Packed Columns
Stationary Phases

Your Analyses Deserve the Best Column You Can Make

Our exclusive SP phases are silicone, ester, and other materials specifically manufactured or purified for use as chromatograph stationary phases. They ensure consistent analyses and much less bleed than generic substitutes. Many of the analyses shown on Applications pages of this catalog were performed on columns incorporating these phases.

DESCRIPTION [USP CODE], QTY. (SOLVENT)	TEMP. (°C) MIN/MAX	CAT. NO.	PRICE
Apiezon L, 25g (C,T)	50/300	21006	
BC-120 (C)	0/125	•	
Bentone 34, 50g (T)	0/180	21013-U	
Bis(2-ethoxyethyl)adipate, 50g (A)	0/150	21146	
Bis(2-ethylhexyl)phthalate [G22], 50g (M)	/150	21010-U	
Bis(2-methoxyethyl)adipate (A)	20/100	•	
n,n'-Bis(p-methoxylbenzylidene)-α,α'-bi-p-toluidine (BMBT) (C)	189/225	•	
Butanediol succinate, purified (C)	50/225	•	
Carbowax 20M [G16], 50g (C)	60/225	21032	
Carbowax 20M-terephthalic acid [G25], 50g (C)	60/225	11033-U	
Carbowax 400 [G20], 50g (C)	10/100	21023-U	
Carbowax 600, 50g (C)	30/125	21025-U	
Carbowax 1000 [G14], 50g (C)	40/150	21027	
Carbowax 1540, 50g (C)	50/175	21028	
Carbowax 4000 [G15], 50g (C)	60/120	21029	
Cyclohexanedimethanol succinate (CHDMS)[†] (C)	100/250	•	
DC-11 (C,T) (suggested substitute: SP-2100)	0/300	•	
DC-200 (500 cstks) (C,T) (suggested substitute: SP-2100)	0/200	•	
DC-200 (12,500 cstks) (C,T) (suggested substitute: SP-2100)	0/250	21095	
DC-550 [G28] (A,T) (suggested substitute: OV-7)	20/250	21096	
DC-710 (A) (suggested substitute: OV-11)	5/250	•	
DC QF-1 (FS 1265) (A) (suggested substitute: SP-2401)	0/250	21098-U	
DEGS-PS (A)	20/200	•	
Dexsil 300 carborane/methyl silicone, 5g (T)	50/450	21258	
Dexsil 400 carborane/methyl phenyl silicone (T)	50/400	•	
Dexsil 410 carborane/methyl cyanoethyl silicone (T)	50/375	•	
Dibutyl maleate, 50g (A)	0/50	21040-U	
Di-n-decyl phthalate (high purity), 25g (A)	10/175	21042-U	
Di(2-ethylhexyl)sebacate [G11], 50g (A)	0/125	21046-U	
Diethylene glycol adipate (DEGA) (A)	0/200	•	
Diethylene glycol succinate (DEGS)[G4], 25g (A)	20/200	11045	
Diglycerol, 10g (C,M)	20/100	21047-U	
Diisodecyl phthalate [G24] (A)	0/175	•	
2,4-Dimethylsulfolane, 10g (C)	0/50	21050-U	
Dinonyl phthalate, 50g (A)	20/150	21052-U	
Dioctyl sebacate, 50g (A)	0/125	21054-U	
EPON 1001 (A◆,C)	50/225	•	
Ethyl n,n-dimethyloxamate (EDO-1)	/40	•	
Ethylene glycol adipate (EGA)[G23], 25g (A)	100/225	11060	
Ethylene glycol phthalate (C)	100/200	•	
Ethylene glycol succinate (C)	100/200	•	
Ethylene glycol tetrachlophthalate (C)	120/200	•	
Fluorad FC-431, 50% solution in ethyl acetate, 50g (E)	40/200	21102-U	
Free Fatty AcidPhase (FFAP)[G25], 10g (C)	50/250	21063-U	
Hallcomid M-18-OL, 50g (C, M)	8/150	21068-U	
Halocarbon 10-25 (C)	20/100	•	
Halocarbon K-352 (F)	0/250	•	
Halocarbon wax (A)	50/150	•	
1,2,3,4,5,6-Hexakis (2 cyanoethoxycyclohexane) (C, T)	125/150	•	
Igepal CO-880 (Nonoxynol) [G31], 50g (A)	100/200	21072	
Igepal CO-990, 50g (A)	100/200	21073	
N-n-Lauryl-N-L-valine-t-butylamide (SP-300) (C)	60/140	•	
Neopentyl glycol adipate (C)	50/225	•	
Neopentyl glycol sebacate (C)	50/225	•	
Neopentyl glycol succinate [G21] (C)	50/225	•	
Nonoxynol (Igepal CO-880) [G31], 50g (A)	100/200	21072	
OV-1 (vinyl) [G9] (C, T) (suggested substitute: SP-2100)	100/350	•	
OV-1 (dimethyl, gum) [G2] 10g (C, T)	100/350	21104	
OV-3 (phenyl methyl dimethyl, 10% phenyl) (C,T)	0/350	•	
OV-7 (phenyl methyl dimethyl, 20% phenyl) [G32] (C, T)	0/350	•	
OV-11 (phenyl methyl dimethyl, 35% phenyl) (C, T)	0/350	•	
OV-17 (phenyl methyl, 50% phenyl) [G3], 25g (C, T) (suggested substitute: SP-2250)	0/375	21105	
OV-22 (phenyl methyl diphenyl, 65% phenyl) (C)	0/350	•	
OV-25 (phenyl methyl diphenyl, 75% phenyl) [G17], 10g (C)	0/350	21234	
OV-61 (diphenyl, 33% phenyl) (C ,T)	0/350	•	
OV-73 (5.5% diphenyl) (T)	0/325	•	
OV-101 (dimethyl, fluid) [G1], 20g (C) (suggested substitute: SP-2100)	0/350	21228	
OV-105 (cyanopropylmethyl) (A)	0/275	•	
OV-202 (trifluoropropyl, fluid) (C)	0/275	•	
OV-210 (trifluoropropyl, fluid) [G6], 25g (A) (suggested substitute: SP-2401)	0/275	21240-U	
OV-215 (trifluoropropyl, gum) (E)	0/275	•	
OV-225 (cyanopropylmethyl-phenylmethyl) [G19], 5g (A,C)	0/265	21241	

Packed Columns
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DESCRIPTION [USP CODE], QTY. (SOLVENT)	TEMP. (°C) MIN/MAX	CAT. NO.	PRICE
OV-275 (dicyanoallyl), 5g (A)	25/250	21278-U	
OV-330 silicone - Carbowax (A, T)	0/250	●	
OV-351 (C)(suggested substitute: SP-1000)	50/270	●	
OV-1701 (vinyl), 3g	0/250	21281-U	
β,β-Oxydipropionitrile, 50g (M)	0/75	21086	
Phenyldiethanolamine succinate [G12], 25g (C)	0/230	21087	
Polyethylene glycol adipate (EGA)[G23], 25g (A)	0/225	11060	
Polyethyleneimine, 50g (A)	0/175	21195-U	
Polyphenyl ether (5 rings) OS-124, 25g (A)	0/200	21089	
Polyphenyl ether (6 rings) OS-138, 25g (A)	0/225	21088	
Polypropylene glycol, 50g (M)	0/150	21090-U	
Polypropyleneimine (C)	0/200	●	
PPE-20 (poly-M-phenoxylene) (C)	125/375	●	
PPE-21 (C)	125/375	●	
Propylene carbonate (C)	0/50	●	
Quadrol, 50g (C)	0/150	21092	
SE-30 (methyl silicone, GC grade)[G2], 10g (C) (suggested substitute: SP-2100)	50/300	21099-U	
SE-52 (methyl silicone)[G27], 50g (C, T) (suggested substitute: OV-73)	50/300	21100-U	
SE-54 (methyl silicone: 5% phenyl, 1% vinyl silicone) [G36], 50g (C, T)	50/300	21106	
SF-96 (methyl silicone), 50g (C, T) (suggested substitute: SP-2100)	0/250	21101-U	
Silar 5 CP (C, A) (suggested substitute: SP-2300)	0/250	●	
Silar 10 CP[G5] (C, A) (suggested substitute: SP-2340)	0/250	●	
Sorbitol [G13] (M)	/150	●	
SP-216-PS (A)	25/200	●	
SP-300 (N-n-Lauroyl-N-L-valine-T-butylamide) (C)	60/140	●	
SP-301 (C)	260/290	●	
SP-400, chlorophenyl methyl silicone	0/350	●	
SP-1000[G25], (C)	50/250	●	
SP-1200, 10g (C)	25/200	21263	
SP-1220 (C)	50/200	●	
SP-1500 (C)	50/230	●	
SP-1510 (C)	50/230	●	
SP-1700 (A)	0/110	●	
SP-2100 (methyl silicone) [G1], 10g (C)	0/350	21284-U	
SP-2250 (methyl phenyl silicone, 50% phenyl) [G3], (C, T)	0/375	●	
SP-2300 (poly(cyanopropylphenyl siloxane))[G7], 5g (C, A)	20/275	21889	
SP-2310 (poly(50% biscyanopropyl / 50% cyanopropylphenyl siloxane)) (A)	25/275	●	
SP-2330(poly(80% biscyanopropyl / 20% cyanopropylphenyl siloxane)) [G8], 5g (A)	25/275	21287-U	
SP-2340 (poly(biscyanopropyl siloxane))[G5], 5g (A)	25/275	21288	
SP-2380 (poly(90% biscyanopropyl / 10% cyanopropylphenyl siloxane)) (A)	25/275	●	
SP-2401 (methyl silicone, trifluoropropyl) [G6], (A)	0/275	●	
SP-2510 (C)	50/250	●	
Squalane, 50g (C, T)	20/100	21109	
Squalene, (C, T)	0/100	●	
Sucrose acetate isobutyrate (SAIB) (C)	0/200	●	
Tetracyanoethylated pentaerythritol (C, T)	30/175	●	
Tetraethylene glycol dimethyl ether [G30] (M)	/80	●	
1,2,3,4-Tetrakis (2-cyanoethoxy)butane (C)	110/200	●	
Tetraethylenepentamine (M)	0/125	●	
Tetrahydroxyethylethylenediamine (THEED) (C)	0/125	●	
β,β'-Thiodipropionitrile (TDPN) [G29] (C)	/100	●	
Tricresyl phosphate (C,M)	20/125	●	
Tris (2-cyanoethyl) nitromethane (TCENM) (C)	20/140	●	
1,2,3-Tris (2-cyanoethoxy)propane (TCEP), 50g (M,C)	0/175	21217	
Triton X-100, 50g (A)	0/200	21123	
Triton X-305 (A)	0/200	●	
UC W982 (methyl silicone) [G9], 50g (C,T) (suggested substitute: SP-2100)	0/300	21272-U	
UCON 50-HB-280-X (C,M)	0/200	●	
UCON 50-HB-2000 (C,M)	0/200	●	
UCON 50-HB-5100 (C,M)	0/200	●	
UCON LB-550-X [G18] (C,M)	0/200	●	
UCON LB-1800-X (M)	/200	●	
Versamid 900 (M)	190/275	●	

[1] US Patent No. 3,239,997.

● Available in packed columns or as a coated packing only.

SOLVENTS	
A – acetone	C – chloroform
E – ethyl acetate	F – Freon
M – methanol	P – pyridine
T – toluene	◆ – hot solvent

Packed Columns
Supports

Graphitized Carbon Blacks (GCB)

Nonporous, nonspecific, highly inert graphitic carbon adsorbents/solid supports which separate compounds according to the size and shape of the molecule (e.g., polarizability). Addition of a liquid phase allows unique separations, based on analyte interactions with both the carbon surface and the liquid phase (i.e., gas-liquid-solid chromatography, or GLSC).

Carbopack B -USP code [S12]. Surface area: ~100m²/g.

Carbopack C -USP code [S7]. Surface area: ~ 10m²/g. Separation mechanism equivalent to that of Carbopack B, but a larger molecular size range typically is chosen.

Carbopack F -Surface area: ~ 5m²/g. Can reduce separation times by 50%, compared to Carbopack C.

Carbopack X -A unique graphitized carbon black with porosity (absent in most GCBs). The 240m²/g surface area provides greater adsorption strength, relative to other GCBs, making Carbopack X a unique bridge between GCBs and carbon molecular sieves. Density: 0.41g/mL.

Carbopack Y -Surface area: 24m²/g; density: 0.42g/mL. A bridge between Carbopack B and Carbopack C.

Carbotrap -Surface area: 100m²/g; available in 20/40 mesh. Traps many airborne C4-C8 compounds.

Carbotrap C -Surface area: 10m²/g; available in 20/40 mesh. Traps many airborne C8 and heavier compounds.

Carbon Molecular Sieves

Carbosieve S-III[1] - Primarily for purge and trap of C2 and smaller molecules. A large surface area, 820m²/g, and 15/40Å pores, excellent for trapping airborne molecules.

Carboxen-563 – Carboxen-564 – Carboxen-569Our versions of Ambersorb XE-347 and Ambersorb XE-340 adsorbents, Carboxen-563 and Carboxen-564carbon molecular sieves provide higher capacity for many volatile organics. Carboxen-569 is an exclusive material with no close equivalents. Carboxen-563 is for analyses of water or airborne compounds. Its range for airborne compounds is similar to that of Carboxen-564, but with a somewhat lower capacity. Carboxen-564 traps many C2-C5 volatile organic compounds. Carboxen-569 has the highest capacity for organic molecules and the lowest capacity for water.

Carboxen-1000 -Large surface area (>1200 m²/g) for excellent kinetics and thermodynamics, designed for analyses of permanent gases and light hydrocarbons. Carboxen-1000 GSC columns are direct replacements for Carbosieve S-II columns.

Carboxen-1001 -Surface area: 560 m²/g; packing density: 0.47g/mL; available in 60/80 mesh. Traps C1 and C2 hydrocarbons. Available only in ORBO tubes or purge traps.

Carboxen-1003 -Large surface area (~ 1000m²/g); a combination of efficient adsorption/desorption and hydrophobic surface characteristics. Density: 0.46g/mL; porosity: macropores – 0.28cc/g, mesopores – 0.26c micropores – 0.38cc/g.

Carboxen-1004 -Improved sieving characteristics for analyses of permanent gases and light hydrocarbons. Available in 80/100 mesh size for micropacked columns.

Supelcarb -A high-capacity sieve, capable of trapping a broad range of organic compounds. Specifically prepared for split vent trap and carrier gas purification applications. Trapping capacity is much higher than that of activated charcoal – by a factor of two for lighter hydrocarbons. Allows less gas channeling in a packed bed than activated charcoal particles.

[1] Patented. See Legally Speaking in the index.
[2] Supelco US Patent No. 4,839,331.

Polymers

Chromosorb 101 -USP code [S2]. Surface area: <50m²/g; packing density: 0.30g/mL. For free fatty acids, glycols, alcohols, alkanes, esters, ketones, hydrocarbons, ethers.

Chromosorb 102 -USP code [S6]. Surface area: 350m²/g; packing density: 0.29g/mL. For alcohols, light and permanent gases, oxygenated compounds, or as an adsorbent to trap organics in air or water.

Chromosorb 103 -Surface area: 350m²/g; packing density: 0.32g/mL. For basic compounds such as alcohols, amides, amines, arsines, hydrazines, ketones, NH_3, phosphines, or as an adsorbent to trap acidic compounds in air.

Chromosorb 104 -Surface area: 100-200m²/g; packing density: 0.32g/mL. For polar compounds.

Chromosorb 105 -Surface area: 600-700m²/g; packing density: 0.34g/mL. For formaldehyde, various classes of organic compounds (boiling point approx. 200°C), to separate acetylene from other small hydrocarbons, or as an adsorbent for trapping organics in air or water.

Chromosorb 106 -Surface area: 700-800m²/g; packing density: 0.28g/mL. For gases, C2-C5 alcohols, low boiling compounds; an adsorbent for organics in air or water.

Chromosorb 107 – Chromosorb 108 -Supply limited; available in columns only until supply runs out.

HayeSep A -Separates permanent gases at ambient temperatures. Use at higher temperatures to analyze C2 hydrocarbons, hydrogen sulfide, and water.

HayeSep B -Separates C1 and C2 amines and trace levels of ammonia and water.

HayeSep C -USP code [S10]. For analyses of polar molecules. Separation characteristics similar to Chromosorb 104.

HayeSep D and DB -Superior separation characteristics for light gases, carbon monoxide, carbon dioxide, and acetylene (elutes before other C2 hydrocarbons). Use D for analyses of water and hydrogen sulfide.

HayeSep Q -USP code [S3].

HayeSep R -USP code [S4].

HayeSep S -USP code [S8].

HayeSep N-P-T -Also available.

Tenax TA - Use for analyses of high boiling alcohols, polyethylene glycols, diols, phenols, mono- and diamines, ethanolamines, aldehydes, ketones, chlorinated aromatics. Widely mentioned in US EPA and NIOSH methods. A replacement for Tenax GC. Tenax GR (30% graphitzed carbon in Tenax) is still available – please inquire.

Porapak

Polarity increases from Porapak P through Porapak T.

Porapak Packing	Surface Area (m^2/g)	Packing Density (g/mL)
P	100-200	0.27
PS[3]	100-200	0.27
Q	500-600	0.34
QS[4]	500-600	0.34
R	450-600	0.30
S	300-450	0.35
N	225-350	0.38
T	250-350	0.43

[3] Silanized version of Porapak P.
[4] Silanized version of Porapak Q.

Chromosorb T (Teflon) - USP code [S5]. Popular for analyses of small polar molecules such as water, acids, amines, alcohols, and corrosives such as HF, HCl, and chlorosilanes. Difficult to pack. Upper temperature limit: 250°C.

Silica

Chromosil 310 and Chromosil 330 packings are specially tested for specific sulfur applications (e.g. COS, H_2S, CS_2 and SO_2), and are available only in prepared columns. For more information about these columns, request Bulletin 722.

Davison Silica Grade 12 - Surface area: 750 m²/g; pore volume: 0.45cc/g; pore diameter: 22Å. Used for collecting or separating light volatile compounds; often used for analyses of CO_2. High affinity for water.

Diatomites

Chromosorb G - For analyses of polar compounds. Maximum phase loading: ~ 5% by weight (equivalent to a Chromosorb W loading of ~ 12.5% because of higher density). Available only as a custom product.

Chromosorb P - USP code [S1C]. Particularly well suited for nonpolar compounds, must be deactivated for use with polar compounds. Can support high phase loadings, up to 35% by weight in some cases.

Chromosorb W - USP code [S1A]. Suitable for use with polar compounds, due to its low surface area and high inertness. Frag

Chromosorb 750 - Developed for pesticide and biological applications. Available only as a custom product.

SUPELCOPORT - USP code [S1A]. The most inert diatomite support available. Acid washed to remove mineral impurities, then DMDCS treated. Density and particle size distribution are tightly controlled to assure batch-to-batch reproducibility. Each lot is tested to conform to US EPA Method 608 for organochlorine pesticides and PCBs.

Activated Alumina F-1

Extremely wide pore diameter range, 0-100,000Å, very useful for separating saturated light (C1-C5) hydrocarbons from unsaturates. Also very useful for air monitoring. Often used as a drying medium. Available only as a custom product.

Zeolite Molecular Sieves

Molecular Sieve 5A and Molecular Sieve 13X are commonly used for separations of H_2, O_2, N_2, CH_4, and CO, argon, neon, and other rare gases. Also used as trapping materials, in particular, for removing water vapor from gas streams. When three-foot columns of the molecular sieves are compared, elution of H_2, O_2, N_2, and CH_4, is approximately equal, but elution of CO takes twice as long on Molecular Sieve 5A.

Support Treatments

AW	acid washed
AW-DMDCS	silane treated, acid washed
BW	base washed (only available on SUPELCOPORT)
DA	deactivated for acidic compounds
DB	deactivated for basic compounds
HT	hydrogen-treated
NAW	nonacid washed

Diatomite Supports

DESCRIPTION [USP CODE] MESH SIZE	SURFACE AREA (m^2/g)	PACKING DENSITY (g/mL)	CAT. NO.	PRICE
CHROMOSORB P NAW, 100g				
60/80	4-6	0.32-0.38	20193	
80/100			20194-U	
100/120			20103	
CHROMOSORB P AW [S1C], 100g				
60/80	4-6	0.32-0.38	20198-U	
80/100			20203-U	
100/120			20110	
CHROMOSORB P AW-DMDCS [S1C] 100g				
60/80	4-6	0.32-0.38	20206	
80/100			20207	
100/120			20117	
CHROMOSORB W HP [S1A], 100g				
60/80	0.6-1.3	0.23	20152	
80/100			20153	
100/120			20159-U	
CHROMOSORB W AW, 100g				
60/80	1.0-3.5	0.21-0.27	20123	
80/100			20124	
100/120			20126	

Available Mesh Sizes

SUPPORT	MESH SIZE
Carbopack B	60/80, 80/100, 80/120
Carbopack B HT	40/60, 60/80
Carbopack C	60/80, 80/100
Carbopack C HT	60/80, 80/100
Alumina F-1	60/80, 80/100, 100/120
Anachrom	80/100, 100/120
Celite 545 (AW)	filter aid, fine mesh
Chromosorb 101-108 [1]	60/80, 80/100, 100/120
Chromosorb 750	60/80, 80/100, 100/120
Chromosorb W HP	60/80, 80/100, 100/120
Chromosorb G HP	80/100, 100/120
Chromosorb G, P, or W (AW or NAW)	45/60, 60/80, 80/100, 100/120
Chromosorb G, P, or W (AW-DMDCS)	60/80, 80/100, 100/120
Chromosorb T [2]	30/60, 40/60
Glass beads	60/80
HayeSep	60/80, 80/100, 100/120
Mol Sieve 5A	60/80, 80/100, 100/120
Mol Sieve 13X	60/80, 80/100, 100/120
Porapak	50/80, 80/100, 100/120
Silica gel	60/80, 80/100, 100/120
SUPELCOPORT	60/80, 80/100, 100/120
SUPELCOPORT BW	60/80, 80/100, 100/120

[1] Chromosorb 104 is not available in 80/100 mesh.

[2] Suggested substitute: Haloport F

HELPFUL HINTS

Catalog numbers for supports can be found in the Stock Packings section of this catalog.

Packed Columns
Stock Packings

Stock Packings for GC Columns

PACKING DESCRIPTION		USE	MIN./MAX. TEMP. (°C)	QTY.	CAT. NO.	PRICE
APIEZON						
10% Apiezon L/2% KOH on 80/100 Chromosorb W AW		amines	50/225	20g	11893	
CARBOPACK B						
Carbopack B, 60/80		light hydrocarbons	>500	10g	20273	
Carbopack B HT[1], 60/80			/225	10g	20274	
4% CARBOWAX 20M/0.8% KOH/60/80 Carbopack B		amines	/220	15g	11887	
5% CARBOWAX 20M/GP 60/80 Carbopack B		blood alcohols	/225	15g	11766	
4% CARBOWAX 20M /80/120 Carbopack B-DA[2]		C2-C5 acids	/200	15g	11889	
5% CARBOWAX 20M/80/120 Carbopack B AW		alcoholic beverages	/225	15g	11812-U	
6.6% CARBOWAX 20M/80/120 Carbopack B AW		alcoholic beverages	/225	15g	11814	
2.5% Oronite NIW/60/80 Carbopack B		alcohols, esters, ketones, general	/200	15g	11800-U	
1% SP-1000/60/80 Carbopack B		halogenated organics	/225	15g	11815	
3% SP-1500/80/120 Carbopack B		industrial solvents	/230	15g	11813-U	
1% SP-1510/60/80 Carbopack B		industrial solvents	/230	15g	11809	
CARBOPACK C						
Carbopack C	60/80	light hydrocarbons	>500	10g	10257	
	80/100	light hydrocarbons	>500	10g	10258	
0.2% CARBOWAX 1500/60/80 Carbopack C		alcohols, esters, ketones, general	/175	15g	11826	
0.2% CARBOWAX 1500/80/100 Carbopack C		alcohols, esters, ketones, general	/175	15g	11827	
0.3% CARBOWAX 20M/0.1% H_3PO_4/60/80 Carbopack C		C2-C5 acids	/200	15g	11825-U	
0.1% SP-1000/80/100 Carbopack C		phenols	/225	15g	11820	
0.8% THEED/80/100 Carbopack C		ethylene oxide (EtO) residues, glycols	/115	15g	11880-U	
CARBOPACK X						
Carbopack X	40/60	light hydrocarbons	>500	10g	10436	
	60/80			10g	10437-U	
	120/400			50g	10439-U	
CARBOPACK Y						
Carbopack Y	40/60	light hydrocarbons	>500	10g	10461-U	
	60/80			10g	10462	
	120/400			50g	10464-U	
CARBOSIEVE						
Carbosieve[3] G	45/60	permanent gases,	/200	5g	10197	
	60/80	C2-C3		5g	10198	
	80/100	hydrocarbons		5g	10199	
Carbosieve S-II	60/80	permanent gases,		10g	10189	
	80/100	C2-C3 hydrocarbons,		10g	10190-U	
Carbosieve S-III	60/80			10g	10184	
CARBOTRAP						
Carbotrap	20/40	air monitoring	/350	10g	20287	
Carbotrap C	20/40			10g	20309	
Carbotrap X	20/40			10g	10435-U	
Carbotrap Y	20/40			10g	10460-U	
CARBOXEN						
Carboxen-563	20/45	permanent gases		10g	10263	
Carboxen-564	20/45	permanent gases		10g	10264	
Carboxen-569	20/45	permanent gases		10g	10269	
Carboxen-1000	45/60	permanent gases,	/225	50g	10477-U	
	60/80	C2-C3 hydrocarbons		10g	10478-U	
Carboxen-1003	40/60	permanent gases	/225	10g	10471	
CARBOWAX 20M						
3% CARBOWAX 20M on 100/120 SUPELCOPORT		general	60/225	20g	11792	
3% CARBOWAX 20M on 80/100 Chromosorb 101		ethylene oxide (EtO) & residues	60/220	20g	11780-U	
5% CARBOWAX 20M on 40/60 Chromosorb T		general	60/225	50g	11993	
5% CARBOWAX 20M on 100/120 SUPELCOPORT		general	60/225	20g	11793-U	
10% CARBOWAX 400 on 80/100 SUPELCOPORT		general	10/100	20g	11808	

Packed Columns
Stock Packings

PACKING DESCRIPTION		USE	MIN./MAX. TEMP. (°C)	QTY.	CAT. NO.	PRICE
CARBOWAX 20M (CONT'D)						
10% CARBOWAX 20M on 80/100 Chromosorb W AW		general	60/225	20g	11994	
10% CARBOWAX 20M/2% KOH on 80/100 Chromosorb W AW		amines	60/225	20g	11805	
10% CARBOWAX 20M/TPA on 80/100 Chromosorb W AW		acids	60/225	20g	11874	
10% CARBOWAX 20M on 80/100 SUPELCOPORT		general	60/225	20g	11810	
10% CARBOWAX 20M on 100/120 SUPELCOPORT		general	60/225	20g	11794-U	
15% CARBOWAX 20M on 80/100 SUPELCOPORT		general	60/225	20g	11796	
20% CARBOWAX 20M on 80/100 SUPELCOPORT		sulfur gases, light hydrocarbons	60/225	20g	11795-U	
DC PHASES						
10% DC-200 on 100/120 SUPELCOPORT		pesticides	0/250	20g	11964	
DEGS						
5% DEGS-PS on 100/120 SUPELCOPORT		C14-C20 fatty acids	20/200	20g	11870-U	
10% DEGS on 80/100 Chromosorb W AW		fatty acid esters	20/200	20g	11903	
GP 10% DEGS-PS on 80/100 SUPELCOPORT		fatty acid esters	20/200	20g	11999	
15% DEGS on 80/100 Chromosorb W AW		fatty acid esters	20/200	20g	11904	
DEXSIL						
3% Dexsil 300 on 80/100 Chromosorb W AW		general	50/450	20g	11995	
3% Dexsil 300 on 100/120 SUPELCOPORT		general	50/450	20g	11973	
MOLECULAR SIEVE						
Molecular Sieve 5A	30/40	permanent gases	/400	50g	20300	
	45/60			50g	20301	
	60/80			50g	20302	
Molecular Sieve 13X	45/60	permanent gases	/400	50g	20304	
	60/80			50g	20305	
	100/120			50g	20307	
OV PHASES						
3% OV-1 on 80/100 SUPELCOPORT		general	100/350	20g	11951	
3% OV-1 on 100/120 SUPELCOPORT		general	100/350	20g	11750-U	
3% OV-7 on 100/120 SUPELCOPORT		general	0/350	20g	11788-U	
3% OV-17 on 80/100 SUPELCOPORT		general	0/350	20g	11953	
3% OV-17 on 100/120 SUPELCOPORT			0/350	20g	11754	
3% OV-17 on 80/100 Chromosorb W HP			0/350	20g	12099	
3% OV-101 on 80/100 SUPELCOPORT			0/350	20g	11752	
10% OV-101 on 80/100 SUPELCOPORT			0/350	20g	11753	
3% OV-210 on 80/100 SUPELCOPORT		general	0/275	20g	11956	
3% OV-225 on 80/100 SUPELCOPORT		general	0/265	20g	11957-U	
3% OV-225 on 100/120 SUPELCOPORT		general	0/265	20g	11992	
15% OV-275 on 100/120 Chromosorb P AW-DMDCS		cis/trans FAMEs	0/250	20g	11844-U	
POROUS POLYMERS: CHROMOSORB CENTURY SERIES						
Chromosorb 101	60/80	general	/250	50g	20213	
	80/100				20214	
	100/120				20215	
Chromosorb 102	60/80	general	/250	50g	20200-U	
	80/100				20201	
	100/120				20202	
Chromosorb 103	60/80	polar compounds	/250	50g	20216	
	80/100				20217	
	100/120				20218	
Chromosorb 105	60/80	formaldehyde, acetylene	/250	50g	20222	
	80/100				20223	

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[4] DB – Deactivated for basic compounds.

[5] Porapak PS and QS are silanized versions of Porapak P and Q, treated to reduce surface adsoprtion.

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Packed Columns

Stock Packings

PACKING DESCRIPTION		USE	MIN./MAX. TEMP. (°C)	QTY.	CAT. NO.	PRIC
POROUS POLYMERS: CHROMOSORB CENTURY SERIES (CONT'D)						
Chromosorb 106	60/80	C2-C3 gases, alcohols	/250	50g	20225	
	80/100				20226	
	100/120				20227	
Chromosorb 107	80/100		/250	50g	20233	
Chromosorb 108	60/80		/250	50g	20131	
	80/100				20132	
	100/120				20133	
POROUS POLYMERS: HAYESEP SERIES						
HayeSep A	60/80	permanent gases	/165	75cc	10282	
	80/100				10283	
	100/120				10284	
HayeSep B	60/80	C1-C2 amines,	/190	75cc	10285	
	80/100	ammonia in water			10286	
HayeSep C	60/80	polar compounds	/250	75cc	10288	
	80/100				10289	
	100/120				10290	
HayeSep D	60/80	light gases,	/290	75cc	10291	
	80/100	CO, CO_2			10292	
	100/120				10293	
HayeSep DB[3]	80/100	light gases, CO, CO_2	/290	75cc	10280-U	
	100/120				10281-U	
HayeSep N	60/80	acetylene,	/165	75cc	10294	
	80/100	ethylene			10295	
	100/120				10296	
HayeSep P	60/80	ammonia,	/250	75cc	10297	
	80/100	alcohols in water			10298	
HayeSep Q	60/80	hydrocarbons,	/275	75cc	10300-U	
	80/100	sulfur gases,			10301-U	
	100/120	general			10302-U	
HayeSep R	60/80	light hydrocarbons,	/250	75cc	10303	
	80/100	chlorinated			10304	
	100/120	compounds			10305-U	
HayeSep S	60/80	C2-C3 hydrocarbons	/250	75cc	10306	
	80/100	polar compounds			10307	
HayeSep T	60/80	light hydrocarbons	/165	75cc	10309	
	80/100	formaldhyde			10310	
	100/120				10311	
POROUS POLYMERS: PORAPAK SERIES						
Porapak N	50/80	ammonia,	/190	75cc	20324	
	80/100	acetylene,			20325	
	100/120	C2 hydrocarbons			20326	
Porapak P	50/80	carbonyl compounds	/250	75cc	20327	
	80/100				20328	
	100/120				20329	
Porapak PS[3]	50/80		/250	75cc	20345	
	80/100				20346	
	100/120				20347	
Porapak Q	50/80	aliphatic	/250	75cc	20330-U	
	80/100	hydrocarbons,			20331	
	100/120	general			20332	
Porapak QS[3]	50/80	organic acids,	/250	75cc	20342	
	80/100	other polar			20343	
	100/120	compounds			20344	
Porapak R	50/80	moderately	/250	75cc	20333	
	80/100	polar ethers			20334	
	100/120				20335	
Porapak S	50/80	alcohols	/250	75cc	20336	
	80/100	(normal & branched)			20337	
	100/120				20338	
Porapak T	50/80	formaldehyde, other	/190	75cc	20339	
	80/100	polar compounds			20340	

Packed Columns
Stock Packings

PACKING DESCRIPTION	USE	MIN./MAX. TEMP. (°C)	QTY.	CAT. NO.	PRICE
SE-30					
3% SE-30 on 80/100 Chromosorb W HP	general	50/300	20g	12097-U	
GP 4% SE-30/6% SP-2401 on 100/120 SUPELCOPORT	pesticides	100/250	20g	11948	
5% SE-30 on 80/100 SUPELCOPORT	general	50/300	20g	11784	
10% SE-30 on 80/100 SUPELCOPORT	general	50/300	20g	11785-U	
SILICA GEL					
Silica Gel (Davison Grade 12), 60/80	hydrocarbons, CO, CO_2, sulfur gases		100g	20290-U	
SP PHASES					
10% SP-1000 on 80/100 SUPELCOPORT	general	50/250	20g	11872	
10% SP-1000/1% H_3PO_4 on 100/120 Chromosorb W AW	anaerobic fermentation	/200	20g	11841	
5% SP-1200/1.75% Bentone 34 on 100/120 SUPELCOPORT	xylenes	25/175	20g	12134	
10% SP-1200/1% H_3PO_4 on 80/100 Chromosorb W AW	C2-C5 volatile fatty acids	25/200	20g	11965	
15% SP-1220/1% H_3PO_4 on 100/120 Chromosorb W AW	volatile fatty acids	/200	20g	12144	
1% SP-1240-DA[2] on 100/120 SUPELCOPORT	phenols	70/180	20g	11832	
23% SP-1700 on 80/100 Chromosorb P AW	C1-C6 hydrocarbons	0/110	25g	11865	
3% SP-2100 on 80/100 SUPELCOPORT	steroids	0/350	20g	11987	
3% SP-2100 on 100/120 SUPELCOPORT	steroids	0/350	20g	12138	
5% SP-2100 on 100/120 SUPELCOPORT	general	0/350	20g	11782-U	
10% SP-2100 on 80/100 SUPELCOPORT	hydrocarbons	0/350	20g	12140	
GP 10% SP-2100 on100/120 SUPELCOPORT	phenols	0/350	20g	11989	
GP 20% SP-2100/0.1% Carbowax 1500 on 100/120 SUPELCOPORT	solvents	0/175	20g	11821	
3% SP-2250 on 80/100 SUPELCOPORT	general	0/350	20g	11980	
3% SP-2250 on 100/120 SUPELCOPORT	bile acid methyl esters	0/350	20g	11878	
10% SP-2250 on 100/120 SUPELCOPORT	general	0/350	20g	12132	
GP 1.5% SP-2250/1.95% SP-2401 on 100/120 SUPELCOPORT	pesticides	0/250	20g	11947	
GP 3% SP-2310/2% SP-2300 on 100/120 Chromosorb W AW	rapeseed FAMEs	25/275	20g	11833	
10% SP-2330 on 100/120 SUPELCOPORT	general	0/275	20g	11858	
GP10% SP-2330 on 100/120 Chromosorb W AW	fatty acid esters	0/275	20g	11851	
3% SP-2340 on 100/120 SUPELCOPORT	carbohydrates	0/275	20g	11863	
10% SP-2340 on 100/120 Chromosorb W AW	general	0/275	20g	11852	
3% SP-2401 on 100/120 SUPELCOPORT	steroids	0/275	20g	11978	
TENAX					
Tenax TA, 60/80	high boiling compounds	/350	10g	11982	
80/100	amines, alcohols	/350	10g	21009-U	
TCEP					
GP 10% 1,2,3-Tris(2-cyanoethoxy)propane (TCEP) on 80/100 Chromosorb P AW	oxygenates, hydrocarbons, aromatics	0/175	20g	12122	
20% 1,2,3-Tris(2-cyanoethoxy)propane (TCEP) on 80/100 Chromosorb P AW	aromatics, oxygenates in gasoline	0/175	20g	11779	

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