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1. ALKYLPHENOL ETHOXYLATES

Alkylphenol ethoxylates, in particular nonylphenol and octylphenol ethoxylates, are widely used as non-ionic surfactants.

Alkylphenol ethoxylates are suspected endocrine disruptors. Nonyl phenol ethoxylates are banned in many countries and are on the second Priority Substance List (PSL2) of the Canadian Environmental Protection Act.

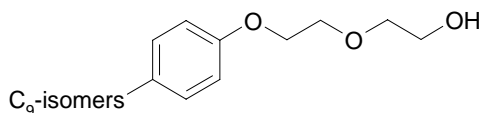
Low molecular weight alkylphenol ethoxylates are analyzed by GC-MS, and high molecular weight alkylphenol ethoxylates can be analyzed by HPLC techniques.

Chiron offers a unique and broad range of single isomer of octyl- and nonylphenol ethoxylates as solution standards. These solutions can be used as calibration standards for GC-MS analysis of waste water and waste water sludges. In addition Chiron offers neat material in mg to g scale for exposure and toxicological studies.

Custom synthesis and custom manufactured solutions are available on request.

Alkylphenol ethoxylates

4-Nonylphenol isomer mix	1 mg/mL in isooctane	2044,15
4-Nonylphenol EO isomer mix	1 mg/mL in isooctane	1833,17
4-Nonylphenol 2EO isomer mix	1 mg/mL in isooctane	1832,19
4-Nonylphenol 3EO isomer mix	1 mg/mL in isooctane	1976,21
4-Nonylphenol 4EO isomer mix	1 mg/mL in isooctane	1977,23
4-Nonylphenol 5EO ++	Please inquire	
4- <i>n</i> -Nonylphenol	5 or 1 mg/mL in isooctane	1450,15
4- <i>n</i> -Nonylphenol EO (internal standard)	1 mg/mL in isooctane	1978,17
4- <i>n</i> -Nonylphenol 2EO (internal standard)	1 mg/mL in isooctane	1979,19
<i>Nonylphenol EO KIT (8 compounds)</i>		2366,8



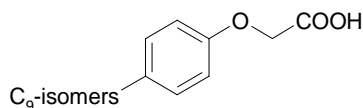
4-Nonylphenol 2EO isomer mix, 1832,19

4- <i>n</i> -Octylphenol	1 mg/mL in isooctane	1445,14
4- <i>n</i> -Octylphenol EO	1 mg/mL in isooctane	2286,16
4- <i>n</i> -Octylphenol 2EO	1 mg/mL in isooctane	2287,18
4- <i>n</i> -Octylphenol 3EO	1 mg/mL in isooctane	2309,20
4- <i>n</i> -Octylphenol 4EO++	Please inquire	
<i>Octylphenol EO KIT (4 compounds)</i>		2367,4

Commercial nonylphenol ethoxylate mixtures:

Imbentin-N/020 (n=0-4)	100 mg	S-4097
Imbentin-N/040 (n=1-7)	100 mg	S-4098
Imbentin-N/060 (n=2-9)	100 mg	S-4099
<i>Imbentin KIT (3 samples)</i>		2368,3

2-(4-Nonylphenoxy)acetic acid isomer mix	1 mg/mL in isooctane	1980,17
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2. PHENOLS

Alkylphenols are used as surfactants, oil additives, antioxidants, herbicides, insecticides, vitamins etc.
Chlorophenols are formed by the use of chlorine in water treatment plants.
Alkylnitrophenols are used as herbicides and pesticides.

Phenols are toxic and suspected endocrine disruptors, they are easily absorbed into the body, they are mobile in soils and well as aquatic media, and they are relatively resistant to biodegradation.

Phenols can be analyzed directly by GC-FID, GC-MS, GC-ECD etc. Derivatization prior to analysis is common in many standard methods, i.e. to pentafluorobenzoyl esters, methyl ethers and acetates.

Chiron offers single pure solutions of alkyl, chloro, bromo and nitrophenols, standardized solutions according to the ISO and EPA methods, a large range of internal standards, and reagents for derivatization.

Custom synthesis and custom manufactured solutions are available on request.

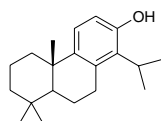
2.1 SINGLE COMPONENT PHENOL STANDARDS

Alkylphenols

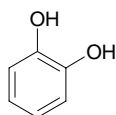
Phenol	1 g - 99 %	1427,6
<i>o</i> -Cresol	1 g - 99 %	1403,7
<i>m</i> -Cresol	1 g - 98 %	1404,7
<i>p</i> -Cresol	1 g - 99 %	1358,7
<i>Phenol C0-C1 KIT</i>		1637,4
2,3-Dimethylphenol	1 g - 99 %	1405,8
2,4-Dimethylphenol	1 g - 99 %	1406,8
2,5-Dimethylphenol	1 g - 99 %	1407,8
2,6-Dimethylphenol	1 g - 99 %	1365,8
3,4-Dimethylphenol	1 g - 99 %	1409,8
3,5-Dimethylphenol	1 g - 99 %	1360,8
2-Ethylphenol	1 g - 98 %	1410,8
3-Ethylphenol	1 g - 96 %	1364,8
4-Ethylphenol	1 g - 99 %	1411,8
<i>Phenol C2 KIT</i>		1638,9
2,3,5-Trimethylphenol	1 g - 98 %	1412,9
2,3,6-Trimethylphenol	1 g - 95 %	1413,9
2,4,6-Trimethylphenol	1 g - 99 %	1362,9
3,4,5-Trimethylphenol	0.25 g - 97 %	1414,9
3-Ethyl-5-methylphenol	1 mg/mL in isooctane - 94 %	1516,9
2- <i>n</i> -Propylphenol	1 g - 99 %	1415,9
3- <i>n</i> -Propylphenol	1 g - 99 %	1416,9
4- <i>n</i> -Propylphenol	1 g - 98 %	1417,9
2-Isopropylphenol	1 g - 99 %	1418,9
3-Isopropylphenol	0.25 g - 98 %	1419,9
4-Isopropylphenol	1 g - 99 %	1420,9
<i>Phenol C3 KIT</i>		1639,11
4- <i>n</i> -Butylphenol	1 g - 98 %	1357,10
2- <i>sec</i> -Butylphenol	1 g - 99 %	1421,10
4- <i>sec</i> -Butylphenol	1 g - 93 %	1422,10
2- <i>tert</i> -Butylphenol	1 g - 99 %	1359,10
3- <i>tert</i> -Butylphenol	1 g - 99 %	1361,10
4- <i>tert</i> -Butylphenol	1 g - 99 %	1423,10
4-Isopropyl-3-methylphenol	1 g - 99 %	1424,10

5-Isopropyl-2-methylphenol (Carvacrol)	0.25 g - 98 %	1425,10
5-Isopropyl-3-methylphenol	1 g - 98 %	1426,10
2-Isopropyl-5-methylphenol (Thymol)	1 g - 98 %	1428,10
Phenol C4 KIT		1640,10
2-(1-Methylbutyl)phenol	1 mg/mL in isooctane - 83 %	1517,11
4- <i>n</i> -Pentylphenol	0.25 g - 98 %	1363,11
4- <i>tert</i> -Butyl-2-methylphenol	1 g - 98 %	1429,11
2- <i>tert</i> -Butyl-4-methylphenol	1 g - 99 %	1430,11
2- <i>tert</i> -Butyl-5-methylphenol	1 g - 99 %	1431,11
2- <i>tert</i> -Butyl-6-methylphenol	1 g - 99 %	1432,11
4- <i>tert</i> -Amylphenol	1 g - 99 %	1433,11
=(4-(1,1-dimethylpropyl)phenol)		
5- <i>tert</i> -Butyl-2-methylphenol	1 mg/mL in isooctane - 87 %	1519,11
4-Isopentylphenol	1 mg/mL in isooctane - 82 %	1518,11
Phenol C5 KIT		1641,9
2-Phenylphenol	1 g - 99 %	1806,12
3-Phenylphenol	1 g - 97 %	1807,12
4-Phenylphenol	1 g - 99 %	1808,12
2,4-Diisopropylphenol	1 mg/mL in isooctane - 98 %	1795,12
2,5-Diisopropylphenol	1 mg/mL in isooctane - 83 %	1520,12
2,6-Diisopropylphenol	0.25 g - 99 %	1434,12
2- <i>tert</i> -Butyl-4-ethylphenol	1 g - 98 %	1435,12
2- <i>tert</i> -Butyl-4,6-dimethylphenol (=6- <i>tert</i> -Butyl-2,4-dimethylphenol)	1 g - 99 %	1436,12
4- <i>n</i> -Hexylphenol	1 g - 99 %	1437,12
4-Cyclohexylphenol	1 g - 99 %	1438,12
2-/4-Cyclohexylphenol	1 g - 99 %	1439,12
Phenol C6 KIT		1642,11
4- <i>n</i> -Heptylphenol	1 g - 98 %	1440,13
2-Benzylphenol	1 g - 98 %	2388,13
4-Benzylphenol	1 g - 96 %	2389,13
2-Cyclohexyl-5-methylphenol	0.25 g - 97 %	1503,13
Phenol C7 KIT		1643,4
2,4-Di- <i>sec</i> -butylphenol	1 mg/mL in isooctane - 92 %	1515,14
2,6-Di- <i>sec</i> -butylphenol (main isomer)	1 g - 91 %	1441,14
2,4-Di- <i>tert</i> -butylphenol	1 g - 99 %	1442,14
2,6-Di- <i>tert</i> -butylphenol	1 g - 99 %	1443,14
3,5-Di- <i>tert</i> -butylphenol	1 g - 99 %	1444,14
4- <i>n</i> -Octylphenol	1 g - 99 %	1445,14
4- <i>tert</i> -Octylphenol	1 g - 96 %	1446,14
2-Benzyl-4-methylphenol	1 mg/mL in isooctane	2439,14
Phenol C8 KIT		1644,8
2,6-Di- <i>tert</i> -butyl-4-methylphenol	1 g - 99 %	1448,15
4,6-Di- <i>tert</i> -butyl-2-methylphenol	1 mg/mL in isooctane - 99 %	1521,15
2-Methyl-4- <i>tert</i> -octylphenol	1 mg/mL in isooctane - 94 %	1522,15
4- <i>n</i> -Nonylphenol	0.25 g - 99 %	1450,15
4-Nonylphenol (isomer mixture)	1 g - 98 %	2044,15
Phenol C9 KIT		1645,5
4- <i>tert</i> -Butyl-2-phenylphenol	1 g - 99 %	1687,16
2,6-Di- <i>tert</i> -Butyl-4-ethylphenol	1 g - 99 %	1452,16
2,4-Di- <i>tert</i> -pentylphenol	1 g - 98 %	1453,16
4- <i>tert</i> -Butyl-2,6-diisopropylphenol	0.1 g - 98 %	1454,16
2,4-Bis(1-methylbutyl)phenol	0.25 g - 69 %	1455,16
2,4-Dimethyl-6-octylphenol	1 mg/mL in isooctane	1523,16
Phenol C10 KIT		1646,6
2- <i>n</i> -Dodecylphenol	1 mg/mL in isooctane - 98 %	2436,18
2- <i>n</i> -Dodecyl- <i>p</i> -cresol	1 mg/mL in isooctane - 98 %	2437,19
4- <i>n</i> -Dodecyl- <i>o</i> -cresol	1 mg/mL in isooctane - 98 %	2438,19
Totarol	1 mg/mL in isooctane - 98 %	2108,20
Bisphenol A	1 mg/mL in toluene - 97 %	1220,15

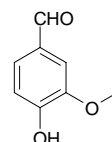
Catechol	1 mg/mL in isooctane - 99 %	2369,6
Vanillin	1 mg/mL in isooctane - 99 %	2370,8
Syringaldehyde	1 mg/mL in isooctane - 98 %	2371,9
Acetosyringone	1 mg/mL in isooctane - 97 %	2307,10
Guaiacol	1 mg/mL in isooctane - 99 %	2372,7
4-Methylguaiacol	1 mg/mL in isooctane - 99 %	2373,8
4-Ethylguaiacol	1 mg/mL in isooctane - 98 %	2374,9
Phenol Misc. KIT		2375,12



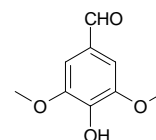
Totarol
2108,20



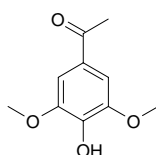
Catechol
2369,6



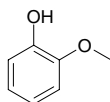
Vanillin
2370,8



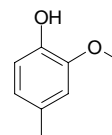
Syringaldehyde
2371,9



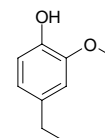
Acetosyringone
2307,10



Guaiacol
2372,7



4-Methylguaiacol
2373,8



4-Ethylguaiacol
2374,9

1-Naphthol	1 mg/mL in isopropanol	2376,10
2-Naphthol	1 mg/mL in isopropanol	2377,10
Please inquire for our hydroxyl PAH special list (more than 40 compounds)		

Chlorophenols

2-Chlorophenol	1 mg/mL in isopropanol	2062,6
3-Chlorophenol	1 mg/mL in isopropanol	2067,6
4-Chlorophenol	1 mg/mL in isopropanol	2068,6
2-Chloro-2-methylphenol	1 mg/mL in isopropanol	2070,7
4-Chloro-3-methylphenol	1 mg/mL in isopropanol	2071,7
2-Chloro-5-methylphenol (= 6-Chloro-3-methylphenol)	1 mg/mL in isopropanol	2063,7
6-Chloro-5-methyl-2-(1-methylethyl)phenol (= 6-Chlorothymol)	1 mg/mL in isopropanol	2378,10
2-Chloro-4-tert-butylphenol	1 mg/mL in isopropanol	2440,10
4-Chloro-2-benzylphenol	1 mg/mL in isopropanol	2441,13
2-Cyclopentyl-4-chlorophenol	Please inquire	
Monochlorophenol KIT		2446,9
2,3-Dichlorophenol	1 mg/mL in isopropanol	2066,6
2,4-Dichlorophenol	1 mg/mL in isopropanol	2064,6
2,5-Dichlorophenol	1 mg/mL in isopropanol	2065,6
2,6-Dichlorophenol	1 mg/mL in isopropanol	2069,6
3,4-Dichlorophenol	1 mg/mL in isopropanol	2080,6
3,5-Dichlorophenol	1 mg/mL in isopropanol	2078,6
2,4-Dichloro-3,5-dimethylphenol	1 mg/mL in isopropanol	2379,8
Dichlorophenol KIT		2380,7

2,3,4-Trichlorophenol	1 mg/mL in isopropanol	2077,6
2,3,5-Trichlorophenol	1 mg/mL in isopropanol	2073,6
2,3,6-Trichlorophenol	1 mg/mL in isopropanol	2072,6
2,4,5-Trichlorophenol	1 mg/mL in isopropanol	2075,6
2,4,6-Trichlorophenol	1 mg/mL in isopropanol	2076,6
3,4,5-Trichlorophenol	1 mg/mL in isopropanol	2082,6
<i>Trichlorohenol KIT</i>		2381,6
2,3,4,5-Tetrachlorophenol	1 mg/mL in isopropanol	2081,6
2,3,4,6-Tetrachlorophenol	1 mg/mL in isopropanol	2382,6
2,3,5,6-Tetrachlorophenol	1 mg/mL in isopropanol	2074,6
Pentachlorophenol	1 mg/mL in isopropanol	2084,6
<i>Tetra-, pentachlorohenol KIT</i>		2386,4

Bromophenols

4-Bromophenol	1 mg/mL in isopropanol	2383,6
2,4-Dibromophenol	1 mg/mL in isopropanol	2061,6
2,5-Dibromophenol	1 mg/mL in isopropanol	2470,6
2,3,4-Tribromophenol	1 mg/mL in isopropanol	2507,6
2,4,5-Tribromophenol	1 mg/mL in isopropanol	2508,6
2,4,6-Tribromophenol	1 mg/mL in isopropanol	2060,6
2,3,4,6-Tetrabromophenol	1 mg/mL in isopropanol	2509,6
<i>Bromophenol KIT</i>		2384,7

Nitrophenols

2-Nitrophenol	1 mg/mL in isopropanol	2085,6
3-Nitrophenol	1 mg/mL in isopropanol	2086,6
4-Nitrophenol	1 mg/mL in isopropanol	2087,6
2,4-Dinitrophenol	1 mg/mL in isopropanol	2079,6
2-Methyl-4,6-dinitrophenol (DNOC)	1 mg/mL in isopropanol	2083,7
2-Ethoxymethyl-4,6-dinitrophenol (Etinofen)	1 mg/mL in isopropanol	2481,9
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	1 mg/mL in isopropanol	2482,10
2-tert-Butyl-4,6-dinitrophenol (Dinoterb)	1 mg/mL in isopropanol	2483,10
<i>Nitrophenol KIT</i>		2385,8

2.2 DERIVATIZATION REAGENTS AND INTERNAL STANDARD

Derivatizing Reagents	Pentafluorobenzoyl chloride	1 g	1647,7
	p-Toluenesulfonyl-N-methyl-N-nitrosamide (Precursor of diazomethane)	10g	1938,8

Internal standards

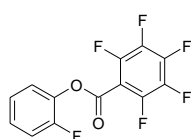
2-Fluorophenol	1 g	2057,6
4-Fluoro-3-methylphenol	1 g	2058,7
4-Fluoro-2-methylphenol	1 g	2059,7
2,4,6-Tribromophenol	1 g	2060,5
2,4-Dibromophenol	1 mg/mL in isopropanol	2061,6
4-Ethylphenol-2,3,5,6-d ₄ , OD	100 mg	2052,8

Internal standard PFB-derivatives

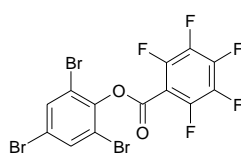
2-Fluorophenol-PFB	1 mg/mL in isopropanol	2088,13
4-Fluoro-3-methylphenol-PFB	1 mg/mL in isopropanol	2089,14
4-Fluoro-2-methylphenol-PFB	1 mg/mL in isopropanol	2090,14
2,4,6-Tribromophenol-PFB *	1 mg/mL in isopropanol	2091,13
2,4-Dibromophenol-PFB * **	1 mg/mL in isopropanol	2092,13
2,5-Dibromophenol-PFB * **	1 mg/mL in isopropanol	2469,13
4-Ethylphenol-d ₉ -PFB	1 mg/mL in isopropanol	2502,15

* Standard for Method EPA 8041A

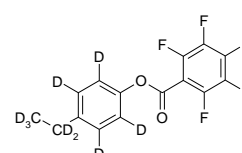
** Standard for Method ISO 8165-2



2-Fluorophenol-PFB
2088,13



2,4,6-Tribromophenol-PFB
2091,13



4-Ethylphenol-d₉-PFB
2502,15

Please inquire for individual PFB derivatives of additional analytes.

Deuterated Alkylphenol Internal Standards

Phenol-OD	5x1 mL, 1 mg/mL in isopropanol	2390,6
Phenol-3,5-d ₂	5x1 mL, 1 mg/mL in isopropanol	2391,6
Phenol-2,4,6-d ₃ , OD	5x1 mL, 1 mg/mL in isopropanol	2392,6
Phenol-2,3,4,5,6-d ₅	5x1 mL, 1 mg/mL in isopropanol	2279,6
Phenol-d ₆	5x1 mL, 1 mg/mL in isopropanol	2349,6
<i>o</i> -Cresol-d ₈	5x1 mL, 1 mg/mL in isopropanol	2393,7
<i>m</i> -Cresol-d ₈	5x1 mL, 1 mg/mL in isopropanol	2394,7
<i>p</i> -Cresol-d ₈	5x1 mL, 1 mg/mL in isopropanol	2280,7
2,4-Dimethylphenol-d ₁₀	5x1 mL, 1 mg/mL in isopropanol	2395,8
2,4-Dimethylphenol-3,5,6-d ₃	5x1 mL, 1 mg/mL in isopropanol	2396,8
2,6-Dimethylphenol-3,4,5-d ₃ , OD	5x1 mL, 1 mg/mL in isopropanol	2397,8
3,4-Dimethylphenol-2,5,6-d ₃ , OD	5x1 mL, 1 mg/mL in isopropanol	2398,8
3,5-Dimethylphenol-2,4,6-d ₃ , OD	5x1 mL, 1 mg/mL in isopropanol	2399,8
3,5-Dimethyl-d ₆ -phenol	Please inquire	2400,8
4-Ethylphenol-2,3,5,6-d ₄ , OD	5x1 mL, 1 mg/mL in isopropanol	2052,8
4-Ethylphenol-d ₁₀	5x1 mL, 1 mg/mL in isopropanol	2281,8

2,3,5-Trimethylphenol-d ₁₁	5x1mL, 1mg/mL in isopropanol	2401,9
2,3,6-Trimethylphenol-d ₁₁	5x1mL, 1mg/mL in isopropanol	2402,9
2,4,6-Trimethylphenol-d ₁₁	5x1mL, 1mg/mL in isopropanol	2403,9
4- <i>n</i> -Propylphenol-d ₁₂	5x1mL, 1mg/mL in isopropanol	2348,9
2-Isopropylphenol-d ₁₂	Please inquire	2404,9
3-Isopropylphenol-d ₁₂	5x1mL, 1mg/mL in isopropanol	2405,9
4-Isopropylphenol-d ₁₂	5x1mL, 1mg/mL in isopropanol	2406,9
4- <i>n</i> -Butylphenol -2,3,5,6-d ₄ , OD	Please inquire	2407,10
4- <i>tert</i> -Butyl-d ₉ -phenol	Please inquire	2408,10
4- <i>tert</i> -Butyl-d ₉ -phenol-2,3,5,6-d ₄	Please inquire	2282,10
4- <i>n</i> -Pentylphenol-2,3,5,6-d ₄ , OD	5x1mL, 1mg/mL in isopropanol	2409,11
4- <i>n</i> -Pentyl-d ₁₁ -phenol	5x1mL, 1mg/mL in isopropanol	2410,11
4- <i>n</i> -Pentylphenol-d ₁₆	5x1mL, 1mg/mL in isopropanol	2411,11
4- <i>n</i> -Octylphenol-d ₁₇	5x1mL, 1mg/mL in isopropanol	2327,14
2,6-Di-(<i>tert</i> -butyl-1-d ₁)-4-methyl-d ₃ -phenol-3,5-d ₂	5x1mL, 1mg/mL in isopropanol	2412,15
2,6-Di-(<i>tert</i> -butyl-d ₉)-4-methylphenol-3,5-d ₂	5x1mL, 1mg/mL in isopropanol	2283,15
2,6-Di- <i>tert</i> -butyl-4-methylphenol-d ₂₄	5x1mL, 1mg/mL in isopropanol	2413,15
4- <i>n</i> -Nonylphenol-2,3,5,6-d ₄ ,OD	5x1mL, 1mg/mL in isopropanol	2414,15
Bisphenol-A-2,2',6,6'-d ₄	5x1mL, 1mg/mL in isopropanol	2415,15
Bisphenol-A-3,3',5,5'-d ₄	5x1mL, 1mg/mL in isopropanol	2416,15
Bisphenol-A-d ₆	5x1mL, 1mg/mL in isopropanol	2417,15
Bisphenol-A-2,2',3,3',5,5',6,6'-d ₈	5x1mL, 1mg/mL in isopropanol	2418,15
Bisphenol-A-d ₁₆	5x1mL, 1mg/mL in isopropanol	2419,15

Deuterated Chlorophenols

2-Chlorophenol-3,4,5,6-d ₄	5x1mL, 1mg/mL in isopropanol	2420,6
4-Chlorophenol-2,3,5,6-d ₄ , OD	5x1mL, 1mg/mL in isopropanol	2421,6
4-Chloro-2-methylphenol-3,5,6-d ₃	5x1mL, 1mg/mL in isopropanol	2510,7
4-Chloro-3-methylphenol-2,6-d ₂	5x1mL, 1mg/mL in isopropanol	2511,7
2,4-Dichlorophenol-3,5,6-d ₃	5x1mL, 1mg/mL in isopropanol	2422,6
2,3,5-Trichlorophenol-4,6-d ₂	Please inquire	2423,6
2,3,6-Trichlorophenol-4,5-d ₂	5x1mL, 1mg/mL in isopropanol	2424,6
2,4,5-Trichlorophenol-3,6-d ₂	5x1mL, 1mg/mL in isopropanol	2425,6
2,4,6-Trichlorophenol-3,5-d ₂	5x1mL, 1mg/mL in isopropanol	2426,6

Deuterated Bromophenols

4-Bromophenol-2,3,5,6-d ₄	5x1mL, 1mg/mL in isopropanol	2427,6
2,4-Dibromophenol-3,5,6-d ₃	5x1mL, 1mg/mL in isopropanol	2428,6
2,6-Dibromophenol-3,4,5-d ₃	Please inquire	2429,6
2,4,6-Tribromophenol-3,5-d ₂	5x1mL, 1mg/mL in isopropanol	2430,6

Deuterated Nitrophenols

2-Nitrophenol-3,4,5,6-d ₄	5x1mL, 1mg/mL in isopropanol	2431,6
4-Nitrophenol-2,3,5,6-d ₄	5x1mL, 1mg/mL in isopropanol	2432,6
2,4-Dinitrophenol-3,5,6-d ₃	5x1mL, 1mg/mL in isopropanol/water	2433,6
3-Methyl-d ₃ -4-nitrophenol-2,5,6-d ₃	Please inquire	2434,7
2-Methyl-4,6-dinitrophenol-3,5-d ₂	5x1mL, 1mg/mL in isopropanol	2435,7

2.3 PHENOL MIXTURES

Alkylphenol Mixtures	Alkylated Phenol Mixture 1	S-4060
	<i>At given concentration in acetone solution; unit 5 mL</i>	
	<i>p</i> -Cresol	33.80 mg/mL
	3-Ethylphenol	6.54 mg/mL
	3,5-Dimethylphenol	6.54 mg/mL
	2,4,6-Trimethylphenol	3.80 mg/mL
	2- <i>tert</i> -Butylphenol	0.37 mg/mL
	3- <i>tert</i> -Butylphenol	0.37 mg/mL
	4- <i>n</i> -Butylphenol	0.37 mg/mL
	4- <i>n</i> -Pentylphenol	1.62 mg/mL

Alkylated Phenols Mixture 2 S-4093

Each compound 5.0 mg/mL in isooctane, pesticide grade; unit: 1 mL or 5x1 mL

Compound	CAS No.	Purity	Prod.No.
Phenol	[108-95-2]	99 %	1427,6
<i>o</i> -Cresol	[95-48-7]	99 %	1403,7
<i>m</i> -Cresol	[108-39-4]	98 %	1404,7
<i>p</i> -Cresol	[106-44-5]	99 %	1358,7
2,4-Dimethylphenol	[105-67-9]	99 %	1406,8
2,5-Dimethylphenol	[95-87-4]	99 %	1407,8
3,5-Dimethylphenol	[108-68-9]	99 %	1360,8
4-Ethylphenol	[123-07-9]	99 %	1411,8
2- <i>n</i> -Propylphenol	[644-35-9]	99 %	1415,9
2,3,5-Trimethylphenol	[697-82-5]	98 %	1412,9
4- <i>n</i> -Propylphenol	[645-56-7]	98 %	1417,9
2,4,6-Trimethylphenol	[527-60-6]	99 %	1362,9
4- <i>tert</i> -Butylphenol	[98-54-4]	99 %	1423,10
4-Isopropyl-3-methylphenol	[3228-02-2]	99 %	1424,10
4- <i>n</i> -Butylphenol	[1638-22-8]	98 %	1357,10
2- <i>tert</i> -Butyl-4-methylphenol	[2409-55-4]	99 %	1430,11
4- <i>tert</i> -Butyl-2-methylphenol	[98-27-1]	98 %	1429,11
4- <i>n</i> -Pentylphenol	[14938-35-3]	98 %	1363,11
2,5-Diisopropylphenol	[35946-91-9]	83 %	1520,12
2,6-Diisopropylphenol	[2078-54-8]	99 %	1434,12
2- <i>tert</i> -Butyl-4-ethylphenol	[96-70-8]	99 %	1435,12
6- <i>tert</i> -Butyl-2,4-dimethylphenol (2- <i>tert</i> -Butyl-4,6-dimethylphenol)	[1879-09-0]	99 %	1436,12
4- <i>n</i> -Heptylphenol	[1987-50-4]	99 %	1440,13
4- <i>tert</i> -Octylphenol	[140-66-9]	96 %	1446,14
2,6-Di- <i>tert</i> -butylphenol	[128-39-2]	99 %	1443,14
4- <i>n</i> -Octylphenol	[1806-26-4]	99 %	1445,14
2,6-Di- <i>tert</i> -butyl-4-methylphenol	[128-37-0]	99 %	1448,15
4- <i>n</i> -Nonylphenol	[104-40-5]	99 %	1450,15
2-Methyl-4- <i>tert</i> -octylphenol	[2219-84-3]	94 %	1522,15

Alkylated Phenols Mixture 3 S-4094

Each compound 0.1 mg/mL in isooctane, pesticide grade; units: 1 mL or 5x1mL

Compound	CAS No.	Purity	Prod.No.
Phenol	[108-95-2]	99 %	1427,6
<i>o</i> -Cresol	[95-48-7]	99 %	1403,7
<i>m</i> -Cresol	[108-39-4]	98 %	1404,7
<i>p</i> -Cresol	[106-44-5]	99 %	1358,7
2,4-Dimethylphenol	[105-67-9]	99 %	1406,8
2,5-Dimethylphenol	[95-87-4]	99 %	1407,8
3,5-Dimethylphenol	[108-68-9]	99 %	1360,8
4-Ethylphenol	[123-07-9]	99 %	1411,8
2- <i>n</i> -Propylphenol	[644-35-9]	99 %	1415,9
2,3,5-Trimethylphenol	[697-82-5]	98 %	1412,9

4- <i>n</i> -Propylphenol	[645-56-7]	98 %	1417,9
2,4,6-Trimethylphenol	[527-60-6]	99 %	1362,9
4- <i>tert</i> -Butylphenol	[98-54-4]	99 %	1423,10
4-Isopropyl-3-methylphenol	[3228-02-2]	99 %	1424,10
4- <i>n</i> -Butylphenol	[1638-22-8]	98 %	1357,10
2- <i>tert</i> -Butyl-4-methylphenol	[2409-55-4]	99 %	1430,11
4- <i>tert</i> -Butyl-2-methylphenol	[98-27-1]	98 %	1429,11
4- <i>n</i> -Pentylphenol	[14938-35-3]	98 %	1363,11
2,5-Diisopropylphenol	[35946-91-9]	83 %	1520,12
2,6-Diisopropylphenol	[2078-54-8]	99 %	1434,12
2- <i>tert</i> -Butyl-4-ethylphenol	[96-70-8]	99 %	1435,12
6- <i>tert</i> -Butyl-2,4-dimethylphenol (2- <i>tert</i> -Butyl-4,6-dimethylphenol)	[1879-09-0]	99 %	1436,12
4- <i>n</i> -Heptylphenol	[1987-50-4]	99 %	1440,13
4- <i>tert</i> -Octylphenol	[140-66-9]	96 %	1446,14
2,6-Di- <i>tert</i> -butylphenol	[128-39-2]	99 %	1443,14
4- <i>n</i> -Octylphenol	[1806-26-4]	99 %	1445,14
2,4-Di- <i>sec</i> -butylphenol	[1849-18-9]	92 %	1515,14
2,6-Di- <i>tert</i> -butyl-4-methylphenol	[128-37-0]	99 %	1448,15
4- <i>n</i> -Nonylphenol	[104-40-5]	99 %	1450,15
4,6-Di- <i>tert</i> -butyl-2-methylphenol	[616-55-7]	99 %	1521,15
2-Methyl-4- <i>tert</i> -octylphenol	[2219-84-3]	94 %	1522,15

Alkylated Phenol Mixture 4

S-4317

In acetone, pesticide grade; units: 1 mL or 5x1 mL

Compound	CAS No.	Purity	mg/mL	Prod.No.
2-Methylphenol (<i>o</i> -Cresol)	[95-48-7]	99 %	65.00	1403,7
4-Methylphenol (<i>p</i> -Cresol)	[106-44-5]	99 %	22.00	1358,7
3,5-Dimethylphenol	[108-68-9]	99 %	6.50	1360,8
2,4,6-Trimethylphenol	[527-60-6]	99 %	2.20	1362,9
4- <i>tert</i> -Butylphenol	[98-54-4]	99 %	1.10	1423,10
4- <i>tert</i> -Butyl-2-methylphenol	[98-27-1]	98 %	0.27	1429,11
4- <i>n</i> -Pentylphenol	[14938-35-3]	98 %	0.54	1363,11
4- <i>n</i> -Hexylphenol	[2446-69-7]	98 %	0.16	1437,12
4- <i>n</i> -Heptylphenol	[1987-50-4]	99 %	0.08	1440,13

Deuterated Alkylphenol Mixtures

Deuterated Phenol Mixture 1

S-4325

Each 0.1 mg/mL in toluene; units: 1 mL or 5x1 mL

Compound	CAS No.	Prod.No.
Phenol-2,3,5,6-d ₅	[4165-62-2]	2279,6
<i>p</i> -Cresol-d ₈	[190780-66-6]	2280,7
4-Ethylphenol-d ₁₀	[352431-18-6]	2281,8
4- <i>tert</i> -Butyl-d ₉ -phenol-2,3,5,6-d ₄	[225386-58-3]	2282,10
2,6-Di-(<i>tert</i> -butyl-d ₉)-4-methylphenol-3,5-d ₂ , OD	[64502-99-4]	2283,15

Deuterated Phenol Mixture 2

S-4346

Each 0.1 mg/mL in toluene,; units: 1 mL or 5x1 mL

Compound	CAS No.	Prod.No.
Phenol-2,3,5,6-d ₅	[4165-62-2]	2279,6
<i>p</i> -Cresol-d ₈	[190780-66-6]	2280,7
4-Ethylphenol-d ₁₀	[352431-18-6]	2281,8
4- <i>tert</i> -Butyl-d ₉ -phenol-2,3,5,6-d ₄	[225386-58-3]	2282,10
2,6-Di-(<i>tert</i> -butyl-d ₉)-4-methylphenol-3,5-d ₂ , OD	[64502-99-4]	2283,15
4- <i>n</i> -Octylphenol-d ₁₇		2327,14

2.4 ISO METHODS

ISO Method 8165-1: 1992 Water quality - Determination of selected monovalent phenols - Part 1: Gas-chromatographic method after enrichment by extraction

This international method specifies a method for determining phenols by a gas chromatographic method. The determination of selected nitrophenols in drinking water, ground water and surface water.

The method provides a procedure for solid-phase extraction of nitrophenols, followed by solvent elution, derivatization with diazomethane and determination by gas chromatography and mass spectrometry.

ISO 8165-1	Phenol Standard Stock Solution	S-4351
<i>35 Analytes, Each 0.1 mg/mL, in methanol, 5x1 mL</i>		
Compound	CAS No.	Prod.No.
Phenol	[108-95-2]	1427,6
2-Methylphenol (<i>o</i> -Cresol)	[95-48-7]	1403,7
3-Methylphenol (<i>m</i> -Cresol)	[108-39-4]	1404,7
4-Methylphenol (<i>p</i> -Cresol)	[106-44-5]	1358,7
2,4-Dimethylphenol	[105-67-9]	1406,8
4-Ethylphenol	[123-07-9]	1411,8
2,6-Di- <i>tert</i> -butyl-4-methylphenol	[128-37-0]	1448,15
(2,6-Bis(1,1-dimethylethyl)-4-methylphenol)		
2-Phenylphenol	[90-43-7]	1806,12
2-Benzylphenol	[28994-41-4]	2388,13
2-Benzyl-4-methylphenol	[716-96-1]	2439,14
2-Chlorophenol	[95-57-8]	2062,6
3-Chlorophenol	[108-43-0]	2067,6
4-Chlorophenol	[106-48-9]	2068,6
4-Chloro-2-methylphenol	[1570-64-5]	2070,7
4-Chloro-3-methylphenol	[59-50-7]	2071,7
2,4-Dichloro-3,5-dimethylphenol	[133-53-9]	2379,8
2-Cyclopentyl-4-chlorophenol	[13347-42-7]	2500,11
6-Chloro-5-methyl-2-(1-methylethyl)phenol	[89-68-9]	2378,10
(6-Chorothymol)		
2,3-Dichlorophenol	[576-24-9]	2066,6
2,4-Dichlorophenol	[120-83-2]	2064,6
2,5-Dichlorophenol	[583-78-8]	2065,6
2,6-Dichlorophenol	[87-65-0]	2069,6
2,4,6-Trichlorophenol	[88-06-2]	2076,6
2,3,5-Trichlorophenol	[933-78-8]	2073,6
2,4,5-Trichlorophenol	[95-95-4]	2075,6
2,3,6-Trichlorophenol	[933-75-5]	2072,6
2,3,4,5-Tetrachlorophenol	[4901-51-3]	2081,6
2,3,4,6-Tetrachlorophenol	[58-90-2]	2149,6
2,3,5,6-Tetrachlorophenol	[935-95-5]	2074,6
Pentachlorophenol	[87-86-5]	2084,6
1-Naphthol	[90-15-3]	2376,10
2-Naphthol	[135-19-3]	2377,10
2-Chloro-5-methylphenol	[615-74-7]	2063,7
(6-Chloro-3-methylphenol)		
2-Chloro-4- <i>tert</i> -butylphenol	[98-28-2]	2440,10
4-Chloro-2-benzylphenol	[120-32-1]	2441,13

ISO 8165-1 Internal Control Stock Solution 1 S-4353*1 Internal standards, 1 mg/mL, in acetone, 5 mL*

2,4-Dibromophenol [615-58-7] 2061,6

*Alternative Internal standard:***ISO 8165-1 Internal Control Stock Standard Solution 2**

2,5-Dibromophenol [28165-52-8] 2470,6

ISO Method 8165-2: 1999 Water quality - Determination of selected monovalent phenols - Part 1: Method by derivatization and gas chromatography

This international method specifies a method for the determination of phenols by gas chromatography, following pentafluorobenzoyl chloride derivatization. It may in particular be applied to the examination of in drinking water, ground water and moderately contaminated surface water.

ISO 8165-2 Phenol Standard Stock Solution 2 S-4352*33 Analytes, Each 0.3 mg/mL, in methanol, 5x1 mL*

Compound	CAS No.	Prod.No.
Phenol	[108-95-2]	1427,6
2-Methylphenol (<i>o</i> -Cresol)	[95-48-7]	1403,7
3-Methylphenol (<i>m</i> -Cresol)	[108-39-4]	1404,7
4-Methylphenol (<i>p</i> -Cresol)	[106-44-5]	1358,7
2,4-Dimethylphenol	[105-67-9]	1406,8
4-Ethylphenol	[123-07-9]	1411,8
2,6-bis(1,1-dimethylethyl)-4-methylphenol	[128-37-0]	2468,15
2-Phenylphenol	[90-43-7]	1806,12
2-Benzylphenol	[28994-41-4]	2388,13
2-Benzyl-4-methylphenol	[716-96-1]	2439,14
2-Chlorophenol	[95-57-8]	2062,6
3-Chlorophenol	[108-43-0]	2067,6
4-Chlorophenol	[106-48-9]	2068,6
4-Chloro-2-methylphenol	[1570-64-5]	2070,7
4-Chloro-3-methylphenol	[59-50-7]	2071,7
2-Chloro-5-methylphenol	[615-47-7]	2063,7
(6-Chloro-3-methylphenol)		
2,4-Dichloro-3,5-dimethylphenol	[133-53-9]	2379,8
2-Chloro-4- <i>tert</i> -butylphenol	[98-28-2]	2440,10
2-Cyclopentyl-4-chlorophenol	[13347-42-7]	2500,11
4-Chloro-2-benzylphenol	[120-32-1]	2441,13
6-Chloro-5-methyl-2-(1-methylethyl)phenol	[89-68-9]	2378,10
2,3-Dichlorophenol	[576-24-9]	2066,6
2,4-Dichlorophenol	[120-83-2]	2064,6
2,5-Dichlorophenol	[583-78-8]	2065,6
2,6-Dichlorophenol	[87-65-0]	2069,6
2,4,6-Trichlorophenol	[88-06-2]	2076,6
2,3,5-Trichlorophenol	[933-78-8]	2073,6
2,4,5-Trichlorophenol	[95-95-4]	2075,6
2,3,6-Trichlorophenol	[933-75-5]	2072,6
2,3,4,5-Tetrachlorophenol	[4901-51-3]	2081,6
2,3,4,6-Tetrachlorophenol	[58-90-2]	2149,6
2,3,5,6-Tetrachlorophenol	[935-95-5]	2074,6
Pentachlorophenol	[87-86-5]	2084,6

ISO 8165-2	Internal Control Stock Solution 1		S-4355
1 Internal standard, 10 µg/mL, in methanol, 5 mL			
2,4-Dibromophenol	[615-58-7]	2061,6	

Alternative Internal standard:

ISO 8165-2	Internal Control Stock Solution 2		S-4356
2,5-Dibromophenol	[28165-52-8]	2470,6	

ISO Method 14154: 2005 **Soil quality – Determination of some selected chlorophenols**
Gas Chromatographic method with electron-capture detection

This method specifies a method for the determination of 4-nonylphenol (mixture of isomers and 4-(1,1,3,3-tetramethylbutyl)phenol) in non-filtered samples of drinking water, ground water and surface water.

The method provides a procedure for solid/liquid extraction and purification based on successive extractions in basic and acidic aqueous media and hexane. Finally the chlorophenols are derivatized with acetic anhydride and analyzed by gas chromatography with electron capture or mass detection.

ISO 14154	2,4,6-Tribromophenol, Internal Standard Stock Solution		S-4361
1.148 mg/mL, in ethanol, 5 mL			

Alternative Internal Standards:

2,4-Dibromophenol, Internal Standard Stock Solution		S-4362
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2,6-Dibromophenol, Internal Standard Stock Solution		S-4363
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ISO 14154	Chlorophenol Standard, Stock Solution		S-4364
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15 Analytes in ethanol, 5x1 mL

2,3-Dichlorophenol	400 µg/mL	[576-24-9]	2066,6
2,4-Dichlorophenol	400 µg/mL	[120-83-2]	2064,6
2,5-Dichlorophenol	400 µg/mL	[583-78-8]	2065,6
2,6-Dichlorophenol	400 µg/mL	[87-65-0]	2069,6
3,4-Dichlorophenol	400 µg/mL	[95-77-2]	2080,6
3,5-Dichlorophenol	400 µg/mL	[591-35-5]	2078,6
2,3,4-Trichlorophenol	400 µg/mL	[15950-66-0]	2077,6
2,3,5-Trichlorophenol	400 µg/mL	[933-78-8]	2073,6
2,3,6-Trichlorophenol	400 µg/mL	[933-75-5]	2072,6
2,4,5-Trichlorophenol	400 µg/mL	[95-95-4]	2075,6
2,4,6-Trichlorophenol	600 µg/mL	[88-06-2]	2076,6
3,4,5-Trichlorophenol	200 µg/mL	[609-19-8]	2082,6
2,3,4,5-Tetrachlorophenol	200 µg/mL	[4901-51-3]	2081,6
2,3,4,6-Tetrachlorophenol	600 µg/mL	[58-90-2]	2149,6
Pentachlorophenol	1000 µg/mL	[87-86-5]	2084,6

ISO Method 17495: 2001 **Water quality - Determination of selected nitrophenols - Method by solid phase extraction and gas chromatography with mass spectrometric detection**

This international method specifies a method for determining phenols by a gas chromatographic method. The determination of selected nitrophenols in drinking water, ground water and surface water.

The method provides a procedure for solid-phase extraction of nitrophenols, followed by solvent elution, derivatization with diazomethane and determination by gas chromatography and mass spectrometry.

ISO 17495	Methylated Phenols Stock Solution,	S-4357
<i>18 Analytes, Each 0.5 mg/mL, in acetone, units: 5x1 mL</i>		
Compound	CAS No.	Prod.No.
2-Nitroanisole	[91-23-6]	2442,7
3-Nitroanisole	[555-03-3]	2443,7
4-Nitroanisole	[100-17-4]	2444,7
4-Methyl-2-nitroanisole	[119-10-8]	2448,8
3-Methyl-4-nitroanisole	[5367-32-8]	2447,8
3-Methyl-2-nitroanisole	[5345-42-6]	2449,8
5-Methyl-2-nitroanisole	[38512-82-2]	2450,8
2,4-Dinitroanisole	[119-27-7]	2451,7
2,5-Dinitroanisole	[3962-77-4]	2452,7
2,6-Dinitroanisole	[3535-67-9]	2453,7
2,4-Dibromoanisole	[21702-84-1]	2473,7
2,6-Dibromoanisole	[38603-09-7]	2474,7
2,4,6-Tribromoanisole	[607-99-8]	2475,7
2,3,6-Trichloroanisole	[50375-10-5]	2476,7
2,4-Dinitro-6-methylanisole	[29027-13-2]	2454,8
2,6-Dichloro-4-nitroanisole	[17742-69-7]	2455,7
2,4-Dichloro-6-nitroanisole	[37138-82-2]	2456,7
2,6-Dimethyl-4-nitroanisole	[14804-39-8]	2457,9

ISO 17495	Nonmethylated Phenols Stock Solution,	S-4358
<i>14 Analytes, Each 0.5 mg/mL, in acetone, units: 5x1 mL</i>		
Compound	CAS No.	Prod.No.
2-Nitrophenol	[88-75-5]	2085,6
3-Nitrophenol	[554-84-7]	2086,6
4-Nitrophenol	[100-02-7]	2087,6
4-Methyl-2-nitrophenol	[119-33-5]	2458,7
3-Methyl-4-nitrophenol	[2581-23-2]	2459,7
5-Methyl-2-nitrophenol	[700-38-9]	2460,7
3-Methyl-2-nitrophenol	[4920-77-8]	2461,7
2,4-Dinitrophenol	[51-28-5]	2079,6
2,5-Dinitrophenol	[329-71-5]	2462,6
2,6-Dinitrophenol	[573-56-8]	2463,6
2,4-Dinitro-6-methylphenol	[534-52-1]	2464,7
2,6-Dimethyl-4-nitrophenol	[2423-71-4]	2465,6
2,4-Dichloro-6-nitrophenol	[609-89-2]	2466,6
2,6-Dichloro-4-nitrophenol	[618-80-4]	2467,6

ISO 17495	Internal Standard Stock Solution	S-4359
<i>2 Internal standards, 1 µg each/mL, in acetone, 5 mL</i>		
2,4-Dibromophenol	[615-58-7]	2061,6
2,4,6-Tribromophenol	[118-79-6]	2060,6

The following compounds are suggested as alternative Internal Standards for this method:

2,4-Dibromophenol	[615-58-7]	2061,6
2,6-Dibromophenol	[608-33-3]	2472,6
Deuterated or ¹³ C-labelled substances		

**ISO Method Water quality – Determination of selected alkylphenols
18857-1: 2005**

Part 1

Method for non-filtered samples using liquid-liquid extraction and gas chromatography with mass selective detection.

This method specifies a method for the determination of 4-nonylphenol (mixture of isomers) and 4-(1,1,3,3-tetramethylbutyl)phenol in non-filtered samples of drinking water, ground water and surface water.

The method provides procedures for the determination of phenols in finished drinking water. This method can also be used on untreated course water and other types of water samples. A large variety of phenols can be determined by this method.

ISO 18857-1	4-<i>n</i>-Nonylphenol (ring¹³C₆), Internal standard	S-4376
	<i>1 ng/μL, in acetone, 5 mL</i>	

ISO 18857-1	4-<i>n</i>-Nonylphenol-2,3,5,6-d₄), Alternative Int. standard	2414,15
	<i>1 ng/μL, in acetone, 5 mL</i>	

ISO 18857-1	4-<i>n</i>-Nonylphenol solution, Calibration standard	S-4377
	<i>1 ng/μL, in toluene, 5 mL</i>	

ISO 18857-1	4-(1,1,3,3-Tetramethylbutyl)phenol solution, Calibration standard	S-4378
	<i>1 ng/μL, in toluene, 5 mL</i>	

2.5 EPA METHODS

EPA Method Phenols in Drinking Water by Solid Phase Extraction and GC-MS 528 Rev. 1.0

Standard Test Method for the Determination of Phenols in Drinking Water by Solid Phase Extraction and Capillary Column Gas Chromatography-Mass Spectrometry.

This method provides procedures for the determination of phenols in finished drinking water. This method can also be used on untreated course water and other types of water samples. A large variety of phenols can be determined by this method.

EPA 528 rev.1.0 Standard Stock Solutions

12 Single stock solutions, Each analyte in 5 µg/mL in methanol, 5 mL of each solution

Phenol	[108-95-2]	1427,6
2-Chlorophenol	[95-57-8]	2062,6
2-Methylphenol (<i>o</i> -Cresol)	[95-48-7]	1403,7
2-Nitrophenol	[88-75-5]	2085,6
2,4-Dimethylphenol	[105-67-9]	1406,8
2,4-Dichlorophenol	[120-83-2]	2064,6
4-Chloro-3-methylphenol	[59-50-7]	2071,7
2,4,6-Trichlorophenol	[88-06-2]	2076,6
2,4-Dinitrophenol	[51-28-5]	2079,6
4-Nitrophenol	[100-02-7]	2087,6
2-Methyl-4,6-dinitrophenol	[534-52-1]	2083,7
Pentachlorophenol	[87-86-5]	2084,6

Set of 12 stock solutions, 12 x 5 mL **2445,12**

EPA 528 rev. 1.0 Primary Dilution Standard Solution

S-4365

12 Analytes, 30 ng each/mL in methanol, 5 mL

Phenol	[108-95-2]	1427,6
2-Chlorophenol	[95-57-8]	2062,6
2-Methylphenol (<i>o</i> -Cresol)	[95-48-7]	1403,7
2-Nitrophenol	[88-75-5]	2085,6
2,4-Dimethylphenol	[105-67-9]	1406,8
2,4-Dichlorophenol	[120-83-2]	2064,6
4-Chloro-3-methylphenol	[59-50-7]	2071,7
2,4,6-Trichlorophenol	[88-06-2]	2076,6
2,4-Dinitrophenol	[51-28-5]	2079,6
4-Nitrophenol	[100-02-7]	2087,6
2-Methyl-4,6-dinitrophenol	[534-52-1]	2083,6
Pentachlorophenol	[87-86-5]	2084,6

EPA 528 rev.1.0 Calibration Solutions **S-4366**
11 Analytes, 2 Internal Standards and 3 Surrogate Analytes, in dichloromethane, 7 x 5 mL

Analyte	CAL 1	CAL 2	CAL 3	CAL 4	CAL 5	CAL 6	CAL 7
	ng/μL	ng/μL	ng/μL	ng/μL	ng/μL	ng/μL	ng/μL
Phenol	15.00	10.00	5.00	2.00	1.00	0.50	0.10
2-Chlorophenol	15.00	10.00	5.00	2.00	1.00	0.50	0.10
2-Methylphenol (o-cresol)	15.00	10.00	5.00	2.00	1.00	0.50	0.10
2-Nitrophenol	15.00	10.00	5.00	2.00	1.00	0.50	0.10
2,4-Dimethylphenol	15.00	10.00	5.00	2.00	1.00	0.50	0.10
4-Chloro-3-methylphenol	15.00	10.00	5.00	2.00	1.00	0.50	0.10
2,4,6-Trichlorophenol	15.00	10.00	5.00	2.00	1.00	0.50	0.10
2,4-Dinitrophenol	15.00	10.00	5.00	2.00	1.00	0.50	0.10
4-Nitrophenol	15.00	10.00	5.00	2.00	1.00	0.50	0.10
2-Methyl-4,6-dinitrophenol	15.00	10.00	5.00	2.00	1.00	0.50	0.10
Pentachlorophenol	15.00	10.00	5.00	2.00	1.00	0.50	0.10
<i>Internal Standards</i>							
1,2-Dimethyl-3-nitrophenol	250	2.50	2.50	2.50	2.50	2.50	2.50
2,3,4,5-Tetrachlorophenol	5.00	5.00	5.00	5.00	5.00	5.00	5.00
<i>Surrogate Analytes</i>							
2-Chlorophenol-3,4,5,6-d ₄	250	2.50	2.50	2.50	2.50	2.50	2.50
2,4-Dimethylphenol-3,5,6-d ₃	250	2.50	2.50	2.50	2.50	2.50	2.50
2,4,6-Tribromophenol	5.00	5.00	5.00	5.00	5.00	5.00	5.00

EPA 528 rev. 1.0 Internal Standard Solution 1 **S-4367**
100 μg/mL in methylene chloride, 5 mL
 1,2-Dimethyl-3-nitrobenzene

EPA 528 rev. 1.0 Internal Standard Solution 2 **S-4368**
200 μg/mL in methylene chloride, 5 mL
 2,3,4,5-Tetrachlorophenol [4901-51-3] 2081,6

EPA 528 rev. 1.0 Internal Standard Solution 3 **S-4369**
100 μg/mL each in methylene chloride, 5 mL
 1,2-Dimethyl-3-nitrophenol 100 μg/mL
 2,3,4,5-Tetrachlorophenol 200 μg/mL [4901-51-3] 2081,6

EPA 528 rev. 1.0 Sample Fortification Solution 1 **S-4370**
100 μg/mL in methanol, 5 mL
 2-Chlorophenol-3,4,5,6-d₄ [93951-73-6] 2420,6

EPA 528 rev. 1.0 Sample Fortification Solution 2 **S-4371**
100 μg/mL in acetone, 5 mL
 2,4-Dimethylphenol-3,5,6-d₃ [93951-75-8] 2396,8

EPA 528 rev. 1.0 Sample Fortification Solution 3 **S-4372**
200 μg/mL in methanol, 5 mL
 2,4,6-Tribromophenol [118-79-6] 2060,6

**EPA Method Phenols by GC-FID and Phenols as PFB Derivatives (GC-ECD)
604**

Standard Test Method for the Determination Phenols in Municipal and Industrial Wastewater using GC Procedures and Derivatization.

This test method describes the procedure for the determination of phenols or phenols derivatives. Nonderivatized phenols may be analyzed by GC-FID. Target phenols may also be derivatized with diazomethane or pentafluorobenzylbromide (PFBBBr) and analyzed by GC-FID or GC-ECD.

EPA 604 Calibration Mixture S-4247

11 Analytes, 500 µg each/mL in methanol, 5 mL
(2,4-Dinitrophenol and 4,6-dinitrocresol(2-Methyl-4,6-dimethylphenol)
at concentration 1000 µg/mL)

4-Chloro-3-methylphenol	2-Nitrophenol
2-Chlorophenol	4-Nitrophenol
2,4-Dichlorophenol	Pentachlorophenol
2,4-Dimethylphenol	Phenol
2,4-Dinitrophenol	2,4,6-Trichlorophenol
2-Methyl-4,6-dinitrophenol	

EPA 604, Surrogate Standard S-4374

1 Analyte, 200 µg/mL in methanol, 5 mL
2,4,6-Tribromophenol [118-79-6] 2060,6

EPA 604 Calibration Mixture as PFB derivatives S-4148

11 Analytes, 200 each µg/mL in methanol, 5 mL

4-Chloro-3-methylphenol	2-Nitrophenol
2-Chlorophenol	4-Nitrophenol
2,4-Dichlorophenol	Pentachlorophenol
2,4-Dimethylphenol	Phenol
2,4-Dinitrophenol	2,4,6-Trichlorophenol
2-Methyl-4,6-dinitrophenol	

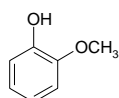
EPA 604, Surrogate Standard as PFB derivatives S-4375

1 Analyte, 200 µg/mL in methanol, 5 mL
or 1 mg/mL in isopropanol, 1 mL
2,4,6-Tribromophenol-PFB 2091,13

EPA Method 1653 Chlorinated Phenolics in Pulp and Paper Effluents

EPA 1653 Chlorophenols**S-4243***0.1 mg each/mL in methanol, 1 mL or 5x1mL*

4-Chlorophenol
2,4-Dichlorophenol
2,6-Dichlorophenol
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,3,4,6-Tetrachlorophenol
Pentachlorophenol

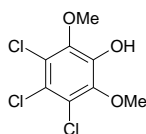
EPA 1653 Chloroguaiacols**S-4244***0.1 mg each/mL in methanol, 1 mL*

Guaiacol

4-Chloroguaiacol
3,4-Dichloroguaiacol
4,5-Dichloroguaiacol
4,6-Dichloroguaiacol
3,4,5-Trichloroguaiacol
3,4,6-Trichloroguaiacol
4,5,6-Trichloroguaiacol
Tetrachloroguaiacol

EPA 1653 Chlorocatechols**S-4245***0.1 mg each/mL in methanol, 1 mL*

4-Chlorocatechol
3,4-Dichlorocatechol
3,6-Dichlorocatechol
4,5-Dichlorocatechol
3,4,5-Trichlorocatechol
3,4,6-Trichlorocatechol
Tetrachlorocatechol

EPA 1653 Chlorovanillines and syringaldehydes**S-4246***0.1 mg each/mL in acetone, 1 mL*

Trichlorosyringol

5-Chlorovanillin
6-Chlorovanillin
5,6-Dichlorovanillin
2-Chlorosyringaldehyde
2,6-Dichlorosyringaldehyde
Trichlorosyringol

**EPA method Phenols as PFB Derivatives by GC-ECD or FID
8041A**

Standard Test method for analysis of phenols in solid waste and ground water using GC procedures and derivatization.

This test method describes the procedure for the determination of phenols or phenols derivatizes. Underivatized phenols may be analyzed by GC-FID. Target phenols may also be derivatized with diazomethane or pentafluorobenzylbromide (PFBBBr) and analyzed by GC-FID or GC-ECD.

Other compositions are available, please inquire.
CHIRON can also offer the PFB derivatives.

EPA 8041A RCRA Target Phenols Solution **S-4207**
21 Analytes, 1 mg each/mL in isopropanol

4-Chloro-3-methylphenol	2-Methyl-4,6-dinitrophenol
2-Chlorophenol	2-Nitrophenol
2-Methylphenol	4-Nitrophenol
3-Methylphenol	Pentachlorophenol
4-Methylphenol	Phenol
2-Cyclohexyl-4,6-dinitrophenol	2,3,4,5-Tetrachlorophenol
2,4-Dichlorophenol	2,3,4,6-Tetrachlorophenol
2,6-Dichlorophenol	2,3,5,6-Tetrachlorophenol
2,4-Dimethylphenol	2,4,5-Trichlorophenol
2,4-Dinitrophenol	2,4,6-Trichlorophenol
Dinoseb	

EPA 8041A Non-RCRA Target Phenol Standards **S-4208**
18 Analytes, 1 mg each/mL in isopropanol

2-Chloro-5-methylphenol	2,5-Dimethylphenol
4-Chloro-2-methylphenol	2,6-Dimethylphenol
3-Chlorophenol	3,4-Dimethylphenol
4-Chlorophenol	2,5-Dinitrophenol
2,3-Dichlorophenol	3-Nitrophenol
2,5-Dichlorophenol	2,3,4-Trichlorophenol
3,4-Dichlorophenol	2,3,5-Trichlorophenol
3,5-Dichlorophenol	2,3,6-Trichlorophenol
2,3-Dichlorophenol	3,4,5-Trichlorophenol

EPA 8041A Internal Standard **S-4209**
1 mg each/mL in isopropanol, 1 mL, 5 x 1 mL, 5 mL

2,5-Dibromophenol
2,2',5,5'-Tetrabromobiphenyl

EPA 8041A Surrogate Standard **S-4382**
1 mg/mL in isopropanol, 1 mL, 5 x 1 mL, 5 mL

2,4-Dibromophenol [615-58-7] 2061,6

EPA 8041A Surrogate Standard PFB-derivatives **S-4373**
1 mg/mL in isopropanol, 1 mL, 5 x 1 mL, 5 mL

2,4-Dibromophenol-PFB 2092,13