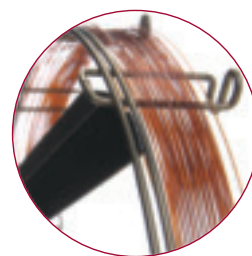


- General purpose and application specific columns
- High temperature stability
- Low phase bleed
- TraceGOLD, TRACE and TracePLOT column ranges

Thermo Scientific offer three main ranges of GC columns. The TraceGOLD series of columns offer exceptionally high column performance with low bleed and superior inertness. TRACE GC columns offer excellent quality and reproducibility for a wide range of GC applications. TracePLOT GC columns are based on the latest innovation in PLOT column technology, providing reproducible analyses of permanent gases, hydrocarbons and solvents.



TraceGOLD GC Phases

Phase	Phase Composition	Polarity	Max. Temp. Limit ^{1,2} (°C)	Applications
TG-1MS	100% Dimethylpolysiloxane	Non-polar	330/350	Hydrocarbons, PCBs, drugs of abuse, essential oils
TR-XLBMS	Proprietary	Non-polar	360	PCB congeners, PAHs, Aroclor mixes
TG-5MS	5% Diphenyl-95% dimethylpolysiloxane	Non-polar	330/350	Semi-volatiles, phenols, amines, pesticides, residual solvents, PCB congeners, drugs of abuse
TG-SQC	Proprietary	Non-polar	330/350	System Qualification Tests
TG-5MS AMINE	Base optimized 5% diphenyl-95% dimethylpolysiloxane	Non-polar	300/315	Amines, N-containing heterocyclics
TG-5SiIMS	5% Diphenyl-95% dimethylarylenesiloxane	Non-polar	330/350	PAHs, phthalates, phenols, amines
TG-5HT	5% Diphenyl-95% dimethylpolysiloxane	Non-polar	380/400	Phenols, solvents, PCBs, semi-volatiles
TG-35MS	35% Diphenyl-65% dimethylpolysiloxane	Mid-polarity	300/320	Pharmaceuticals, sterols, phthalate esters, organochlorine pesticides
TG-35MS AMINE	Base optimized 35% diphenyl-65% dimethylpolysiloxane	Mid-polarity	220	Amines, N-containing heterocyclics
TG-1301MS	6% Cyanopropylphenyl-94% dimethylpolysiloxane	Mid-polarity	260/280	Alcohols, oxygenates, volatile organics, residual solvents
TG-624	6% Cyanopropylphenyl-94% dimethylpolysiloxane	Mid-polarity	240	VOCs, alcohols, oxygenates, solvents
TG-VRX	Proprietary	-	260	Volatile organics
TG-VMS	Proprietary	-	260	Volatile organics
TG-1701MS	14% Cyanopropylphenyl-86% dimethylpolysiloxane	Mid-polarity	260/280	Alcohols, oxygenates, PCBs congeners
TG-17MS	50% Diphenyl-50% dimethylpolysiloxane	Mid-polarity	300/320	Pesticides, triglycerides, sterols
TG-225MS	50% Cyanopropylmethyl-50% phenylmethylpolysiloxane	Mid-polarity	220/240	FAMES, carbohydrates, sterols, flavour compounds
TG-200MS	Trifluoropropyl methylpolysiloxane	Mid-polarity	320/340	Fluorocarbons, silanes, glycols
TG-WaxMS	Polyethylene glycol (PEG)	Polar	240/260	FAMES, xylene isomers, solvents
TG-WaxMS A	Acid optimised PEG	Polar	240/250	Organic acids, free fatty acids
TG-WaxMS B	Base optimised PEG	Polar	200/220	Amines, diamines, basic compounds
TG-OCP I / TG-OCP II	Proprietary	-	340	Organochlorine pesticides, herbicides
TG-OPP I / TG-OPP II	Proprietary	-	330	Organophosphorus pesticides
TG-ALC I / TG-ALC II	Proprietary	-	260	Blood alcohols, glycols, GHB, anesthetics
TG-POLAR	90% Biscyanopropyl-10% phenylcyanopropyl polysiloxane	Polar	260/275	Cis/trans FAMES, dioxins
TG-1MT Metal	100% Dimethylpolysiloxane	Non-polar	430	Solvent impurities, PCB congeners, essential oils, drugs of abuse
TG-5MT Metal	5% Diphenyl-95% dimethylpolysiloxane	Non-polar	430	Drugs, hydrocarbons, pesticides, PCB congeners, semi-volatiles
TG-WaxMT Metal	Polyethylene glycol (PEG)	Polar	240/260	FAMES, flavour compounds, amines, xylene isomers, acrylonitrile

¹ Isothermal/Temperature programmed analyses

² Maximum temperatures are lower for 0.53µm film thickness columns

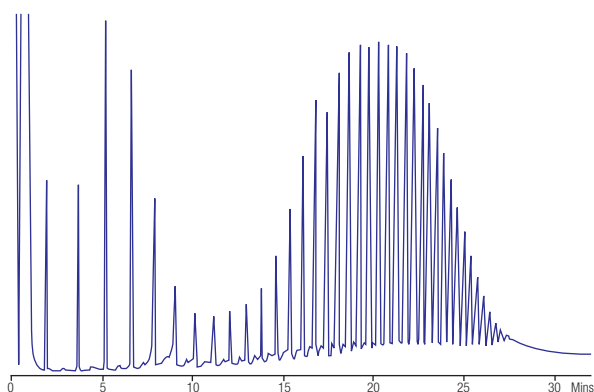


Figure 1. Simulated distillation using TG-1MT

Thermo Scientific's TraceGOLD Metal Columns (TG-1MT, TG-5MT and TG-WaxMT) enable the user to work at higher temperatures without compromising performance. The columns also withstand the stress of analyzing highly active and aggressive compounds. Figure 1 shows a simulated distillation chromatogram of the carbon range C12 to C90 using a TraceGOLD TG-1MT Metal column.

Ordering Information – TraceGOLD GC Columns¹

The ordering information below relates to a selection of the more popular dimension TraceGOLD columns. Please enquire for phases and column dimensions not listed.

I.D. (mm)	Length (m)	Film (µm)	TG-1MS ²	TG-5MS ²	TG-200MS	Price	TG-5SiIMS ²	Price
0.25	15	0.25	26099-1300	26098-1300	-		26096-1300	
	15	1.0	26099-2840	26098-2840	-		26096-2840	
	30	0.25	26099-1420	26098-1420	26084-1420		26096-1420	
	30	1.0	26099-2960	26098-2960	26084-2960		26096-2960	
	60	0.25	26099-1540	26098-1540	-		26096-1540	
	60	1.0	26099-3080	26098-3080	-		26096-3080	
0.32	15	0.25	26099-1310	26098-1310	-		26096-1310	
	15	1.0	26099-2850	26098-2850	-		-	-
	30	0.25	26099-1430	26098-1430	26084-1430		26096-1430	
	30	1.0	26099-2970	26098-2970	26084-2970		26096-2970	
	60	0.25	26099-1550	26098-1550	-		-	-
	60	1.0	26099-3090	26098-3090	-		-	-
0.53	15	0.5	26099-2130	26098-2130	-		-	-
	15	1.5	26099-3340	26098-3340	-		-	-
	30	0.5	26099-2250	26098-2250	-		-	-
	30	1.5	26099-3360	26098-3360	-		26096-3360	
	60	1.5	26099-3370	-	-		-	

I.D. (mm)	Length (m)	Film (µm)	TG-35MS	TG-1301MS	TG-17MS	TG-1701MS	TG-225MS	Price
0.25	15	0.25	26094-1300	26091-1300	26089-1300	26090-1300	26083-1300	
	15	1.0	26094-2840	26091-2840	26089-2840	26090-2840	-	
	30	0.25	26094-1420	26091-1420	26089-1420	26090-1420	26083-1420	
	30	1.0	26094-2960	26091-2960	26089-2960	26090-2960	-	
	60	0.25	-	26091-1540	26089-1540	26090-1540	26083-1540	
	60	1.0	-	26091-3080	-	26090-3080	-	
0.32	15	0.25	26094-1310	26091-1310	26089-1310	26090-1310	26083-1310	
	15	1.0	26094-2850	26091-2850	26089-2850	26090-2850	26083-2850	
	30	0.25	26094-1430	26091-1430	26089-1430	26090-1430	26083-1430	
	30	1.0	26094-2970	26091-2970	26089-2970	26090-2970	26083-2970	
	60	0.25	-	26091-1550	-	26090-1550	26083-1550	
	60	1.0	-	26091-3090	-	26090-3090	26083-3090	
0.53	15	0.5	26094-2130	26091-2130	26089-2130	26090-2130	26083-2130	
	15	1.5	26094-3340	26091-3340	26089-3340	26090-3340	-	
	30	0.5	26094-2250	26091-2250	26089-2250	26090-2250	26083-2250	
	30	1.5	26094-3360	26091-3360	26089-3360	26090-3360	-	
	60	1.5	-	26091-3370	-	26090-3370	-	

I.D. (mm)	Length (m)	Film (µm)	TG-WAXMS ²	Price	TG-WAXMS A	Price	TG-WAXMS B	Price
0.25	15	0.25	26088-1300		26087-1300		26086-1300	
	15	0.5	26088-2110		26087-2110		-	
	30	0.25	26088-1420		26087-1420		26086-1420	
	30	0.5	26088-2230		26087-2230		26086-2230	
	60	0.25	26088-1540		26087-1540		-	
	60	0.5	26088-2350		26087-2350		-	
0.32	15	0.25	26088-1310		26087-1310		26086-1310	
	15	1.0	26088-2850		26087-2850		26086-2850	
	30	0.25	26088-1430		26087-1430		26086-1430	
	30	1.0	26088-2970		26087-2970		26086-2970	
	60	0.25	26088-1550		26087-1550		-	
	60	1.0	26088-3090		26087-3090		26086-3090	
0.53	15	0.5	26088-2130		26087-2130		-	
	15	1.5	26088-3340		26087-3340		-	
	30	0.5	26088-2250		26087-2250		26086-2250	
	30	1.5	26088-3360		26087-3360		26086-3360	
	60	1.5	26088-3370		26087-3370		-	

¹ Other phases and column dimensions available including TraceGOLD Fast GC columns (see page 8) – please enquire

² Also available with Safeguard integrated guard – please enquire

TRACE GC Columns – Phase Availability

The following table lists the phases available in the TRACE GC column range. Please contact Hichrom for ordering information for these phases.

Phase	Phase Composition	Polarity	Max. Temp. Limit (°C)	Applications
TR-1MS	100% Dimethylpolysiloxane	Non-polar	370/380	Chlorinated and nitroaromatic compounds
TR-5	5% Phenyl Methylpolysiloxane	Non-polar	340/350 (for films <1.5µm) ¹	Alcohols, free fatty acids, aromatics, flavours
TR-5MS	5% Phenyl Polysilphenylene siloxane	Non-polar	360/370 (for films <1.5µm) ¹	Hydrocarbons, solvents, phenols, pesticides, herbicides, amines
TR-5HT	5% Phenyl Polycarborane siloxane	Non-polar	380/400	
TR-35MS	35% Phenyl Polysilphenylene siloxane	Mid-polarity	360/370	Pesticides, herbicides, drugs of abuse, pharmaceuticals
TR-1701	14% Cyanopropylphenyl Polysiloxane	Mid-polarity	280/300	Pesticides, PCBs, PAHs, drugs, organic acids, steroids
TR-50MS	50% Phenyl Polysilphenylene siloxane	Mid-polarity	360/370	Herbicides, drugs of abuse, pharmaceuticals
TR-225	50% Cyanopropylphenyl Polysiloxane	Mid-polarity	230/250	FAMEs, carbohydrates, neutral sterols
TR-Wax	Polyethylene glycol (PEG)	Polar	260/280 (for films <1.0µm) ¹	Esters, alcohols, ketones, glycols, aromatic isomers
TR-WaxMS	Polyethylene glycol (PEG)	Polar	280/300	Food additives, essential oils, esters, ketones, aldehydes
TR-FFAP	TPA modified polyethylene glycol	Polar	240/250	Free fatty acids
TR-SimDist	100% Dimethylpolysiloxane	Non-polar	400 (for films <1.0µm) ¹	Simulated distillation. High MW hydrocarbons
TR-V1	6% Cyanopropylphenylpolysiloxane	Mid-polarity	280/300	Volatile organics, alcohols
TR-FAME	70% Cyanopropyl Polysilphenylenesiloxane	Polar	250/260	FAMEs, FAMEs cis/trans isomers
TR-524	Cyanopropylphenyl Dimethylpolysiloxane	Mid-polarity	240/260	
TR-525	Proprietary	Mid-polarity	340/360	EPA Drinking water test methods
TR-527	5% Phenyl Polysilphenylene siloxane	Non-polar	330/350	
TR-8095	8% Phenyl Polycarboranesiloxane	Mid-polarity	360/370	EPA Explosives testing method
TR-8270	5% Phenyl Polysilphenylenesiloxane	Non-polar	330/350	EPA Solid waste test method
TR-PCB 8MS	8% Phenyl Polysilphenylenesiloxane	Mid-polarity	330/350	PCB congeners
TR-Dioxin 5MS	5% Phenyl Polysilphenylenesiloxane	Non-polar	330/350	Dioxins, furans
TR-Biodiesel (M)	100% Dimethylpolysiloxane	Non-polar	300/320	Residual methanol in biodiesel
TR-Biodiesel (F)	Polyethylene glycol (PEG)	Polar	280/300	FAME content of biodiesel
TR-Biodiesel (G)	5% Phenyl Polysilphenylenesiloxane	Non-polar	380/400	Total glyceride content of biodiesel
TR-DoA5	5% Phenyl Methylpolysiloxane	Non-polar	330/350	Drugs of abuse - amphetamines, codeine, morphine
TR-DoA35	35% Phenyl Polysilphenylenesiloxane	Mid-polarity	330/350	Drugs of abuse – carboxy-THC
TR-Pesticide	5% Phenyl Methylpolysiloxane	Non-polar	330/350	
TR-Pesticide II	Proprietary	Non-polar	330/350	Organophosphate pesticides, organochlorine pesticides, pyrethroid pesticides, herbicides
TR-Pesticide III	35% Phenyl Methylpolysiloxane	Mid-polarity	300/320	
TR-Pesticide IV	35% Phenyl Methylpolysiloxane	Mid-polarity	300/320	

¹ Higher film thicknesses have a lower maximum temperature limit

TracePLOT GC Columns - Phase Availability

The following table lists the phases available in the TracePLOT GC column range. Please contact Hichrom for ordering information for these phases.

Phase	Phase Composition	Polarity	Max. Temp. Limit ¹ (°C)	Applications
TR-Bond Alumina (Na ₂ SO ₄)	Na ₂ SO ₄ deactivated aluminium oxide	Non-polar	200	C1 to C5 hydrocarbons, unsaturated hydrocarbon isomers
TG-Bond Alumina (KCl)	KCl deactivated aluminium oxide	Non-polar	200	
TG-Bond Msieve 5A	Molecular sieve (5A)	Non-polar	300	Permanent gases, refinery or natural gases
TG-Bond Q	100% Divinylbenzene	Non-polar	280/300	CO ₂ , methane, O ₂ /N ₂ /CO, alkanes up to C12
TG-Bond Q+	Porous divinylbenzene polymer	Mid-polarity	250	Ethane, ethylene, acetylene
TG-Bond S	Divinylbenzene 4-vinylpyridine	Mid-polarity	250	Non-polar and polar compounds
TG-Bond U	Divinylbenzene ethylene glycol / dimethylacrylate	Polar	190	Polar and non-polar compounds

¹ Higher film thicknesses have a lower maximum temperature limit

Please contact Hichrom for ordering information for TRACE and TracePLOT GC columns.

