

Test Report

No.: CANEC23007638305

Date: Aug 16, 2023

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Client Name: KINGBOARD LAMINATES HOLDINGS LIMITED

Client Address: 23/F., DELTA HOUSE, NO.3 ON YIU STREET, SHATIN, N.T. HONG KONG.

Sample Name: KB-3152

Model No.: KB-3152

Client Ref. Information: KB-2150G, KB-2150GC

The above sample(s) and information were provided by the client.

SGS Job No.: GZP23-008315

Sample Receiving Date: Aug 07, 2023

Testing Period: Aug 07, 2023 ~ Aug 16, 2023

Test Requested: Select test(s) as requested by the client.

Test Method(s): Please refer to next page(s).

Test Result(s): Please refer to next page(s).

Test Requirement	Conclusion
EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	Pass
Targeted 220 Perfluoroalkyl and polyfluoroalkyl substances (PFAS) Content	See Results
Tetrabromobisphenol A (TBBP-A)	See Results
Alkanes C14-C17, chloro (medium- chain chlorinated paraffins) (MCCPs)	See Results
Polycyclic Aromatic Hydrocarbons (PAHs)	See Results
Persistent, Bioaccumulative, and Toxic (PBT) Chemicals under US EPA Toxic Substances Control Act (TSCA) Section 6(h)	Pass
Halogen	See Results
Element(s)	See Results

Signed for and on behalf of
SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch



Jany Zhong
Approved Signatory

scan to see the report



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Guangzhou Branch, Chemical Laboratory

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Test Requirement	Conclusion
Red Phosphorus	See Results
Chlorinated Paraffins	See Results
Hexabromocyclododecane (HBCDD)	See Results
Organic-Tin compounds	See Results
Phthalates	See Results

Test Result(s):

Test Part Description:

SN ID	Sample No.	SGS Sample ID	Description
SN1	A3	CAN23-0076383-0001.C003	Copper clad brown laminate(only test part without red "KB" printing)

Remarks:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) “-“ = Not Regulated

EU RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU- Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015 and IEC 62321-8:2017, analysis was performed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit(s)	MDL	A3
Cadmium(Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8	ND
Polybromobiphenyl (PBBs)	1000	mg/kg	-	ND
Monobromobiphenyl (MonoBB)	-	mg/kg	5	ND
Dibromobiphenyl (DiBB)	-	mg/kg	5	ND
Tribromobiphenyl (TriBB)	-	mg/kg	5	ND
Tetrabromobiphenyl (TetraBB)	-	mg/kg	5	ND
Pentabromobiphenyl (PentaBB)	-	mg/kg	5	ND
Hexabromobiphenyl (HexaBB)	-	mg/kg	5	ND
Heptabromobiphenyl (HeptaBB)	-	mg/kg	5	ND
Octabromobiphenyl (OctaBB)	-	mg/kg	5	ND
Nonabromobiphenyl (NonaBB)	-	mg/kg	5	ND
Decabromobiphenyl (DecaBB)	-	mg/kg	5	ND
Polybromodiphenyl ether(PBDEs)	1000	mg/kg	-	ND
Monobromodiphenylether (MonoBDE)	-	mg/kg	5	ND



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Test Item(s)	Limit	Unit(s)	MDL	A3
Dibromodiphenylether (DiBDE)	-	mg/kg	5	ND
Tribromodiphenylether (TriBDE)	-	mg/kg	5	ND
Tetrabromodiphenylether (TetraBDE)	-	mg/kg	5	ND
Pentabromodiphenylether (PentaBDE)	-	mg/kg	5	ND
Hexabromodiphenylether (HexaBDE)	-	mg/kg	5	ND
Heptabromodiphenylether (HeptaBDE)	-	mg/kg	5	ND
Octabromodiphenylether (OctaBDE)	-	mg/kg	5	ND
Nonabromodiphenylether (NonaBDE)	-	mg/kg	5	ND
Decabromodiphenylether (DecaBDE)	-	mg/kg	5	ND
Dibutyl Phthalate(DBP)	1000	mg/kg	50	ND
Benzyl Butyl Phthalate(BBP)	1000	mg/kg	50	ND
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalate(DIBP)	1000	mg/kg	50	ND

Notes:

- (1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.
- (2) IEC 62321 series is equivalent to EN 62321 series.
- (3) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.

Targeted 220 Perfluoroalkyl and polyfluoroalkyl substances (PFAS) Content

Test Method: With reference to CEN/TS 15968:2010, analysis was performed by LC-MS or LC-MS/MS and GC-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A3
PFOS, its salts and related compounds				
Perfluorooctane sulfonates (PFOS) ^{Note (1)}	1763-23-1	mg/kg	0.010	ND
N-ethylperfluoro-1-octanesulfonamide (N-EtFOSA)	4151-50-2	mg/kg	0.010	ND
N-methylperfluoro-1-octanesulfonamide (N-MeFOSA)	31506-32-8	mg/kg	0.010	ND
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol (N-EtFOSE)	1691-99-2	mg/kg	0.010	ND
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol (N-MeFOSE)	24448-09-7	mg/kg	0.010	ND
Perfluorooctane Sulfonamide (PFOSA) Note (25)	754-91-6	mg/kg	0.010	ND
Sum of Perfluorooctane sulfonates (PFOS) and its derivatives	-	mg/kg	-	ND
PFOA, its salts				
Perfluorooctanoic acid (PFOA) ^{Note (2)}	335-67-1	mg/kg	0.010	ND
PFOA-related compounds				
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) ^{Note (3)}	39108-34-4	mg/kg	0.010	ND
Methyl perfluorooctanoate (Me-PFOA)	376-27-2	mg/kg	0.1	ND



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Test Item(s)	CAS No.	Unit(s)	MDL	A3
Ethyl perfluorooctanoate (Et-PFOA)	3108-24-5	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluoro-1-decanol (8:2 FTOH) ^{Note (3)}	678-39-7	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorodecyl acrylate (8:2 FTA) ^{Note (3)}	27905-45-9	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorodecyl methacrylate (8:2 FTMA) ^{Note (3)}	1996-88-9	mg/kg	0.1	ND
Perfluoro-1-iodooctane (PFOI)	507-63-1	mg/kg	0.1	ND
2H,2H-Perfluorodecane Acid (H ₂ PFDA/8:2 FTCA) ^{Note (3), Note (11)}	27854-31-5	mg/kg	0.010	ND
Sum of PFOA-related compounds	-	mg/kg	-	ND
C9-C14 PFCA, their salts				
Perfluorononane Acid (PFNA) ^{Note (4)}	375-95-1	mg/kg	0.010	ND
Perfluorodecane Acid (PFDA) ^{Note (4)}	335-76-2	mg/kg	0.010	ND
Perfluoroundecanoic Acid (PFUnDA) ^{Note (22)}	2058-94-8	mg/kg	0.010	ND
Perfluorododecanoic Acid (PFDoDA) ^{Note (4)}	307-55-1	mg/kg	0.010	ND
Perfluorotridecanoic Acid (PFTrDA) ^{Note (24)}	72629-94-8	mg/kg	0.010	ND
Perfluorotetradecanoic Acid (PFTDA)	376-06-7	mg/kg	0.010	ND
Perfluoro-3,7-dimethyloctanoic Acid (PF-3,7-DMOA)	172155-07-6	mg/kg	0.010	ND
Sum of C9-C14 PFCA, their salts	-	mg/kg	-	ND
C9-C14 PFCA-related substances				
Perfluorodecane Sulfonate (PFDS) ^{Note (10)}	335-77-3	mg/kg	0.010	ND
1H,1H,2H,2H-Perfluoro-1-dodecanol (10:2 FTOH)	865-86-1	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorododecylacrylate (10:2 FTA)	17741-60-5	mg/kg	0.1	ND
1-Iodo-1H,1H,2H,2H-perfluorodecane (8:2 FTI)	2043-53-0	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorodecyltriethoxysilane (8:2 FTSi(OC ₂ H ₅) ₃)	101947-16-4	mg/kg	0.1	ND
2H,2H,3H,3H-Perfluoroundecanoic acid (H ₄ PFUnDA/ 8:3 FTCA) ^{Note (12)}	34598-33-9	mg/kg	0.010	ND
1H,1H,2H,2H-Perfluorododecyl methacrylate (10:2 FTMA)	2144-54-9	mg/kg	0.1	ND
1H,1H,2H,2H-perfluorotetradecan-1-ol (12:2 FTOH)	39239-77-5	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	120226-60-0	mg/kg	0.010	ND
1,1,2,2-Tetrahydroperfluorododecyl iodide (10:2 FTI)	2043-54-1	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorotetradecyl iodide (12:2 FTI)	30046-31-2	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) ^{Note (3)}	39108-34-4	mg/kg	0.010	ND



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Test Item(s)	CAS No.	Unit(s)	MDL	A3
1H,1H,2H,2H-Perfluoro-1-decanol (8:2 FTOH) ^{Note (3)}	678-39-7	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorodecyl acrylate (8:2 FTA) ^{Note (3)}	27905-45-9	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorodecyl methacrylate (8:2 FTMA) ^{Note (3)}	1996-88-9	mg/kg	0.1	ND
2H,2H-Perfluorodecane Acid (H ₂ PFDA/8:2 FTCA) ^{Note (3), Note (11)}	27854-31-5	mg/kg	0.010	ND
Sum of C9-C14-related substances	-	mg/kg	-	ND
PFHxS, its salts				
Perfluorohexane Sulfonate (PFHxS) ^{Note (7)}	355-46-4	mg/kg	0.010	ND
PFHxS-related compounds				
N-Methylperfluoro-1-hexanesulfonamide (N-Me-PFHxSA)	68259-15-4	mg/kg	0.010	ND
Perfluorohexane sulfonamide (PFHxSA)	41997-13-1	mg/kg	0.010	ND
N-[3-(dimethylamino)propyl] tridecafluorohexanesulphonamide (N-AP-FHxSA)	50598-28-2	mg/kg	0.010	ND
2-[methyl[(tridecafluorohexyl) sulphonyl]amino]ethyl acrylate)) (N-MeFHSEA)	67584-57-0	mg/kg	0.5	ND
Other PFAS				
Perfluorobutane Acid (PFBA) ^{Note (13)}	375-22-4	mg/kg	0.010	ND
Perfluorobutane Sulfonate (PFBS) ^{Note (5)}	375-73-5	mg/kg	0.010	ND
1,1,2,2,3,3,4,4,4-nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulphonamide (PFBS-NC ₃ H ₈ O)	34454-97-2	mg/kg	0.010	ND
Perfluoropentane Acid (PFPeA) ^{Note (17)}	2706-90-3	mg/kg	0.010	ND
Perfluorohexane Acid (PFHxA) ^{Note (6)}	307-24-4	mg/kg	0.010	ND
Perfluoroheptane Acid (PFHpA) ^{Note (14)}	375-85-9	mg/kg	0.010	ND
Perfluoroheptanesulfonic Acid (PFHpS) ^{Note (8)}	375-92-8	mg/kg	0.010	ND
7H-Dodecanefluoroheptane Acid (7HPFHpA)	1546-95-8	mg/kg	0.010	ND
1H,1H,2H,2H-Perfluorooctanesulphonic acid (6:2 FTS) ^{Note (26)}	27619-97-2	mg/kg	0.010	ND
1H,1H,2H,2H-Perfluorooctylacrylate (6:2 FTA)	17527-29-6	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluoro-1-hexanol (4:2 FTOH)	2043-47-2	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluoro-1-octanol (6:2 FTOH)	647-42-7	mg/kg	0.1	ND
2,3,3,3-tetrafluoro-2-(heptafluoropropoxy) propionic acid (HFPO-DA) ^{Note (9)}	13252-13-6	mg/kg	0.010	ND
Perfluorooctane sulfonamidoacetic Acid (FOSAA)	2806-24-8	mg/kg	0.010	ND



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N-Methylperfluoro-1-octanesulfonamidoacetic Acid (N-MeFOSAA)	2355-31-9	mg/kg	0.010	ND
N-Ethylperfluorooctane sulfonamidoacetic Acid (N-EtFOSAA)	2991-50-6	mg/kg	0.010	ND
Perfluoropentane sulfonic acid (PFPeS) ^{Note (18)}	2706-91-4	mg/kg	0.010	ND
Perfluoro nonane sulfonic acid (PFNS) ^{Note (19)}	68259-12-1	mg/kg	0.010	ND
Perfluoroundecane sulfonic acid (PFUnDS) ^{Note (16)}	749786-16-1	mg/kg	0.010	ND
Perfluorododecanesulfonic acid (PFDoDS) ^{Note (20)}	79780-39-5	mg/kg	0.010	ND
Perfluorotridecane sulfonic acid (PFTrDS) ^{Note (21)}	791563-89-8	mg/kg	0.010	ND
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	757124-72-4	mg/kg	0.010	ND
2-Perfluorohexyl ethanoic acid (6:2 FTCA)	53826-12-3	mg/kg	0.010	ND
3-Perfluoropentyl propanoic acid (5:3 FTCA)	914637-49-3	mg/kg	0.010	ND
Perfluorohexadecanoic Acid (PFHxDA)	67905-19-5	mg/kg	0.010	ND
Perfluorooctadecanoic Acid (PFODA)	16517-11-6	mg/kg	0.010	ND
bis(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptafluorodecyl) hydrogen phosphate (8:2diPAP) ^{Note (15)}	678-41-1	mg/kg	0.010	ND
1H,1H,2H,2H-Perfluorooctyl methacrylate (6:2 FTMA)	2144-53-8	mg/kg	0.1	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	mg/kg	0.010	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)	377-73-1	mg/kg	0.010	ND
Perfluoro-4-methoxybutanoic acid (PFMBA)	863090-89-5	mg/kg	0.010	ND
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	151772-58-6	mg/kg	0.010	ND
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	mg/kg	0.010	ND
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	mg/kg	0.010	ND
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	113507-82-7	mg/kg	0.010	ND
3-Perfluoropropyl propanoic acid (3:3 FTCA)	356-02-5	mg/kg	0.010	ND
3-Perfluoroheptyl propanoic acid (7:3 FTCA)	812-70-4	mg/kg	0.010	ND
Perfluoropentadecanoic Acid (PFPeDA)	141074-63-7	mg/kg	0.1	ND
1H,1H,2H,2H-Perfluorohexyl methacrylate (4:2 FTMA)	1799-84-4	mg/kg	0.1	ND



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2-(N-ethylperfluorooctanesulfamido) ethyl acrylate (EtFOSAC)	423-82-5	mg/kg	0.1	ND
1H,1H,2H-Heptadecafluoro-1-decene (PFDE)	21652-58-4	mg/kg	0.1	ND
Perfluorooctyl triethoxysilane (POTS)	51851-37-7	mg/kg	0.1	ND
Perfluorododecyl iodide (PFDoDI)	307-60-8	mg/kg	0.1	ND
Perfluorodecyl iodide (PFDI)	423-62-1	mg/kg	0.1	ND
11H-Perfluoroundecanoic acid (11H-PFUnDA) <small>Note (23)</small>	1765-48-6	mg/kg	0.1	ND

Notes:

- (1) PFOS refer to its salts/derivative including
 - PFOS-K CAS No.: 2795-39-3
 - PFOS-Li CAS No.: 29457-72-5
 - PFOS-Na CAS No.: 4021-47-0
 - PFOS-NH₄ CAS No.: 29081-56-9
 - PFOS-NH₂(C₂H₄OH)₂ CAS No.: 70225-14-8
 - PFOS-N(C₂H₅)₄ CAS No.: 56773-42-3
 - PFOS-N(C₁₀H₂₁)₂(CH₃)₂ CAS No.: 251099-16-8
 - POSF CAS No.: 307-35-7
 - POSF-Mg CAS No.: 91036-71-4
- (2) PFOA refer to its salts/derivative including
 - PFOA-Na CAS No.: 335-95-5
 - PFOA-K CAS No.: 2395-00-8
 - PFOA-Ag CAS No.: 335-93-3
 - PFOA-F CAS No.: 335-66-0
 - APFO CAS No.: 3825-26-1
 - PFOA-Li CAS No.: 17125-58-5
- (3) PFAS classified as both PFOA-related compounds and C9-C14 PFCA-related substances.
 - 8:2 FTS refer to its salts including
 - 8:2 FTS-K CAS No.: 438237-73-1
 - 8:2 FTS-NH₄ CAS No.: 149724-40-3
 - 8:2 FTS-Na CAS No.: 27619-96-1
- (4) PFNA refer to its salts including
 - PFNA-Na CAS No.: 21049-39-8
 - PFNA-NH₄ CAS No.: 4149-60-4
 - PFNA-K CAS No.: 21049-38-7
 - PFNA-Li CAS No.: 60871-92-3
 - PFNA-Ag CAS No.: 7358-16-9
 - PFDA refer to its salts including
 - PFDA-Na CAS No. 3830-45-3
 - PFDA-NH₄ CAS No: 3108-42-7
 - PFDA-K CAS No: 51604-85-4
 - PFDA-Ag CAS No: 5784-82-7
 - PFDA-Li CAS No: 84743-32-8
 - PFDoDA refer to its salts including
 - PFDoDA-NH₄ CAS No: 3793-74-6
 - PFDoDA-Na CAS No: 60872-01-7
- (5) PFBS refers to its salts/derivative including
 - PFBS-K CAS No.: 29420-49-3



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PFBS-H ₂ O	CAS No.: 59933-66-3
PFBS-Li	CAS No.: 131651-65-5
TPS-PFBS	CAS No.: 144317-44-2
PFBS-S(CH ₃) ₂ C ₆ H ₅	CAS No.: 220133-51-7
PFBS-P(C ₄ H ₉) ₄	CAS No.: 220689-12-3
PFBS-N(C ₂ H ₅) ₄	CAS No.: 25628-08-4
PFBS-F	CAS No.: 375-72-4
PFBS-NC ₄ H ₉ O	CAS No.: 503155-89-3
PFBS-Mg	CAS No.: 507453-86-3
PFBS-NH ₄	CAS No.: 68259-10-9
PFBS-SC ₁₈ H ₂₃ O	CAS No.: 209482-18-8
PFBS-Cl	CAS No.: 2991-84-6
PFBS-Na	CAS No.: 60453-92-1
PFBS-I(C ₆ H ₄) ₂ (C ₄ H ₉) ₂	CAS No.: 194999-85-4
PFBS-NH(C ₂ H ₅ O) ₂	CAS No.: 70225-18-2
(6) PFHxA refers to its salt including	
APFHx	CAS No.: 21615-47-4
PFHxA-Na	CAS No.: 2923-26-4
PFHxA-K	CAS No.: 3109-94-2
PFHxA-F	CAS No.: 355-38-4
PFHxA-Ag	CAS No.: 336-02-7
PFHxA-Li	CAS No.: 90430-61-8
(7) PFHxS refers to its salts including	
PFHxS-Na	CAS No.: 82382-12-5
PFHxS-K	CAS No.: 3871-99-6
PFHxS-Li	CAS No.: 55120-77-9
PFHxS-NH ₄	CAS No.: 68259-08-5
PFHxS-BTPP	CAS No.: 1000597-52-3
PFHxS-N(C ₄ H ₉) ₄	CAS No.: 108427-54-9
PFHxS-N(C ₂ H ₅) ₄	CAS No.: 108427-55-0
PFHxS-NC ₄ H ₉	CAS No.: 1187817-57-7
PFHxS-(NC ₁₀ H ₁₄) ₃ C ₅ H ₄	CAS No.: 1310480-24-0
PFHxS-(NC ₈ H ₁₀) ₂ C ₁₃ H ₁₂	CAS No.: 1310480-27-3
PFHxS-(NC ₈ H ₁₀) ₂ C ₁₇ H ₁₂	CAS No.: 1310480-28-4
PFHxS-C ₄₂ H ₇₀ O ₃₅	CAS No.: 1329995-45-0
PFHxS-C ₄₈ H ₈₀ O ₄₀	CAS No.: 1329995-69-8
TPS-PFHxS	CAS No.: 144116-10-9
PFHxS-C ₄₄ H ₃₇ N ₂ O ₂	CAS No.: 1462414-59-0
PFHxS-I(C ₆ H ₅) ₂	CAS No.: 153443-35-7
PFHxS-TMA	CAS No.: 189274-31-5
PFHxS-NH ₂ (CH ₃) ₃	CAS No.: 202189-84-2
PFHxS-I(C ₆ H ₄) ₂ (C ₄ H ₉) ₂	CAS No.: 213740-81-9
PFHxS-Ga	CAS No.: 341035-71-0
PFHxS-S(C ₇ H ₇) ₂ C ₆ H ₅	CAS No.: 341548-85-4
PFHxS-Sc	CAS No.: 350836-93-0
PFHxS-Nd	CAS No.: 41184-65-0
PFHxS-Y	CAS No.: 41242-12-0
PFHxS-S ₃ (C ₆ H ₅) ₄ (C ₆ H ₄) ₂	CAS No.: 421555-73-9
PFHxS-I(C ₆ H ₄) ₂ (C ₅ H ₁₁) ₂	CAS No.: 421555-74-0
PFHxS-F	CAS No.: 423-50-7
PFHxS-S(C ₆ H ₄) ₃ (C ₄ H ₉) ₃	CAS No.: 425670-70-8
PFHxS-Zn	CAS No.: 70136-72-0



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PFHxS-NH(C ₂ H ₅ O) ₂	CAS No.: 70225-16-0
PFHxS-N(C ₂ H ₅) ₃	CAS No.: 72033-41-1
PFHxS-I(C ₆ H ₄) ₂ (C ₄ H ₉) ₂	CAS No.: 866621-50-3
PFHxS-S(C ₆ H ₅) ₂ C ₇ H ₇	CAS No.: 910606-39-2
PFHxS-S(C ₆ H ₅) ₂ C ₁₀ H ₉ O ₂	CAS No.: 911027-68-4
PFHxS-Cs	CAS No.: 92011-17-1
PFHxS-SC ₂₈ H ₃₁ O ₄	CAS No.: 928049-42-7
PFHxS-Cl	CAS No.: 55591-23-6
(8) PFHpS refers to its salts including	
PFHpS-Na	CAS No.: 21934-50-9
PFHpS-K	CAS No.: 60270-55-5
PFHpS-NH ₄	CAS No.: 68259-07-4
PFHpS-Li	CAS No.: 117806-54-9
(9) HFPO-DA refers to its salts including	
HFPO-DA-NH ₄	CAS No.: 62037-80-3
HFPO-DA-K	CAS No.: 67118-55-2
HFPO-DA-F	CAS No.: 2062-98-8
(10) PFDS refer to its salts including	
PFDS-Na	CAS No.: 2806-15-7
PFDS-K	CAS No.: 2806-16-8
PFDS-NH ₄	CAS No.: 67906-42-7
(11) H ₂ PFDA / 8:2 FTCA refer to its salt/derivative including	
8:2 FTCA-P(C ₄ H ₉) ₄	CAS No.: 882489-14-7
(12) H ₄ PFUnDA/ 8:3 FTCA refer to its salts including	
H ₄ PFUnDA-K	CAS No.: 83310-58-1
(13) PFBA refers to its salts including	
PFBA-NH ₄	CAS No.: 10495-86-0
PFBA-Na	CAS No.: 2218-54-4
PFBA-K	CAS No.: 2966-54-3
PFBA-Ag	CAS No.: 3794-64-7
PFBA-Li	CAS No.: 4146-76-3
(14) PFHpA refers to its salts including	
PFHpA-Na	CAS No.: 20109-59-5
PFHpA-K	CAS No.: 21049-36-5
PFHpA-NH ₄	CAS No.: 6130-43-4
PFHpA-Cs	CAS No.: 171198-24-6
PFHpA-Ag	CAS No.: 424-05-5
PFHpA-Li	CAS No.: 60871-90-1
(15) 8:2diPAP refers to its salts including	
8:2diPAP-Na	CAS No.: 114519-85-6
(16) PFUnDS refers to its salts including	
PFUnDS-Na	CAS No.: 441296-91-9 (anion)
(17) PFPeA refers to its salts including	
PFPeA-Na	CAS No.: 2706-89-0
PFPeA-K	CAS No.: 336-23-2
PFPeA-NH ₄	CAS No.: 68259-11-0
PFPeA-Li	CAS No.: 198482-22-3
PFPeA-Ag	CAS No.: 2795-30-4
(18) PFPeS refers to its salts including	
PFPeS-Na	CAS No.: 630402-22-1
PFPeS-K	CAS No.: 3872-25-1
PFPeS-NH ₄	CAS No.: 68259-09-6



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- (19)PFNS refers to its salts including
 PFNS-Na CAS No.: 98789-57-2
 PFNS-NH₄ CAS No.: 17202-41-4
 PFNS-K CAS No.: 29359-39-5
- (20)PFDoDS refers to its salts including
 PFDoDS-Na CAS No.: 1260224-54-1
- (21)PFTrDS refers to its salts including
 PFTrDS-Na CAS No.: 174675-49-1
- (22)PFUnDA refers to its salts including
 PFUnDA-Na CAS No.: 60871-96-7
 PFUnDA-NH₄ CAS No.: 4234-23-5
 PFUnDA-K CAS No.: 30377-53-8
- (23)11H-PFUnDA refers to its salts including
 11H-PFUnDA-K CAS No.: 307-71-1
 11H-PFUnDA-NH₄ CAS No.: 5081-02-7
- (24)PFTTrDA refers to its salts including
 PFTTrDA-NH₄ CAS No.: 4288-72-6
- (25)PFOSA refers to its salts including
 PFOSA-Li CAS No.: 76752-79-9
- (26)6:2 FTS refers to its salts including
 6:2 FTS-Na CAS No.: 27619-94-9
 6:2 FTS-K CAS No.: 59587-38-1
 6:2 FTS-NH₄ CAS No.: 59587-39-2

Tetrabromobisphenol A (TBBP-A)

Test Method: With reference to US EPA 3550C: 2007, analysis was performed by GC-MS or LC-MS or LC-MS/MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A3
Tetrabromobisphenol A(TBBP-A)	79-94-7	mg/kg	5	ND

Alkanes C14-C17, chloro (medium- chain chlorinated paraffins) (MCCPs)

Test Method: With reference to ISO 22818:2021, analysis was performed by GC-NCI-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A3
Alkanes C ₁₄ -C ₁₇ , chloro (medium- chain chlorinated paraffins) (MCCPs)	85535-85-9 and others	mg/kg	50	ND

Polycyclic Aromatic Hydrocarbons (PAHs)

Test Method: With reference to AfPS GS 2019:01 PAK, analysis was performed by GC-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A3
Benzo(a)pyrene(BaP)	50-32-8	mg/kg	0.1	ND



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Test Item(s)	CAS No.	Unit(s)	MDL	A3
Benzo(e)pyrene(BeP)	192-97-2	mg/kg	0.1	ND
Benzo(a)anthracene(BaA)	56-55-3	mg/kg	0.1	ND
Benzo(b)Fluoranthene(BbF)	205-99-2	mg/kg	0.1	ND
Benzo(j)fluoranthene(BjF)	205-82-3	mg/kg	0.1	ND
Benzo(k)Fluoranthene(BkF)	207-08-9	mg/kg	0.1	ND
Chrysene(CHR)	218-01-9	mg/kg	0.1	ND
Dibenzo(a,h)Anthracene(DBA)	53-70-3	mg/kg	0.1	ND
Benzo(g,h,i)perylene(BPE)	191-24-2	mg/kg	0.1	ND
Indeno(1,2,3-c,d)pyrene(IPY)	193-39-5	mg/kg	0.1	ND
Phenanthrene(PHE)	85-01-8	mg/kg	0.1	ND
Pyrene(PYR)	129-00-0	mg/kg	0.1	ND
Anthracene(ANT)	120-12-7	mg/kg	0.1	ND
Fluoranthene(FLT)	206-44-0	mg/kg	0.1	ND
Sum of Phenanthrene(PHE), Pyrene(PYR), Anthracene(ANT), Fluoranthene(FLT)	-	mg/kg	-	ND
Naphthalene(NAP)	91-20-3	mg/kg	0.1	ND
Sum of 15 PAHs	-	mg/kg	-	ND
Material Category	-	-	-	-

Notes:

AfPS (German commission for Product Safety) : PAHs requirements

Parameter	Category 1	Category 2		Category 3	
	Materials intended to be placed in the mouth, or materials coming into long-term contact with skin (more than 30s) during the intended use -in toys according to Directive 2009/48/EC or -for the use by children ^{a,b} up to 3 years of age.	Materials not covered by category 1, coming into long-term contact (more than 30s) or short-term repetitive contact ^c with skin during the intended or foreseeable use ^d .		Materials covered neither by category 1 nor by category 2, coming into short-term contact (up to 30s) with skin during the intended or foreseeable use.	
		a.	b.	a.	b.
		use by children	other consumer products	use by children	other consumer products
Benzo(a)pyrene (BaP) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(e)pyrene (BeP) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1



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Benzo(a)anthracene (BaA) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(b)fluoranthene (BbF) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(j)fluoranthene (BjF) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(k)fluoranthene (BkF)mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Chrysene (CHR) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Dibenzo(a,h)anthracene (DBA) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo(g,h,i)perylene (BPE) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Indeno(1,2,3-cd)pyrene (IPY) mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Phenanthrene (PHE), pyrene (PYR), anthracene (ANT), fluoranthene (FLT), mg/kg	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum
Naphthalene (NAP) mg/kg	< 1	< 2	< 10		
Sum of 15 PAHs	<1	< 5	< 10	< 20	< 50

Notes:

- ^a A "Child" is legally defined as a person before reaching the age of 14 years.
- ^b Use by children includes both active and passive contact by children.
- ^c Definition "short-term repetitive contact" taken from REACH Annex XVII entry 50 amendment (Regulation (EC) No.1272/2013)
- ^d According to the definition of the German Product Safety Act (ProdSG) (chapter 1 Article 2 No. 28) "foreseeable use" shall mean the use of a product in a manner that the person placing it on the market, has not intended, but which could be reasonably foreseeable.

Remark:

The German committee on Product Safety (AfPS) published a new PAHs document (AfPS GS 2019:01 PAK) on April 10, 2020, which will be binding for the issue of GS mark certificate from July 1, 2020.

Persistent, Bioaccumulative, and Toxic (PBT) Chemicals under US EPA Toxic Substances Control Act (TSCA) Section 6(h)

Test Method: SGS In-house method (SGS-CCL-TOP-149-07, With reference to US EPA Method 3550C:2007), analysis was performed by GC-MS.



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Test Item(s)	CAS No.	Limit	Unit(s)	MDL	A3
Decabromodiphenyl ether (DecaBDE) ^{Δ1}	1163-19-5	Prohibited	mg/kg	5	ND
Phenol, isopropylated phosphate (3:1) (PIP 3:1) ^{Δ2}	68937-41-7	Prohibited	mg/kg	5	ND
2,4,6-Tris(tert-butyl)phenol (2,4,6-TTBP) ^{Δ3}	732-26-3	3000	mg/kg	5	ND
Hexachlorobutadiene (HCBd)	87-68-3	Prohibited	mg/kg	5	ND
Pentachlorothiophenol (PCTP)	133-49-3	10000	mg/kg	5	ND
Conclusion					Pass

Notes:

(1) The regulation is available at the following link.

<https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/persistent-bioaccumulative-and-toxic-pbt-chemicals-under>

(2) ^{Δ1}: The submitted sample is exempted if it is plastic for recycling from products or articles containing Deca-BDE.

(3) ^{Δ2}: The submitted sample is exempted from the regulated scope if it is anyone of the following:

- Hydraulic fluids for aviation or military industry;
- Lubricants and grease;
- New and replacement parts for motor and aerospace vehicles;
- Intermediate in a closed system to produce cyanoacrylate adhesive;
- Specialized engine air filters for locomotive and marine applications;
- Plastic for recycling from products or articles containing PIP (3:1);
- Finished products or articles made of plastic recycled from products or articles containing PIP (3:1).

(4) ^{Δ3}: The submitted sample is out of the regulated scope if it is not oil or lubricant.

Halogen

Test Method: With reference to EN 14582:2016, analysis was performed by IC.

Test Item(s)	Unit(s)	MDL	A3
Fluorine(F)	mg/kg	20	ND
Chlorine(Cl)	mg/kg	50	131
Bromine(Br)	mg/kg	50	ND
Iodine(I)	mg/kg	50	ND

Element(s)

Test Method: With reference to US EPA 3052:1996, analysis was performed by ICP-OES/AAS.

Test Item(s)	Unit(s)	MDL	A3
Arsenic(As)	mg/kg	10	ND
Beryllium(Be)	mg/kg	5	ND
Nickel (Ni)	mg/kg	5	ND
Antimony(Sb)	mg/kg	10	ND



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Red Phosphorus

Test Method: SGS In-house method (SGS-CCL-TOP-215-01), analysis was performed by PY-GC/MS/ICP-OES / GC-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A3
Red Phosphorus	7723-14-0	mg/kg	500	ND

Chlorinated Paraffins

Test Method: With reference to ISO 22818:2021, analysis was performed by GC-NCI-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A3
Short Chain Chlorinate Paraffins(SCCP)(C ₁₀ -C ₁₃)	85535-84-8	mg/kg	50	ND

Hexabromocyclododecane (HBCDD)

Test Method: With reference to IEC 62321-9:2021, analysis was performed by GC-MS.

Test Item(s)	CAS No.	Unit(s)	MDL	A3
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α -HBCDD, β -HBCDD, γ -HBCDD)	134237-50-6 /134237-51-7 /134237-52-8 /25637-99-4 /3194-55-6	mg/kg	20	ND

Organic-Tin compounds

Test Method: With reference to ISO 17353:2004, analysis was performed by GC-MS.

Test Item(s)	Unit(s)	MDL	A3
Dibutyl tin(DBT)	mg/kg	0.02	ND
Tributyl tin(TBT)	mg/kg	0.02	ND
Diocetyl tin(DOT)	mg/kg	0.02	ND
Triphenyl tin(TPhT)	mg/kg	0.02	ND
Tricyclohexyltin(TCyHT)	mg/kg	0.02	ND
Trimethyltin(TMT)	mg/kg	0.02	ND
Trioctyltin(TOT)	mg/kg	0.02	ND
Tri-n-propyltin(TPT)	mg/kg	0.02	ND

Phthalates

Test Method: With reference to IEC 62321-8:2017, analysis was performed by GC-MS.



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Test Item(s)	CAS No.	Unit(s)	MDL	A3
Dibutyl Phthalate(DBP)	84-74-2	mg/kg	50	ND
Bis-(2-ethylhexyl) Phthalate(DEHP)	117-81-7	mg/kg	50	ND
Benzyl Butyl Phthalate(BBP)	85-68-7	mg/kg	50	ND
Diisononyl Phthalate (DINP)	28553-12-0 /68515-48-0	mg/kg	50	ND
Di-n-Octyl Phthalate(DNOP)	117-84-0	mg/kg	50	ND
Diisodecyl Phthalate (DIDP)	26761-40-0 /68515-49-1	mg/kg	50	ND
Diisobutyl Phthalate(DIBP)	84-69-5	mg/kg	50	ND
Bis(2-methoxyethyl)phthalate(DMEP)	117-82-8	mg/kg	50	ND
Di-n-Hexyl Phthalate(DnHP)	84-75-3	mg/kg	50	ND
Dipentyl Phthalate (DPENP/DnPP)	131-18-0	mg/kg	50	ND
Diphenyl Phthalate(DPhP)	84-62-8	mg/kg	50	ND
Diundecyl Phthalate(DUDP)	3648-20-2	mg/kg	50	ND
Dimethyl Phthalate(DMP)	131-11-3	mg/kg	50	ND
Diethyl Phthalate(DEP)	84-66-2	mg/kg	50	ND
Dipropyl Phthalate(DPrP)	131-16-8	mg/kg	50	ND
Dicyclohexyl Phthalate(DCHP)	84-61-7	mg/kg	50	ND
Dibenzyl Phthalate(DBzP)	523-31-9	mg/kg	50	ND
Dinonyl Phthalate(DNP)	84-76-4	mg/kg	50	ND
Diisooctyl Phthalate(DIOP)	27554-26-3	mg/kg	50	ND
Diallyl Phthalate(DAP)	131-17-9	mg/kg	50	ND
n-Decyl-n-Octyl Phthalate(nDnOP)	119-07-3	mg/kg	50	ND
Di-n-Decyl Phthalate(DnDP)	84-77-5	mg/kg	50	ND
Diisopentyl Phthalate(DIPP)	605-50-5	mg/kg	50	ND
n-pentyl Isopentyl Phthalate(nPIPP)	776297-69-9	mg/kg	50	ND
Bis(2-n-butoxyethyl)Phthalate(DBEP)	117-83-9	mg/kg	50	ND
Bis(4-methyl-2-pentyl)Phthalate(BMPP)	146-50-9	mg/kg	50	ND
Bis(2-ethoxyethyl)Phthalate(DEEP)	605-54-9	mg/kg	50	ND
1,2-Benzenedicarboxylic Acid,di-C6-8-branched alkyl esters,C7-rich(DIHP)	71888-89-6	mg/kg	50	ND
Di-n-Heptyl Phthalate(DnHpP)	3648-21-3	mg/kg	50	ND
1,2-Benzenedicarboxylic Acid,Di-C7-11-Branched and Linear Alkyl Esters(DHNUP)	68515-42-4	mg/kg	50	ND
1,2-Benzenedicarboxylic Acid,Dipentyl Ester,Branched and Linear (DPP)	84777-06-0	mg/kg	50	ND
Ditridecyl Phthalate(DTDP)	119-06-2	mg/kg	50	ND
1,2-benzenedicarboxylic Acid,dihexyl ester branched and linear(DHxP)	68515-50-4	mg/kg	50	ND
Di-(2-Ethylhexyl)Adipate(DEHA)	103-23-1	mg/kg	50	ND
Dioctyl Terephthalate(DOTP)	6422-86-2	mg/kg	50	ND
Diisononyl Adipate(DINA)	33703-08-1	mg/kg	50	ND
Di(2-propylheptyl)Phthalate(DPHpP)	53306-54-0	mg/kg	50	ND
Acetyl Tributyl Citrate(ATBC)	77-90-7	mg/kg	50	ND
Trioctyl trimellitate(TOTM)	3319-31-1	mg/kg	50	ND

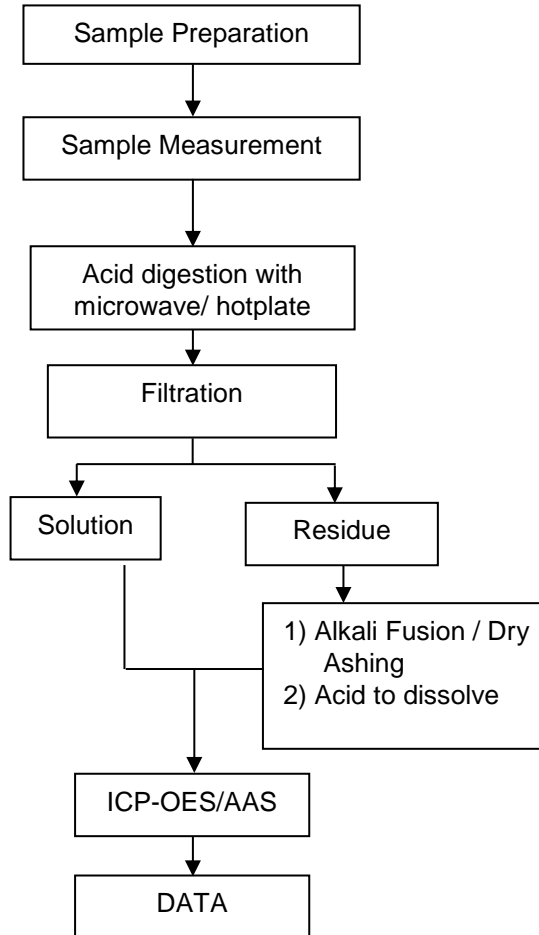
Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule ($w=0$) stated in ILAC-G8:09/2019.



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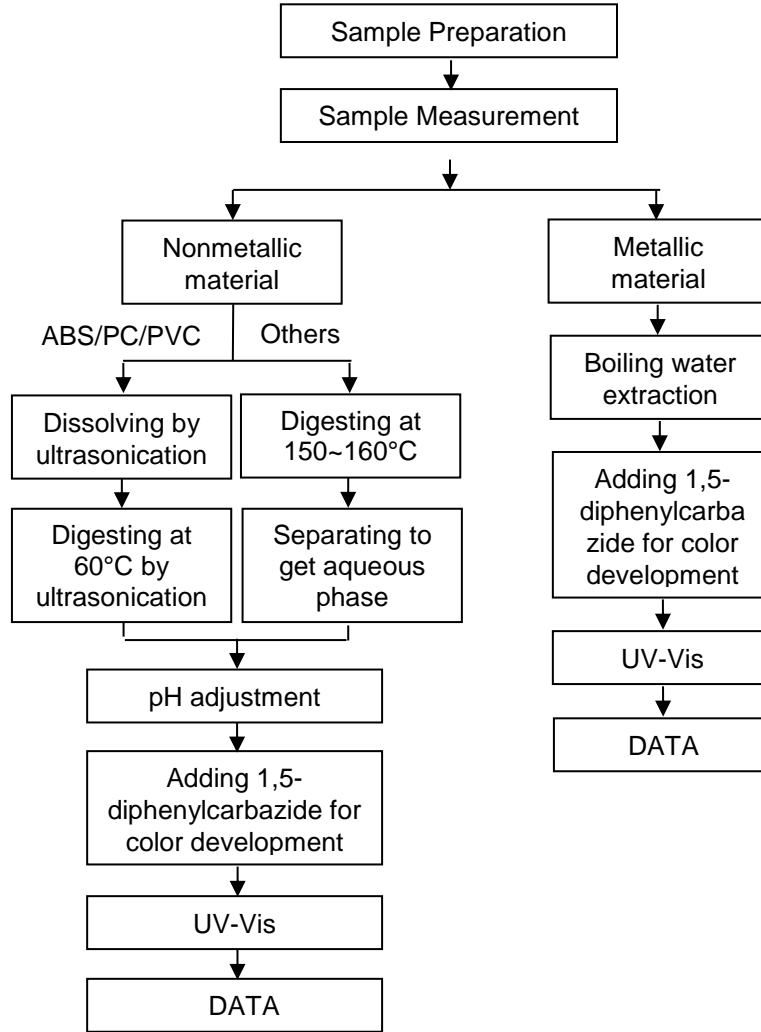
Elements Testing Flow Chart

These samples were dissolved totally by pre-conditioning method according to below flow chart.



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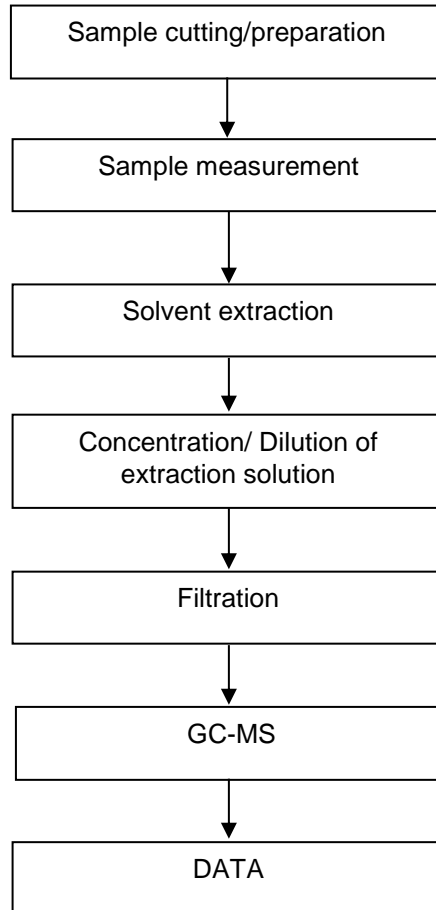
Hexavalent Chromium (Cr(VI)) Testing Flow Chart



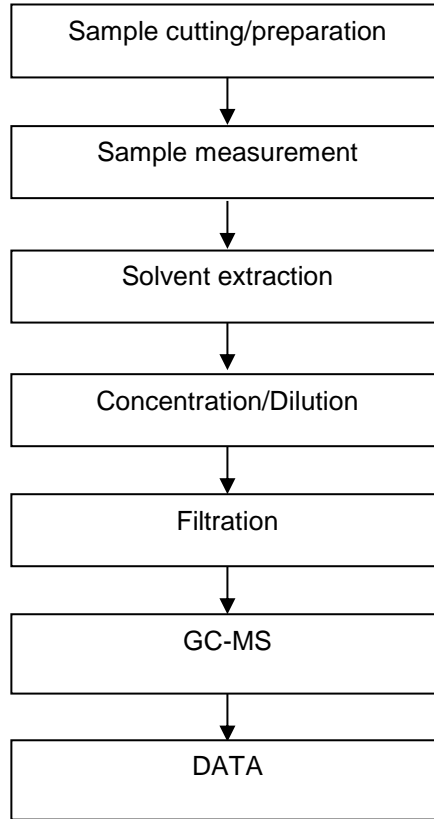
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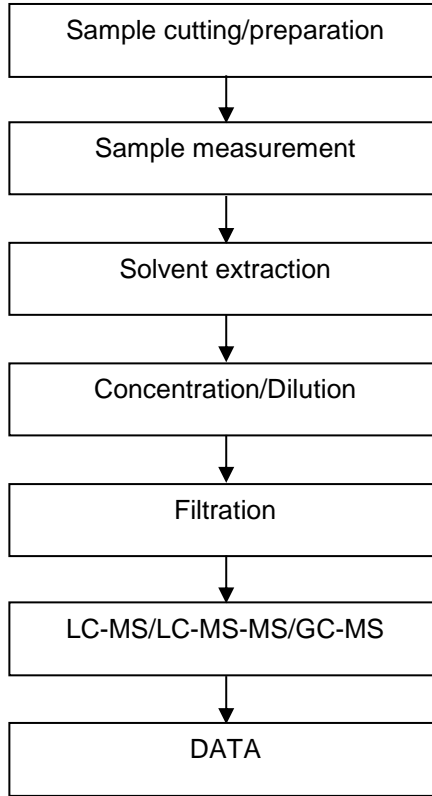
PBBs/PBDEs Testing Flow Chart



Phthalates Testing Flow Chart



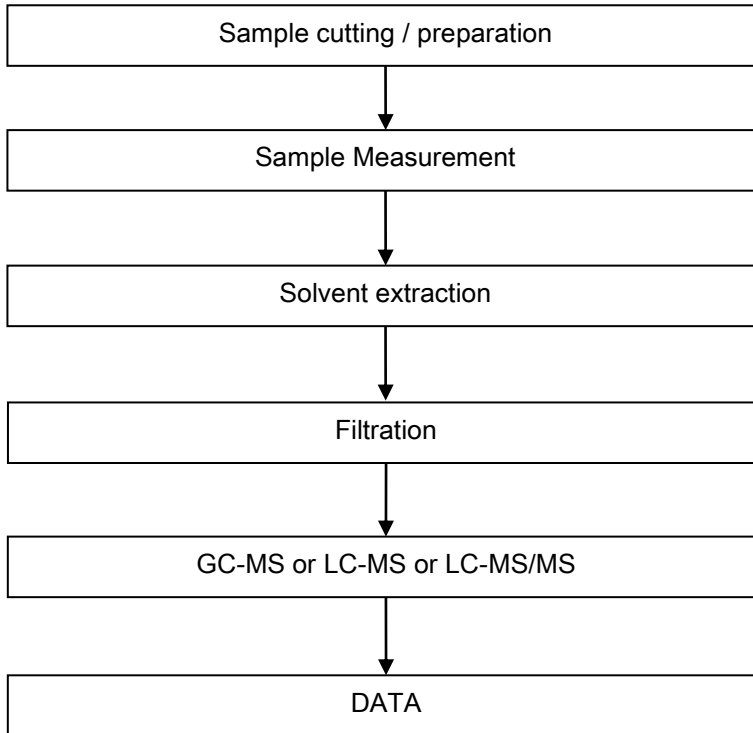
PFASs/ PFOS/PFOA Testing Flow Chart



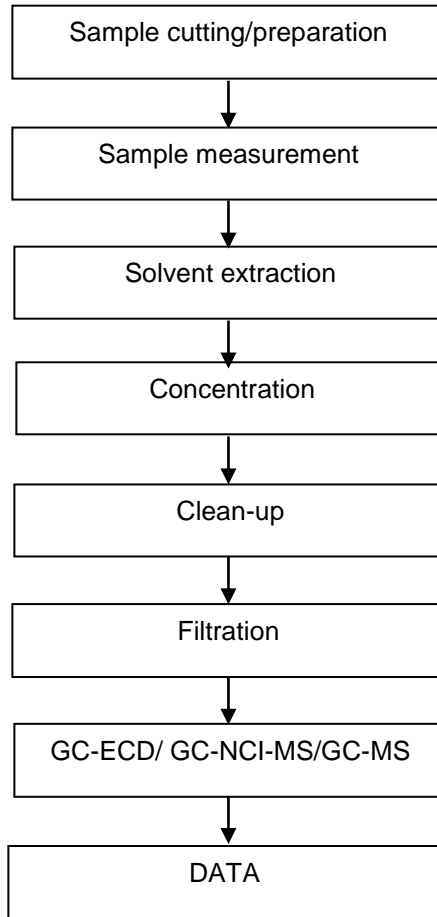
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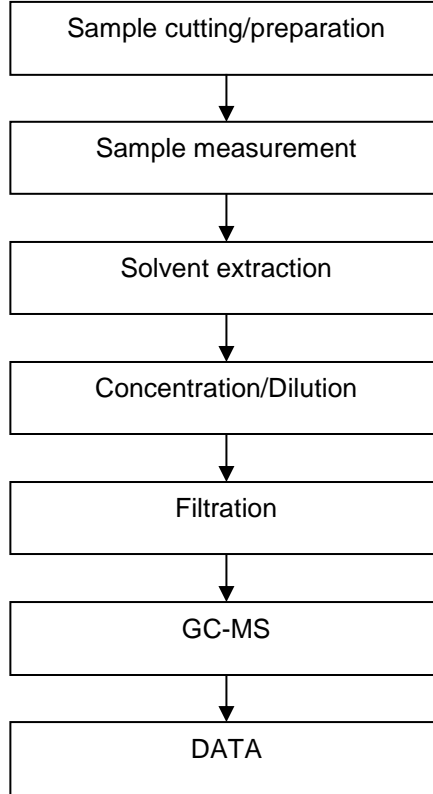
TBBP-A Testing Flow Chart



Chlorinated Paraffin Testing Flow Chart



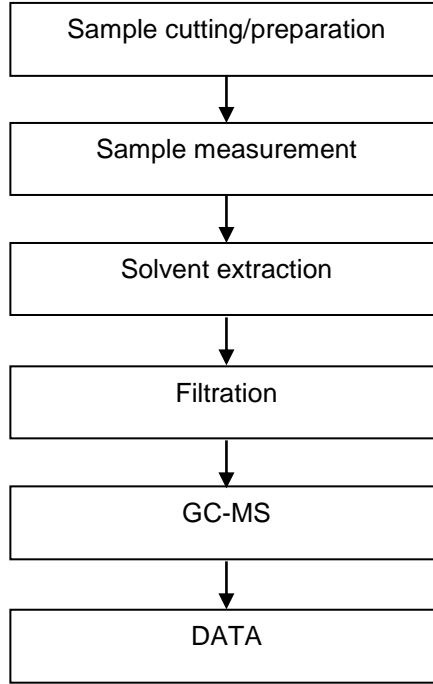
PAHs Testing Flow Chart



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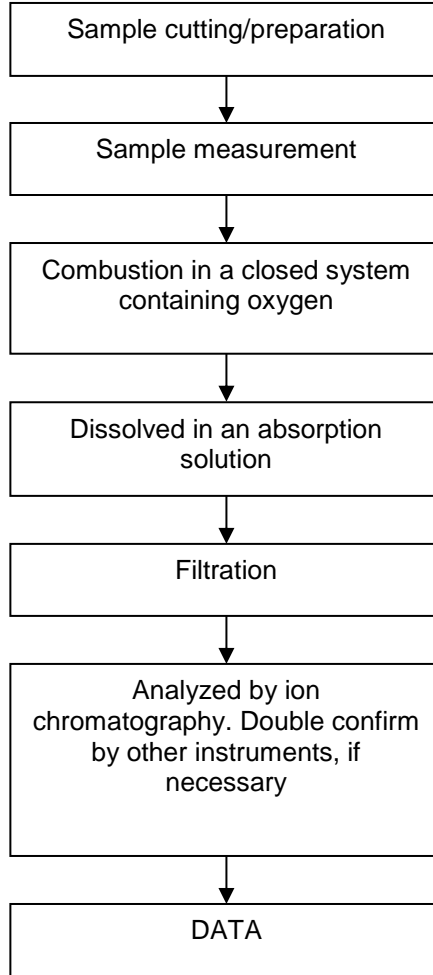
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Persistent, Bioaccumulative, and Toxic (PBT) Chemicals Testing Flow Chart

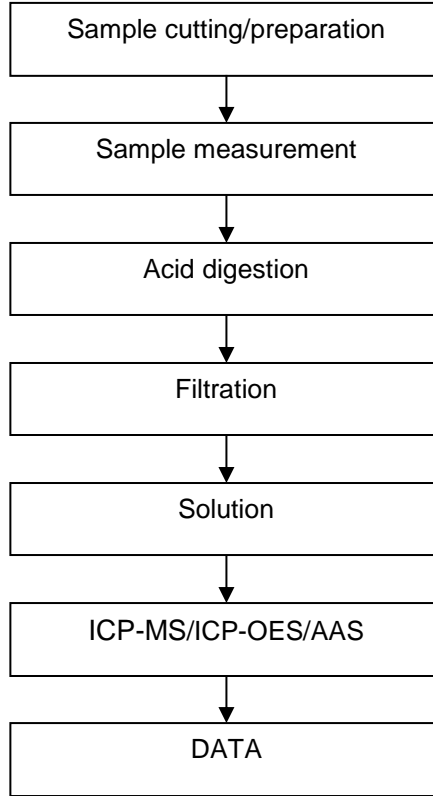


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Halogen Testing Flow Chart

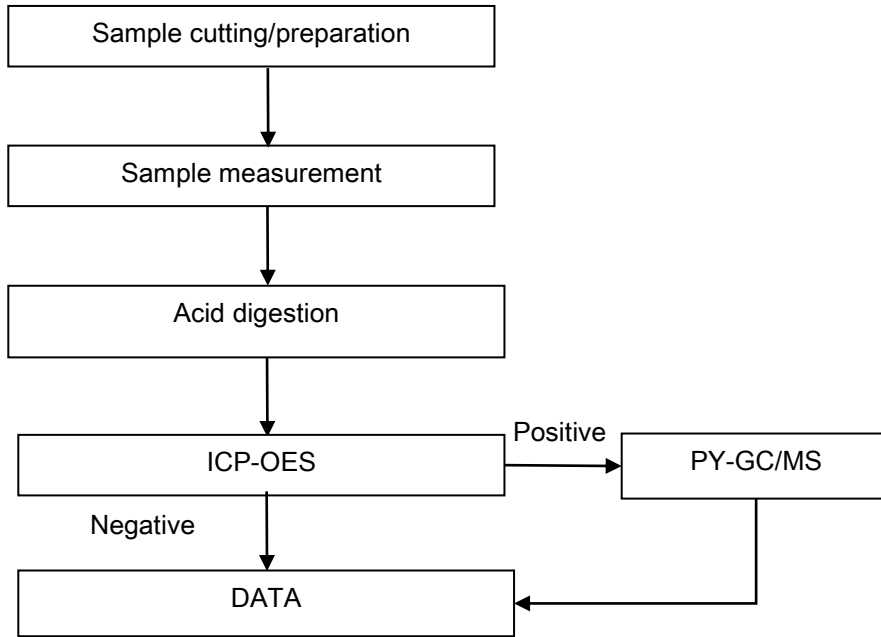


Elements Testing Flow Chart



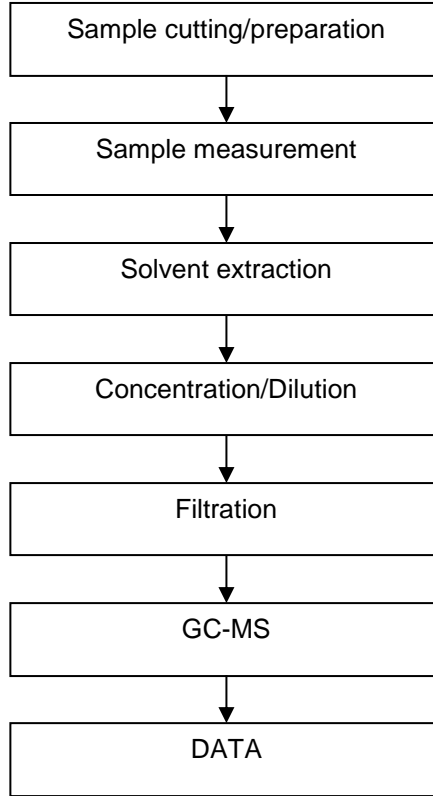
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Red phosphorus Testing Flow Chart

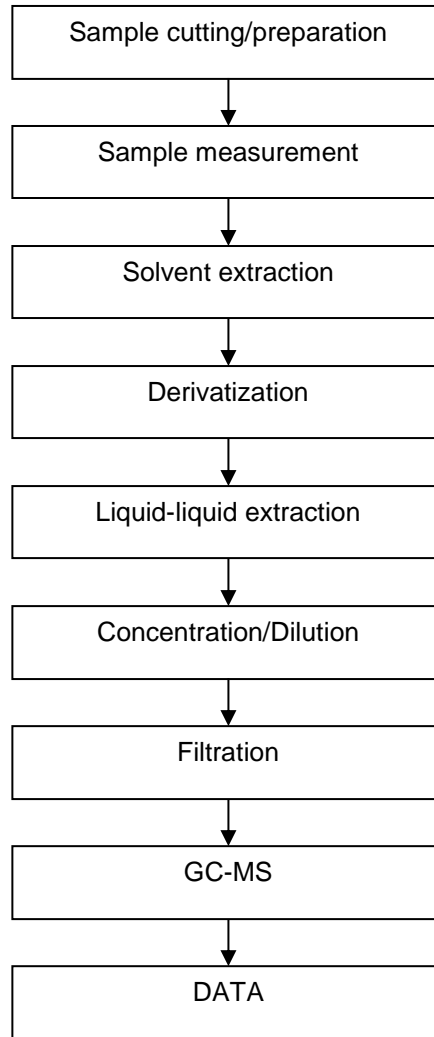


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HBCDD Testing Flow Chart



Organotin Testing Flow Chart



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Sample Photo:



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