Supelco Columns for USP Methods

The official pharmaceutical analysis monographs in the United States Pharmacopeia (USP) detail the methods used by pharmaceutical manufacturers for quality control of bulk drug substances and dosage form preparations. Each method specifies a particular gas chromatography (GC) or high pressure liquid chromatography (HPLC) column or column type and the conditions under which the analysis is performed. This poster lists the USP Codes for the phases and supports used in these methods, descriptions of the columns, and information about the Supelco products that conform to these descriptions.

HPLC PACKINGS

USP CODE	DESCRIPTION	RECOMMENDED SUPELCO PACKING ▲
L1	Octadecyl silane chemically bonded to porous silica or ceramic microparticles, 3 to 10 µm in diameter.	**Ascentis™ C18** **Discovery® C18** **Discovery HS C18** **Discovery BIO Wide Pore C18** **SUPELCOSIL™ LC-18** **SUPELCOSIL LC-18-DB** **SUPELCOSIL LC-318**
L3	Porous silica particles, 5 to 10 µm in diameter.	**SUPELCOSIL LC-Si** **SUPELCOSIL LC-3Si**
L7	Octylsilane chemically bonded to totally porous silica particles, 3 to 10 µm in diameter.	**Discovery C8** **Discovery BIO Wide Pore C8** **SUPELCOSIL LC-8** **SUPELCOSIL LC-8-DB** **SUPELCOSIL LC-308**
L8	An essentially monomolecular layer of aminopropylsilane chemically bonded to totally porous silica gel support, 10 µm in diameter.	**SUPELCOSIL LC-NH_2** **SUPELCOSIL LC-NH_2-NP**
L9	10 µm irregular or spherical, totally porous silica gel having a chemically bonded, strongly acidic cation-exchange coating.	**SUPELCOSIL LC-SCX**
L10	Nitrile groups chemically bonded to porous silica particles, 3 to 10 µm in diameter.	**Discovery Cyano** **SUPELCOSIL LC-CN** **SUPELCOSIL LC-PCN**
L11	Phenyl groups chemically bonded to porous silica particles, 5 to 10 µm in diameter.	**SUPELCOSIL LC-DP** **SUPELCOSIL LC-3DP**
L13	Trimethylsilane chemically bonded to porous silica particles, 3 to 10 µm in diameter.	**SUPELCOSIL LC-1**
L14	Silica gel 10 µm in diameter having a chemically bonded, strongly basic quaternary ammonium anion-exchange coating.	**SUPELCOSIL SAX1**
L17	Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the hydrogen form, 7 to 11 µm in diameter.	**SUPELCOGEL™ H** **SUPELCOGEL C-610H**
L19	Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinyl benzene copolymer in the calcium form, about 9 µm in diameter.	**SUPELCOGEL Ca**
L26	Butyl silane chemically bonded to totally porous silica particles, 5 to 10 µm in diameter.	**SUPELCOSIL LC-304**
L27	Porous silica particles, 30 to 50 µm in diameter.	**Discovery DSC-Si** **Supelclean™ LC-Si** **Pelliguard™ LC-Si**
L34	Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the lead form, about 9 µm in diameter.	**SUPELCOGEL Pb**
L43	Pentafluorophenyl groups chemically bonded to silica particles by a propyl spacer, 5 to 10 µm in diameter.	**Discovery HS F5**
L49	A reversed-phase packing made by coating a thin layer of polybutadiene onto spherical porous zirconia particles, 3 to 10 µm in diameter.	**Discovery Zr-PBD**
L52	A strong cation exchange resin made of porous silica with sulfopropyl groups, 5 to 10 µm in diameter.	**SUPELCOSIL LC-SCX**
L60	Spherical, porous silica gel, 3 or 5 µm in diameter, the surface of which has been covalently modified with palmit amidopropyl groups and endcapped.	**Ascentis RP-Amide** **Discovery RP-Amide C16** **SUPELCOSIL ABZ+Plus** **SUPELCOSIL LC-ABZ**

GC SUPPORTS ▼

USP CODE	DESCRIPTION	RECOMMENDED SUPELCO SUPPORT ▲
S1A	Siliceous earth for gas chromatography has been flux-calcined by mixing diatomite with Na_2CO_3 flux and calcining above 900 °C. The siliceous earth is acid-washed, then water-washed until neutral, but not base-washed. The siliceous earth may be silanized by treating with an agent such as dimethyldichlorosilane to mask surface silanol groups.	**Chromosorb® W AW** **Chromosorb W HP** **SUPELCOPORT™**
S1AB	The siliceous earth as described above is both acid- and base-washed.	**SUPELCOPORT BW**
S1C	A support prepared from crushed firebrick and calcined or burned with a clay binder above 900 °C with subsequent acid-wash. It may be silanized.	**Chromosorb P AW** **Chromosorb P AW-DMCS**
S1NS	The siliceous earth is untreated.	**Chromosorb W-NAW**
S2	Styrene-divinylbenzene copolymer having a nominal surface area of less than 50 m^2 per g and an average pore diameter of 0.3 to 0.4 µm.	**Chromosorb 101**
S3	Copolymer of ethylvinylbenzene and divinylbenzene having a nominal surface area of 500 to 600 m^2 per g and an average pore diameter of 0.0075 µm.	**HayeSep® Q** **Porapak™ Q** **Super Q**
S4	Styrene-divinylbenzene copolymer with aromatic –O and –N groups, having a nominal surface area of 400 to 600 m^2 per g and an average pore diameter of 0.0076 µm.	**HayeSep R** **Porapak R**
S5	40- to 60-mesh, high molecular weight tetrafluorethylene polymer.	**Chromosorb T**
S6	Styrene-divinylbenzene copolymer having a nominal surface area of 250 to 350 m^2 per g and an average pore diameter of 0.0091 µm.	**Chromosorb 102** **HayeSep P** **Porapak P**
S7	Graphitized carbon having a nominal surface area of 12 m^2 per g.	**Carbopack™ C**
S8	Copolymer of 4-vinyl-pyridine and styrene-divinylbenzene.	**HayeSep S** **Porapak S**
S9	A porous polymer based on 2,6-diphenyl-*p*-phenylene oxide.	**Tenax® TA**
S10	A highly polar cross-linked copolymer of acrylonitrile and divinylbenzene.	**HayeSep C**
S11	Graphitized carbon having a nominal surface area of 100 m^2 per g modified with small amounts of petrolatum and polyethylene glycol compound.	**3% SP-1500 on 80/120 Carbopack B**
S12	Graphitized carbon having a nominal surface area of 100 m^2 per g.	**Carbopack B**

GC PHASES

USP CODE	DESCRIPTION	RECOMMENDED SUPELCO PHASE ▲
G1	Dimethylpolysiloxane oil.	**SP-2100, OV®-101, SE-30, Equity™-1 (capillary), SPB™-1 (capillary), MDN-1 (capillary)**
G2	Dimethylpolysiloxane gum.	**SP™-2100, OV-1, SE-30, Equity-1 (capillary), SPB-1 (capillary), MDN-1 (capillary)**
G3	50% Phenyl-50% methylpolysiloxane.	**SP-2250, OV-17, SPB-50 (capillary), SP-2250 (capillary), SPB-17 (capillary)**
G4	Diethylene glycol succinate polyester.	**Diethylene glycol succinate (DEGS)**
G5	3-Cyanopropylpolysiloxane.	**SP-2340, Silar 10 CP, SP-2340 (capillary), SP-2560 (capillary)**
G6	Trifluoropropylmethylpolysiloxane.	**SP-2401, OV-210**
G7	50% 3-Cyanopropyl-50% phenylmethylsilicone.	**SP-2300, Silar 5 CP, SPB-225 (capillary)**
G8	80% Bis(3-cyanopropyl)-20% 3-cyanoproplyphenyl-polysiloxane (percentages refer to molar substitution).	**SP-2330, SP-2330 (capillary)**
G9	Methylvinylpolysiloxane.	**OV-1, UC W982, Equity-1 (capillary), SPB-1 (capillary), MDN-1 (capillary)**
G11	Bis(2-ethylhexyl)sebacate polyester.	**Di(2-ethylhexyl)sebacate**
G12	Phenyldiethanolamine succinate polyester.	**Phenyldiethanolamine succinate**
G13	Sorbitol.	**Sorbitol**
G14	Polyethylene glycol (av. mol. wt. of 950 to 1050).	**Carbowax® 1000**
G15	Polyethylene glycol (av. mol. wt. of 3000 to 3700).	**Carbowax 4000**
G16	Polyethylene glycol compound (av. mol. wt. about 15,000). A high molecular weight compound of polyethylene glycol with a diepoxide linker. Available commercially as Polyethylene Glycol Compound 20M, or as Carbowax 20M, from suppliers of chromatographic reagents.	**Carbowax 20M, Omegawax™ (capillary), SUPELCOWAX™ 10 (capillary)**
G17	75% Phenyl-25% methylpolysiloxane.	**OV-25**
G18	Polyalkylene glycol.	**UCON® LB-550-X, UCON LB-1800-X, PAG (capillary)**
G19	25% Phenyl-25% cyanopropyl-50% methylsilicone.	**OV-225, SPB-225 (capillary)**
G20	Polyethylene glycol (av. mol. wt. of 380 to 420).	**Carbowax 400**
G21	Neopentyl glycol succinate.	**Neopentyl glycol succinate**
G22	Bis(2-ethylhexyl) phthalate.	**Bis(2-ethylhexyl)phthalate**
G23	Polyethylene glycol adipate.	**Ethylene glycol adipate (EGA), Polyethylene glycol adipate (EGA)**
G24	Diisodecyl phthalate.	**Diisodecyl phthalate**
G25	Polyethylene glycol compound TPA. A high molecular weight compound of a polyethylene glycol and a diepoxide that is esterified with terephthalic acid. Available commercially as Carbowax 20M-TPA from suppliers of chromatographic reagents.	**Carbowax 20M-terephthalic acid, Carbowax 20M-TPA, SP-1000, Free Fatty Acid Phase (FFAP), SPB-1000 (capillary), Nukol™ (capillary)**
G27	5% Phenyl-95% methylpolysiloxane.	**SE-52, Equity-5 (capillary), PTE™-5 (capillary), SPB-5 (capillary), MDN-5 (capillary)**
G28	25% Phenyl-75% methylpolysiloxane.	

GC PHASES (cont.d)

USP CODE	DESCRIPTION	RECOMMENDED SUPELCO PHASE ▲
G29	3,3′-Thiodipropionitrile.	**β,β′-Thiodipropionitrile (TDPN)**
G30	Tetraethylene glycol dimethyl ether.	**Tetraethylene glycol dimethyl ether**
G31	Nonylphenoxypoly(ethyleneoxy)ethanol (av. ethyleneoxy chain length is 30); Nonoxynol 30.	**Igepal® CO-880 (Nonoxynol)**
G32	20% Phenylmethyl-80% dimethylpolysiloxane.	**OV-7, SPB-20 (capillary)**
G33	20% Carborane-80% methylsilicone.	**Dexsil® 300**
G34	Diethylene glycol succinate polyester stabilized with phosphoric acid.	**DEGS-PS**
G35	A high molecular weight compound of polyethylene glycol and a diepoxide that is esterified with nitroterephthalic acid.	**Carbowax 20M-terephthalic acid, Carbowax 20M-TPA, SP-1000, Free Fatty Acid Phase (FFAP), SPB-1000 (capillary), Nukol (capillary)**
G36	1% Vinyl-5% phenylmethylpolysiloxane.	**SE-54, Equity-5 (capillary), PTE-5 (capillary), SPB-5 (capillary), SE-54 (capillary), MDN-5 (capillary)**
G37	Polyimide.	**Poly-I 110**
G38	Phase G1 containing a small percentage of a tailing inhibitor.	**SP-2100 + 0.1% Carbowax 1500, SP-2100 + 0.2% Carbowax 1500**
G40	Ethylene glycol adipate.	**Ethylene glycol adipate (EGA)**
G41	Phenylmethyldimethylsiloxane (10% phenyl-substituted).	**OV-3**
G42	35% Phenyl-65% dimethylpolysiloxane (percentages refer to molar substitution).	**OV-11, SPB-35 (capillary)**
G43	6% cyanopropylphenyl-94% dimethylpolysiloxane (percentages refer to molar substitution).	**OV-1301, SPB-624 (capillary), OVI-G43 (capillary)**
G44	2% low molecular weight petrolatum hydrocarbon grease and 1% solution of potassium hydroxide.	**Apiezon® L + 1% KOH**
G45	Divinylbenzene-ethylene glycol-dimethylacrylate.	**HayeSep A, HayeSep N, Porapak N**
G46	14% Cyanopropylphenyl-86% methylpolysiloxane.	**OV-1701, Equity-1701 (capillary), SPB-1701 (capillary)**
G47	Polyethylene glycol (av. mol. wt. of about 8000).	**Carbowax 8000**
G48	Highly polar, partially cross-linked cyanopolysiloxane.	**SP-2380, SP-2380 (capillary)**

Supelco's Molecular sieve 5A GC material meets USP/NF criteria for analysis of nitrogen purity: "…a molecular sieve prepared from a synthetic alkali-metal aluminosilicate capable of absorbing molecules having diameters of up to 0.5 nm, which permit complete separation of oxygen from nitrogen."

Contact our Technical Service Department for expert answers to your questions.

telephone: 800-359-3041 or 814-359-3041
fax: 800-359-3044 or 814-359-5468
e-mail: techservice@sial.com

Footnotes

▲ Indicates availability of material(s) matching the description. Supelco is not necessarily the manufacturer of the material.

▼ Unless otherwise specified, mesh sizes of 80 to 100 or alternatively, 100 to 120 are intended.

Reference

United States Pharmacopeia 27, National Formulary 22, First Supplement (August 1, 2004). Request from United States Pharmacopeial Convention, Inc., 12601 Twinbrook Parkway, Rockville, MD USA 20852 (tel. 800-227-8772).

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