	Cat. No.	Quantity
1/8" tube fitting	60181-625	1 Each
1/4" tube fitting	60181-626	1 Each

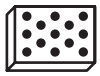
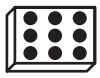
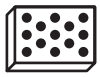
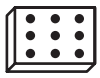
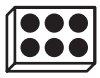
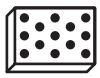
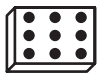
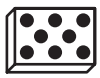
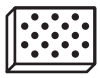
Reacti-Block aluminum blocks

Optimal thermal conductivity

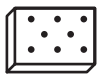
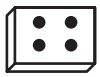
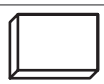
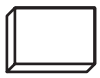
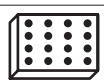
- Constructed of an aluminum alloy for optimal thermal conductivity
- Each Thermo Scientific™ Reacti-Block™ aluminium block contains a thermometer well
- Block dimensions are 9.4 L x 7.5 W x 5.1cm H for all blocks except for F, G, J and M which have a depth (height) of 7.6cm



Thermo Scientific™ Reacti-Block™ aluminum llocks

Description		Cat. No
Reacti-Block A-1 Holds 13 x 0.3mL or 1mL Reacti-Vials; 13 holes/14mm dia. x 23mm deep		TS-18801
Reacti-Block B-1 Holds 9 x 3mL or 5mL Reacti-Vials; 9 holes/21mm dia. x 32mm deep		TS-18802
Reacti-Block C-1 Holds 13 x 3.5mL Screw Cap Septum Vials; 13 holes/15mm dia. x 34mm deep		TS-18803
Reacti-Block Z-1 Holds 9 x 0.1mm Reacti-Vials; 9 holes/12mm dia. x 21mm deep		TS-18804
Reacti-Block M-1 Holds 6 x 27.5mL Reacti-Vials; 6 holes/28.5mm dia. x 70mm deep		TS-18811
Reacti-Block S-1 Holds 13 x 13mm dia. Test Tubes; 13 holes/14mm dia. x 45mm deep		TS-18816
Reacti-Block T-1 Holds 9 x 16mm dia. Test Tubes; 9 holes/17mm dia. x 45mm deep		TS-18817
Reacti-Block U-1 Holds 8 x 20mm dia. Test Tubes; 8 holes/21mm dia. x 45mm deep		TS-18818
Reacti-Block V-1 Holds 17 Microcentrifuge Test Tubes; 17 holes/11mm dia. x 45mm deep		TS-18819

The Reacti-Block aluminium blocks below are designed to be used exclusively with the Reacti-Therm modules. The hole patterns do not match the needle configuration of Thermo Scientific™ Reacti-Vap™ Evaporators.

Description		Cat. No
Reacti-Block F Holds 8 x 6mL Vacuum Hydrolysis Tubes; 8 holes/10mm dia. x 64mm deep		TS-18806
Reacti-Block G Holds 4 x 18mL Vacuum Hydrolysis Tubes; 4 holes/19mm dia. x 64mm deep		TS-18807
Reacti-Block J Blank/no holes (for custom drilling) 7.6cm tall		TS-18809
Reacti-Block K Blank/no holes (for custom drilling) 5.1cm tall		TS-18810
Reacti-Block L Holds 16 x 0.1mL Reacti-Vials; 16 holes/12mm dia. x 21mm deep		TS-18812

Reacti-Therm thermometers

Thermometers specially designed for use in dry block heaters

- Mercury-free: alcohol-filled for greater safety
- PTFE coating ensures that glass is impervious to corrosive materials
- Shock-resistant glass and coatings
- Standard laboratory size: 225mm length x 8mm diameter
- Compatible for use in Thermo Scientific™ Reacti-Therm™ Heating Modules and other laboratory equipment



Reacti-Therm thermometers

Min. Temperature (°C)	Max. Temperature (°C)	Cat. No.	Quantity
0	100	TS-18914	1 Each
0	200	TS-18915	1 Each

Reacti-Vap replacement parts



Reacti-Vap replacement parts

Description	Cat. No.	Quantity
Reacti-Vap Replacement Tube Kit 2.5 inch (64mm) (Tubes and Plugs)	TS-18782	9 Pack
Reacti-Vap PTFE-Coated Needles 102mm (4in) Length	TS-18784	9 Pack
Reacti-Vap PTFE-Coated Needles 152mm (6in) Length	TS-18786	9 Pack
Replacement Luer-Lok Fitting	TS-18827	1 Each
Replacement Height Adjustment Knob	TS-18829	1 Each
Replacement Metal Rod	TS-18831	1 Each

Vacuum hydrolysis tubes

For fast, effective protein and peptide hydrolysis

- The upper temperature limit of the Vacuum Hydrolysis Tubes is 260°C; however, do not heat the tubes greater than 100°C in an oven
- Vacuum hydrolysis tubes fit conveniently into Reacti-Block aluminium heating blocks



Vacuum hydrolysis tubes

Volume (mL)	OD (mm)	Length (mm)	Cat. No.	Quantity
1	8	60	TS-29570	1 Each
6	10	150	TS-29571	1 Each
18	19	100	TS-29572	1 Each

Learn more at **thermofisher.com/GCsamplehandling**

Reacti-Vial small reaction vials

An internal cone makes small sample handling easy and convenient

- Extra thick glass wall magnifies the sample, making these vials ideal fc observing chemical reactions
- Amber vials available for light-sensitive compounds
- Supplied complete with Open-Top Screw Caps and PTFE/Rubber Dis



Applications:

- Residue isolation, derivative preparation, maximum sample retrieval, moisture protection, sample storage, precipitations, centrifugations, solvent evaporation

Thermo Scientific™ Reacti-Vial™ small reaction vials

Capacity	Cat. No.	Quantity
Amber		
1mL	TS-13097	12 Pack
5mL	TS-13099	12 Pack
Clear		
100µL	TS-13100	12 Pack
300µL	TS-13220	12 Pack
1mL	TS-13221	12 Pack
3mL	TS-13222	12 Pack
5mL	TS-13223	12 Pack
10mL	TS-13225	12 Pack

Thermo Scientific Tuf-Bond PTFE/Silicone discs

Discs that combine the inertness of PTFE with the resealability of silicone

- Structurally bonded PTFE to silicone; no cement to leak out of your sample after needle penetration
- Reseals instantly, puncture after puncture
- Autoclavable
- Compresses to maintain a tight seal forcing the PTFE to conform to the sealing surface
- Standard syringe and GC needles penetrate the entire disc with ease

Thermo Scientific Tuf-Bond PTFE/Silicone discs

Diameter (mm)	Fits	Cat. No.	Quantity
8	100µL Reacti-Vial Small Reaction Vials, 1.5mL Screw Cap Septum Vials	TS-12708	72 Pack
12	0.3 and 1mL Reacti-Vial Small Reaction Vials, 3.5mL Screw Cap Septum Vials	TS-12712	72 Pack
13	7mL Screw Cap Septum Vials	TS-12713	72 Pack
16	14mL Screw Cap Septum Vials; 15mL (0.5 oz.) Screw Cap Bottles	TS-12716	72 Pack
18	3 and 5mL Reacti-Vial Small Reaction Vials	TS-12718	72 Pack
22	25 and 40mL Screw Cap Septum Vials, 240mL (8 oz.) Screw Cap Bottles, 10mL Reacti-Vial	TS-12722	72 Pack

PTFE/Rubber laminated discs

Provides a highly inert and unreactive seal



- Constructed of white pharmaceutical rubber with PTFE bonded to one side
- Discs are autoclavable with no loss of integrity after heating above 100°C for 5 hours

PTFE/Rubber laminated discs

Diameter (mm)	Fits	Cat. No.	Quantity
12	0.3 and 1mL Reacti-Vial Small Reaction Vials, 2 and 3.5mL Screw Cap Septum Vial	TS-12412	72 Pack
18	3 and 5mL Reacti-Vial Small Reaction Vials; 10 and 25mL Reacti-Flask	TS-12418	72 Pack

Open-Top screw caps

Provide inert, air-tight seal and direct puncture-access to sample with a syringe needle



- Fits into Reacti-Vial Small reaction vials
- Used with PTFE/Rubber laminated discs

Open-Top screw caps

Fits	Cat. No.	Quantity
3 and 5mL Reacti-Vials	TS-13218	72 Pack
0.3 and 1.0mL Reacti-Vials, 3.5mL Screw Cap Septum Vial	TS-13215	72 Pack
10mL Reacti-Vials, 40mL Screw Cap Septum Vials	TS-13219	72 Pack

Screw cap septum vials

Economy, convenience and versatility in a vial and closure system



- Flat bottom vials
- Heavy-duty flip-top divider box provides easy access to vials, caps and septa and offers a convenient sample storage center
- Storage of reagents and standards under complete seal with instant syringe access

Screw cap septum vials

Capacity (mL)	Cat. No.	Quantity
Clear		
3.5	TS-13019	72 Pack
7	TS-13028	72 Pack

Ordering Alerts: Septa not included with vials; must be ordered separately.

Learn more at **thermofisher.com/GCsamplehandling**

Mininert valves

Excellent closures for chemicals that deteriorate or evaporate through conventional vial caps and seals



Thermo Scientific™ Mininert Valves are screw caps that have integrated resealable valves to allow repeated and unlimited syringe-needle access to samples. Slide the valve one way to open the needle-port. Slide the valve back to close and completely seal the close.

- Available in two sizes – 20mm (thread size 20/400) and 27mm (thread size 24/400) to fit 3 and 5mL Reacti-Vial Small Reaction Vials and 40mL Screw Cap Septum Vials, respectively
- Precision crafted from PTFE plastic for repeated use and chemical resistance
- Valve design eliminates the septum-boring that occurs with repeated puncture of traditional septa

Mininert valves

Size (mm)	Fits	Cat. No.	Quantity
20	Fits 3 and 5mL Reacti-Vial Small Reaction Vials	TS-10135	12 Pack
27	Fits 40mL Screw Cap Septum Vials	TS-10130	12 Pack

GC and GC-MS instruments

Our gas chromatography and mass spectrometry instruments offer solutions to food, environmental, pharmaceutical laboratories and industrial customers. Our instruments stimulate to advance scientific knowledge, enable drug discovery and to improve manufacturing processes. Using our GC and GC-MS you can expect the best results and highest level of productivity to keep your research or processes moving smoothly.

TRACE 1300 Series GC



- User-installable injectors and detectors
- Easy adoption of standard GC methods
- Unmatched detector sensitivity in trace analysis
- Increased robustness of injector technology
- Shorter sample cycle time

For routine GC and GC-MS laboratories that need flexibility for a wide range of applications, the Thermo Scientific™ TRACE™ 1300 Series GC Gas Chromatograph is the latest technology to simplify workflow and increase analytical performance.

The TRACE 1300 Series offers the most versatile GC platform in the market, with unique instant connect modularity for ground-breaking ease of use and performance, setting a new era in GC technology. GC users now have the unique ability to easily configure the system themselves, to increase throughput or for a rapid exchange of configurations, with the added benefit of continuous operation since modules can be swapped and routine maintenance performed offline to fit laboratory's schedule.

Visit **thermofisher.com/GC**

TriPlus RSH autosampler



- Reliable GC and GC-MS automation
- Liquid injection/headspace/SPME, all-in-one unattended sequence
- Enhanced productivity and powerful versatility in sample preparation

The Thermo Scientific™ TriPlus™ RSH Autosampler offers scalable flexibility from simple liquid injection to extended sample preparation. An innovative Automated Tool Change (ATC) station addresses sampling demand and selects the most suitable syringe during a sequence. Up to 6 different syringes can be programmed in a sequence for extended sample preparation capabilities and different sampling modes (liquid, HS, SPME). Unsurpassed sample handling flexibility combined with high sample capacity, places no limits even to more stringent productivity requirements. Multiple sample trays increase unattended operation up to 972 x 2mL vials. The unique Bottom Vial Sensing feature secured syringe depth positioning in your vial for the last µL sample. Even nanovolume injections through the use of plunger-in-needle syringes can be programmed in a flexible sequence. All these, combined with large volume injections deliver unsurpassed sample handling flexibility.

AI/AS 1310 autosampler

- Automated liquid injection systems for all Thermo Scientific GC and GC-MS systems
- Performance and simplicity in liquid sampling
- “Tool-Free” upgradability from 8 to 155 vial positions

Engineered to meet the highest level requirements of ruggedness and ease-of-use, the AI/AS 1310 automatic sampling system is ideal for high throughput and QA/QC control on the Thermo Scientific GC and GC/MS product portfolio. Utmost precision and ease-of-use of the plug and inject concept are combined in the available configurations: 8-position single module system for small batches of samples; 155 position tray system for high sample throughput. Boost productivity further with the Gemini configuration, which allows two autosamplers to be mounted on the same GC, serving two injection ports simultaneously.



AI 1310 mounted onto a TRACE 1310 GC



AS 1310 155-vial Autosampler mounted on a TRACE 1300 GC with ISQ Mass Spectrometer

TriPlus 300 Headspace autosampler

- Unprecedented productivity and accelerated analytical results
- High throughput operations with expanded sample capacity
- Ideal for organic volatiles analysis

The Thermo Scientific™ TriPlus™ 300 Headspace valve-and-loop autosampler offers a quick start-up and enables reliable, unattended and high throughput operations with expanded sample capacity. Its ability to fully comply with existing methods in pharmaceutical, forensic and environmental laboratories makes TriPlus 300 HS the product of choice for automated and dependable organic volatiles determinations.

Combined with the user-configurable TRACE 1300 Series GC and supported by a range of chromatography data systems that offer comprehensive system control, TriPlus 300 HS delivers unprecedented productivity and accelerated analytical results within the laboratory workflow.





ISQ Series Single Quadrupole GC-MS

- Unique Full Source Removal™ capability delivers maximum uptime and unstoppable productivity
- ExtractaBrite™ solid, inert ion source provides robust operations and low detection limits
- Versatile and flexible for a broad range of applications

The Thermo Scientific™ ISQ™ Series single quadrupole GC-MS system features time-proven technology developed with the accumulation of almost 50 years of mass spectrometry innovation, offering an affordable and robust solution. This GC-MS series offers operational simplicity, proven dependability, and unstoppable productivity.

The ISQ QD GC-MS offers quality design, MS operational simplicity, and proven dependability for QA/QC and low-to medium-throughput production environments, as well as in teaching and academic facilities.

For analytically-demanding, high-throughput laboratories, requiring utmost sensitivity and unstoppable productivity, the ISQ LT GC-MS does not need to be vented to exchange the source, and it boasts the lowest detection limits and unlimited flexibility.

Visit **thermofisher.com/ISQ7000**



TSQ 9000 Triple Quadrupole GC-MS/MS system

Satisfy your routine laboratory's current and future analytical needs for truly unstoppable performance with the Thermo Scientific™ TSQ™ 9000 triple quadrupole GC-MS/MS system. Deliver high sensitivity for more routine analysis. Minimize maintenance intervals with routine-grade robustness. Operate with technology, flexible method development and powerful reporting tools designed for optimal productivity. Achieve quality results on time, every time with easy-to-use routine workflows. Fully upgrade from base to advanced configurations to boost flexibility and performance when you need it.

Visit **thermofisher.com/TSQ9000**



Satisfy your routine laboratory's current and future analytical needs for truly unstoppable performance with the Thermo Scientific TSQ 9000 triple quadrupole GC-MS/MS system. Deliver high sensitivity for more routine analysis. Minimize maintenance intervals with routine-grade robustness. Operate with technology, flexible method development and powerful reporting tools designed for optimal productivity. Achieve quality results on time, every time with easy-to-use routine workflows. Fully upgrade from base to advanced configurations to boost flexibility and performance when you need it.

Q Exactive GC Orbitrap GC-MS/MS

Bring the power of the first-ever combination of high-resolution gas chromatography (GC) and high-resolution/accurate-mass (HR/AM) Orbitrap mass spectrometry to your laboratory. The Thermo Scientific™ Q Exactive™ GC Orbitrap™ GC-MS/MS system provides comprehensive characterization of samples in a single analysis for the highest confidence in compound discovery, identification, and quantitation. Q Exactive GC offers the quantitative power of a GC triple quadrupole MS combined with the high performance, full scan HR/AM capabilities that are only possible with Orbitrap MS technology.

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