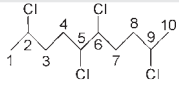
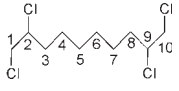
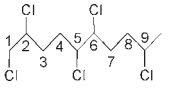
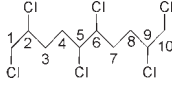
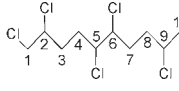


## Chloroparaffins

In 1999 a new analytical method has been developed in the Institute for Chemical Technical Analysis - Technical University Munich for quantification of C10-C13 polychlorinated paraffins (Lit. 1-3). Detection has been achieved by a short-column gas chromatography/ electron capture negative ion mass spectrometry using C10, C11, C12 and C13 polychlorinated alkanes with different chlorine contents.

Name	Description	Formula	Conc.	Unit	Cat.No.	Price
CP-1	2,5,6,9-Tetrachlorodecane (mix of 3 diastereoisomers)	 <chem>CCCC(Cl)C(Cl)C(Cl)C(Cl)C</chem>	$C_{10}H_{18}Cl_4$	10 ng/μl	1ml	LA17356500CY BEK
CP-2	1,2,9,10-Tetrachlorodecane (1 diastereoisomer)	 <chem>ClC(Cl)CCCCC(Cl)C(Cl)C</chem>	$C_{10}H_{18}Cl_4$	10 ng/μl	1ml	LA17356600CY BEK
CP-3	1,2,5,6,9-Pentachlorodecane (mix of 2 diastereoisomers)	 <chem>ClC(Cl)C(Cl)C(Cl)C(Cl)C(Cl)C</chem>	$C_{10}H_{17}Cl_5$	10 ng/μl	1ml	LA15963500CY BEK
CP-4	1,2,5,6,9,10-Hexachlorodecane (1 diastereoisomer)	 <chem>ClC(Cl)C(Cl)C(Cl)C(Cl)C(Cl)C(Cl)C</chem>	$C_{10}H_{16}Cl_6$	10 ng/μl	1ml	LA14171500CY BEK
CP-5	1,2,5,6,9,10-Hexachlorodecane (mix of 2 diastereoisomers)	 <chem>ClC(Cl)C(Cl)C(Cl)C(Cl)C(Cl)C(Cl)C</chem>	$C_{10}H_{16}Cl_6$	10 ng/μl	1ml	LA14171600CY BEK
CP-6	1,2,4,5,9,10-Hexachlorodecane		$C_{10}H_{16}Cl_6$	10 ng/μl	1ml	LA14171400CY BFL
CP-7	1,2,4,5,6,9,10-Heptachlorodecane		$C_{10}H_{15}Cl_7$	10 ng/μl	1ml	LA14110000CY CFA
CP-8	1,2,5,5,6,9,10-Heptachlorodecane		$C_{10}H_{15}Cl_7$	10 ng/μl	1ml	LA14110010CY CFA
CP-8	2,3,4,5,6,7,8,9-Octachlorodecane		$C_{10}H_{14}Cl_8$	1 ng/μl	1ml	ZA15705000CY CFA
CP-10	1,2,3,4,5,6,7,8,9-Nonachlorodecane		$C_{10}H_{13}Cl_9$	1 ng/μl	1ml	ZA15620500CY DBA
	Chloroparaffin-C10-Mix 1 Quantitative mix of Coelhan-Parlar No. CP-1, CP-2, CP-3, CP-4, & CP-5 Technical Grade Chloroparaffin Compounds:		10 ng/μl	1ml	LA22102000CY	FFA
	Chloroparaffin C10-C13, 51.5%Cl		100 ng/μl	10ml	X 23105100CY	DF
	Chloroparaffin C10-C13, 55.5% Cl		100 ng/μl	10ml	X 23105500CY	DF
	Chloroparaffin C10-C13, 63% Cl		100 ng/μl	10ml	X 23106300CY	DF
	Chloroparaffin C14-C17, 42% Cl		100 ng/μl	10ml	X 23144200CY	DF
	Chloroparaffin C14-C17, 52% Cl		100 ng/μl	10ml	X 23145200CY	DF
	Chloroparaffin C14-C17, 57% Cl		100 ng/μl	10ml	X 23145700CY	DF
	Chloroparaffin C18-C20, 36% Cl		100 ng/μl	10ml	X 23183600CY	DF
	Chloroparaffin C18-C20, 49% Cl		100 ng/μl	10ml	X 23184900CY	DF
	Chloroparaffin C22, 72.1% Cl		100 ng/μl	10ml	X 23227200CY	DF

# Dr. Ehrenstorfer Reference Materials

Description	Chain	Chlorination	Conc.	Solvent	Unit	Cat. No.	Price
Chloroparaffin	C10	44.82% Cl	10 ng/µl	cyclohexane	1 ml	LA11457510CY	KL
Chloroparaffin	C10	50.18% Cl	10 ng/µl	cyclohexane	1 ml	LA11457512CY	KL
Chloroparaffin	C10	55.00% Cl	10 ng/µl	cyclohexane	1 ml	LA11457514CY	KL
Chloroparaffin	C10	60.09% Cl	10 ng/µl	cyclohexane	1 ml	LA11457516CY	KL
Chloroparaffin	C10	65.02% Cl	10 ng/µl	cyclohexane	1 ml	LA11457518CY	KL
Chloroparaffin	C11	45.50% Cl	10 ng/µl	cyclohexane	1 ml	LA11457520CY	KL
Chloroparaffin	C11	50.21% Cl	10 ng/µl	cyclohexane	1 ml	LA11457522CY	KL
Chloroparaffin	C11	55.20% Cl	10 ng/µl	cyclohexane	1 ml	LA11457524CY	KL
Chloroparaffin	C11	60.53% Cl	10 ng/µl	cyclohexane	1 ml	LA11457526CY	KL
Chloroparaffin	C11	65.25% Cl	10 ng/µl	cyclohexane	1 ml	LA11457528CY	KL
Chloroparaffin	C12	45.32% Cl	10 ng/µl	cyclohexane	1 ml	LA11457530CY	KL
Chloroparaffin	C12	50.18% Cl	10 ng/µl	cyclohexane	1 ml	LA11457532CY	KL
Chloroparaffin	C12	55.00% Cl	10 ng/µl	cyclohexane	1 ml	LA11457534CY	KL
Chloroparaffin	C12	65.08% Cl	10 ng/µl	cyclohexane	1 ml	LA11457536CY	KL
Chloroparaffin	C12	69.98% Cl	10 ng/µl	cyclohexane	1 ml	LA11457538CY	KL
Chloroparaffin	C13	44.90% Cl	10 ng/µl	cyclohexane	1 ml	LA11457540CY	KL
Chloroparaffin	C13	50.23% Cl	10 ng/µl	cyclohexane	1 ml	LA11457542CY	KL
Chloroparaffin	C13	55.03% Cl	10 ng/µl	cyclohexane	1 ml	LA11457544CY	KL
Chloroparaffin	C13	59.98% Cl	10 ng/µl	cyclohexane	1 ml	LA11457546CY	KL
Chloroparaffin	C13	65.18% Cl	10 ng/µl	cyclohexane	1 ml	LA11457548CY	KL

## Literature:

- (1) Coelhan, M. Anal. Chem. 1999, 71, 4498-4505
- (2) Coelhan, M., Saraci, M., Parlar, H., Chemosphere 2000, 40, 685-689
- (3) Coelhan, M., Saraci, M., Lahaniatis, M., Leopold, G., Parlar, H., FEB 1998, 7, 353-360

## Chlorostyrenes

Prof. Dr. H. Parlar and his research group from Technical University Munich succeeded in producing important Chlorostyrene single components.

Description	Conc.	Solvent	Unit	Cat. No.	Price
2,3,4,5,6-Pentachlorostyrene	10 ng/µl	cyclohexane	1 ml	LA15973160CY	BBK
alpha-2,3,4,5,6-Hexachlorostyrene	10 ng/µl	cyclohexane	1 ml	LA14185010CY	BBK
(E)-beta-2,3,4,5,6-Hexachlorostyrene	10 ng/µl	cyclohexane	1 ml	LA14185020CY	BBK
(Z)-beta-2,3,4,5,6-Hexachlorostyrene	10 ng/µl	cyclohexane	1 ml	LA14185022CY	BBK
(E)-alpha,beta,2,3,4,5,6-Heptachlorostyrene	10 ng/µl	cyclohexane	1 ml	LA14121010CY	BBK
(Z)-alpha,beta,2,3,4,5,6-Heptachlorostyrene	10 ng/µl	cyclohexane	1 ml	LA14121012CY	BBK
beta,beta,2,3,4,5,6-Heptachlorostyrene	10 ng/µl	cyclohexane	1 ml	LA14121014CY	BBK
Octachlorostyrene	10 ng/µl	cyclohexane	1 ml	LA15710000CY	BBK
Chlorostyrene-Standard-Mix 1 containing 1 ng/µl of each single component	10 ng/µl	cyclohexane	1 ml	ZA22103000CY	FFA

## Literature:

- (1) Reil, G., Diplomarbeit (1999), Technical University of Munich, Institute for Chemical Technical Analysis
- (2) Parlar, H., et. al. (2000), ES&T, Publication submitted.

## 4,4'-Diphenoquinones and 4,4'-Dihydroxybiphenyls

4,4'-Diphenoquinones produced under oxidative conditions, such as combustion, pyrolysis and oxidative metabolism (1.) have been detected in different environmental samples (2.) Toxicological studies of 3,3',5,5'-tetrachloro-4,4'-diphenoquinone showed that this substance binds to the nuclear T4 receptor like chlorinated dioxins (3.) Recently, some compounds of this substance class have been synthesized by the research group of Prof. Dr. H. Parlar (TU Munich) and an analytical method has been developed in cooperation with the research groups of Prof. Dr. M. Bahadir and Prof. Dr. H. Hopf (TU Brunswick) (2.) Diphenoquinones and dihydroxybiphenyls are in an equilibrium, which is completely shifted to the dihydroxybiphenyls side by Soxhlet extraction with acetone as well as by liquid/liquid-partitioning with hexane and water.

Description	Conc.	Solvent	Unit	Cat. No.	Price	
DHB	4,4'-Dihydroxybiphenyl	10 ng/µl	in Acetonitrile	1ml	LA12635500AL	KL
DQ	4,4'-Diphenoquinone	10 ng/µl	in Acetonitrile	1ml	LA12882500AL	KL
TCDHB	3,3',5,5'-Tetrachloro-4,4'-dihydroxybiphenyl	10 ng/µl	in Acetonitrile	1ml	LA17356900AL	KL
TCDQ	3,3',5,5'-Tetrachloro-4,4'-diphenoquinone	10 ng/µl	in Acetonitrile	1ml	LA17357000AL	KL
TMxDHB	3,3',5,5'-Tetramethoxy-4,4'-dihydroxybiphenyl	10 ng/µl	in Acetonitrile	1ml	LA17407500AL	KL
TMxDQ	3,3',5,5'-Tetramethoxy-4,4'-diphenoquinone	10 ng/µl	in Acetonitrile	1ml	LA17407700AL	KL
TMDHB	3,3',5,5'-Tetramethyl-4,4'-dihydroxybiphenyl	10 ng/µl	in Acetonitrile	1ml	LA17413800AL	KL
TMDQ	3,3',5,5'-Tetramethyl-4,4'-diphenoquinone	10 ng/µl	in Acetonitrile	1ml	LA17414000AL	KL

1. Waters, W. A.; J.Chem. Soc. [B] 2026-2029 (1971) Eastmond, D. A., Smith, M. T., Ruzo, L. O., Ross, D.; Mol. Pharmacol. 30, 674-679 (1986)
2. Otto, F., Leopold, G., Parlar, H., Rosemann, R., Bahadir, M., Hopf, H.; Anal. Chem. Submitted
3. McKinney, J., Fannin, R., Chae, K., Rickenbacher, U., Peddersen, L.; J. Med. Chem. 30, 79-86 (1987)

## Dyes

Researchers found, that colours intended for textiles and other household products have been used in order to provide food with a more appealing aspect. The need for reference materials is obvious and led to our list.

Description	CAS	Formula	MW	Cat.No.	Conc.	Unit	Price
<b>Acid Red 26</b>	3761-53-3	$C_{18}H_{14}N_2Na_2O_7S_2$	480.42	C 10028800	certified	0.1 g	EH
<b>Acid Yellow 7</b>	2391-30-2	$C_{19}H_{14}N_2O_5SNa$	405.39	C 10029000	certified	0.25 g	HD
<b>Basic Red 9</b>	569-61-9	$C_{19}H_{17}N_3 \cdot HCl$	323.82	C 10425000	certified	0.1 g	EH
<b>Basic Violet 3</b>	548-62-9	$C_{25}H_{30}ClN_3$	407.98	C 10427500	certified	0.1 g	EH
<b>Basic Violet 14 HCl</b>	632-99-5	$C_{20}H_{20}ClN_3 \cdot HCl$	337.85	C 10428000	certified	0.1 g	EH
<b>Curcumin (E100)</b>	458-37-7	$C_{21}H_{20}O_6$	368.4	E 11780000	neat	0.25 g	CC
<b>Direct Black 38</b>	1937-37-7			C 12965000	certified	0.1 g	EH
<b>Direct Blue 2b</b>	2602-46-2	$C_{32}H_{24}N_6O_{14}S_4Na_4$	936.5	C 12965200	certified	0.1 g	EH
<b>Direct Red 28</b>	573-58-0	$C_{32}H_{22}N_6Na_2O_6S_2$	696.66	C 12965400	certified	0.1 g	EH
<b>Disperse Blue 1</b>	2475-45-8	$C_{14}H_{12}N_4O_2$	268.3	C 12972010	certified	0.1 g	EH
<b>Disperse Blue 3</b>	2475-46-9	$C_{17}H_{16}N_2O_3$	296.32	C 12972013	certified	0.1 g	EH
<b>Disperse Blue 7</b>	3179-90-6	$C_{18}H_{18}N_2O_6$		C 12972017	certified	0.1 g	EH
<b>Disperse Blue 35</b>	12222-75-2			C 12972020	certified	0.1 g	EH
<b>Disperse Blue 102</b>	12222-97-8	$C_{14}H_{17}N_5O_3S$		C 12972027	certified	0.1 g	EH
<b>Disperse Blue 106</b>	12223-01-7	$C_{14}H_{17}N_5O_3S$	335.38	C 12972030	certified	0.1 g	EH
<b>Disperse Blue 124</b>	61951-51-7			C 12972040	certified	0.1 g	EH
<b>Disperse Brown 1</b>	23355-64-8	$C_{16}H_{15}Cl_3N_3O_4$		C 12972070	certified	0.1 g	EH
<b>Disperse Orange 1</b>	2581-69-3	$C_{18}H_{14}N_4O_2$	318.33	C 12972101	certified	0.1 g	EH
<b>Disperse Orange 3</b>	730-40-5	$C_{12}H_{11}N_4O_2$	242.24	C 12972110	certified	0.1 g	EH
<b>Disperse Orange 11</b>	82-28-0	$C_{15}H_{11}NO_2$	237.25	C 12972111	certified	0.1 g	EH
<b>Disperse Orange 13</b>	6253-10-7	$C_{22}H_{16}N_4O$	352.39	C 12972113	certified	0.1 g	EH
<b>Disperse Orange 37</b>	13301-61-6	$C_{17}H_{16}Cl_2N_2O_2$	392.2	C 12972120	certified	0.1 g	EH
<b>Disperse Red 11</b>	2872-48-2	$C_{15}H_{12}N_2O_3$	268.3	C 12972221	certified	0.1 g	EH
<b>Disperse Yellow 1</b>	119-15-3	$C_{12}H_9N_3O_5$	275.21	C 12972308	certified	0.1 g	EH
<b>Disperse Yellow 3</b>	2832-40-8	$C_{15}H_{15}N_3O_2$	269.3	C 12972310	certified	0.1 g	EH
<b>Disperse Yellow 9</b>	6373-73-5		274.24	C 12972319	certified	0.1 g	EH
<b>Disperse Yellow 49</b>	54824-37-2	$C_{21}H_{22}N_4O_2$		C 12972349	certified	0.1 g	EH
<b>Leucocrystal Violet</b>	603-48-5	$C_{25}H_{31}N_3$	373.54	C 14629400	certified	0.1 g	EH
<b>Leucomalachite green</b>	129-73-7	$C_{23}H_{26}N_2$	330.48	C 14629500 LA14629500CY	certified	0.1 g 10 ng/μl 1 ml	CC DC
<b>Leucomalachite green D6</b>		$C_{23}H_{20}N_2D_6$	336.48	C 14629510 XA14629510AC	certified	50 mg 100 ng/μl 1.1 ml	CGA LE
<b>Navy Blue 018112</b>	118685-33-9			C 15492000	certified	0.1 g	EH
<b>Orange II sodium salt</b>	633-96-5	$C_{16}H_{11}N_3NaO_4S$	350.32	C 15735000	certified	0.25 g	CC
<b>Para Red</b>	6410-10-2	$C_{16}H_{11}N_3O_3$	293.28	C 15875000	certified	0.1 g	CC
<b>Reactive Black 5</b>	12225-25-1	$C_{26}H_{21}N_5Na_4O_{15}S_6$	991.79	C 16809000	certified	0.1 g	EH
<b>Reactive Blue 19</b>	12225-25-1	$C_{26}H_{21}N_5Na_4O_{15}S_6$	991.79	C 16809010	certified	0.1 g	EH
<b>Reactive Orange 16</b>	12225-88-6	$C_{20}H_{17}N_3Na_2O_{11}S_3$		C 16809050	certified	0.1 g	EH
<b>Reactive Violet 5</b>	12226-38-9	$C_{20}H_{17}N_3Na_3O_{15}S_4$		C 16809100	certified	0.1 g	EH
<b>(-)-Riboflavin (Vitamin B2)</b>	83-88-5	$C_{17}H_{20}N_2O_6$	376.37	C 16813600	certified	0.25 g	CC
<b>Sudan 1</b>	842-07-9	$C_{16}H_{12}N_2O$	248.18	C 16986101	certified	0.25 g	CC
<b>Sudan 2</b>	3118-97-6	$C_{18}H_{16}N_2O$	276.2	C 16986102	certified	0.25 g	CC
<b>Sudan 3</b>	85-86-9	$C_{22}H_{16}N_4O$	352.24	C 16986103	certified	0.25 g	CC
<b>Sudan 4</b>	85-83-6	$C_{24}H_{20}N_4O$	380.45	C 16986104	certified	0.25 g	CC
<b>Sudan 1 D5 (phenyl D5)</b>	752211-63-5	$C_{16}H_7N_2OD_5$	253.18	C 16986105 XA16986105AC	certified	50 mg 100 ng/μl 1.1 ml	BGL KL
<b>Sudan 4 D6</b>		$C_{24}H_{14}N_4OD_6$	386.45	C 16986108 XA16986108AC	certified	25 mg 100 ng/μl 1.1 ml	DDA LE
<b>Sudan Black B</b>	4197-25-5	$C_{29}H_{24}N_6$	456.54	C 16986110	certified	0.1 g	CC
<b>Sudan Blue 2</b>	17354-14-2	$C_{22}H_{26}N_2O_2$	350.45	C 16986113	certified	0.1 g	CC
<b>Sudan Orange G</b>	2051-85-6	$C_{12}H_{10}N_2O_2$	214.22	C 16986115	certified	0.1 g	CC
<b>Sudan Red 7B</b>	6368-72-5	$C_{24}H_{21}N_5$	379.46	C 16986120	certified	0.1 g	CC
<b>Sudan Red G</b>	1229-55-6	$C_{17}H_{14}N_2O_2$	278.31	C 16986127	certified	0.1 g	CC
<b>Sudan Yellow</b>	60-11-7	$C_{14}H_{15}N_3$	225.30	C 16986150	certified	0.25 g	DC
<b>Toluidine Red</b>	2425-85-6	$C_{17}H_{13}N_3O_3$	307.30	C 17597000	certified	0.1 g	CC