



Test Report: (6723)096-0055

Report Date: April 15, 2023

Factory Company Name: AARTI INTERNATIONAL LIMITED

Factory Address: VILL. BHAMAN KALAN &amp; HARHIAN P.O UPPAL, KOHARA MACHIWARA ROAD, LUDHIANA, PUNJAB, INDIA, 141123

Sampling Method & Description:	I001) Untreated wastewater	Composite	Brown Color Liquid
	I002) Effluent	-	Not tested
	I003) Sludge	Composite	Dark Brown Solid
	I004) Leachate	-	Not tested
	I005) Incoming water	-	Not tested

Discharge Type: **Zero Liquid Discharge**

On-site ETP / Pretreatment: Yes Homogenization Tank &amp; Holding Time: Yes

Discharge Destination: REUSE/ RECYCLING

Permit Validation Date: /

Conventional, Anions &amp; Heavy Metals Overall Category: Not applicable ZDHC MRSL Parameters: Not detected

Sludge Parameters: Meet ZDHC Threshold Value

Sample Pick Up Date: April 06, 2023 Sampler Number: C74D106820051

Test Period: April 06, 2023 to April 15, 2023

Parameter(s) exceeded maximum holding time / temperature: Not exceeded

**Remark**

The results of this report shall not be used for any regulatory compliance purposes.

Type of Process:	<b>Textile</b>	Average total industrial wastewater generated:	<b>Equal or more than 15m3/day</b>
Sludge Disposal Pathway:	Disposal Pathway B		
Type of Sludge:	Dried sludge		

General enquiry and invoicing:  
 Shubham Goyal & Amit Kumar Srivastava  
[Shubham.goyal@bureauveritas.com](mailto:Shubham.goyal@bureauveritas.com)  
[Amit.srivastava@bureauveritas.com](mailto:Amit.srivastava@bureauveritas.com)  
 Phone No. 4368205/ 283

Technical enquiry:  
 Sumanta Kumar Swain  
[Sumanta.swain@bureauveritas.com](mailto:Sumanta.swain@bureauveritas.com)  
 Phone No. 0120- 4368264/206

Report reviewed by:

Shubham Goyal, Sustainability Coordinator

Report approved by:

Sumanta Kumar Swain, Manager

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**Result Summary - ZDHC MRSL Wastewater Parameters**

Test Items	Untreated wastewater	Effluent	Incoming water
1A) AP and APEOs	ND	NR	NR
1B) Anti-Microbials & Biocides	ND		NR
1C) Chlorinated Parafins	ND		NR
1D) Chlorobenzenes and Chlorotoluenes	ND		NR
1E) Chlorophenols	ND		NR
1F) DMFa	ND		NR
1G) Dyes - Carcinogenic or Equivalent Concern	ND		NR
1H) Dyes - Disperse (Sensitising)	ND		NR
1I) Dyes - Navy Blue Colourant	ND		NR
1J) Flame Retardants	ND		NR
1K) Glycols / Glycol Ethers	ND		NR
1L) Halogenated Solvents	ND		NR
1M) Organotin Compounds	ND		NR
1N) Other / Miscellaneous Chemicals	ND		NR
1O) PFCs	ND		NR
1P) Phthalates	ND		NR
1Q) PAHs	ND		NR
1R) Restricted Aromatic Amines	ND		NR
1S) UV Absorbers	ND		NR
1T) VOC	ND		NR



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**Result Summary - ZDHC Heavy Metals, Conventional and Anions Wastewater Parameters**

Test Items	Untreated wastewater	Effluent	Incoming water
Antimony	NR		NR
Chromium (VI)	NR		NR
Barium	NR		NR
Selenium	NR		NR
Tin	NR		NR
Arsenic	NR		NR
Total Chromium	NR		NR
Cobalt	NR		NR
Cadmium	NR		NR
Copper	NR		NR
Lead	NR		NR
Nickel	NR		NR
Silver	NR		NR
Zinc	NR		NR
Mercury	NR		NR
pH			
Temperature difference			
E.coli			
Colour			
Persistent Foam		NR	
Wastewater Flowrate			
Ammonium-Nitrogen			
AOX			
BOD <sub>5</sub>			
COD			
DO			
Oil & Grease	NR		NR
Total Phenols / Phenol Index			
Total Chlorine			
TDS			
Total Nitrogen			
Total Phosphorus			
TSS			
Chloride			
Cyanide, total			
Sulfate			
Sulfide			
Sulfite			



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**Result Summary - ZDHC Sludge Parameters**

Test Items	Sludge	Leachate
Antimony	Refer to result	NR
Arsenic	ND	NR
Barium	ND	NR
Cadmium	ND	NR
Coblat	ND	NR
Copper	Refer to result	NR
Lead	Refer to result	NR
Nickel	ND	NR
Selenium	ND	NR
Silver	ND	NR
Total Chromium	ND	NR
Zinc	ND	NR
Chromium (VI)	ND	NR
Mercury	ND	NR
Cyanide	Refer to result	NR
pH	Refer to result	
% Solids	Refer to result	
Paint Filter Test	Refer to result	
Fecal Coliform	Refer to result	
AP and APEOs	ND	
PAHs	ND	
Chlorotoluenes	ND	

## Note / Key:

Meet	=	Meet Foundational Limit / Meet Discharge Criteria
<b>Not Meet</b>	=	Exceed Foundational Limit / Exceed Discharge Criteria
NR	=	Not requested / Not required
NA	=	Not applicable
<b>D</b>	=	Detected
ND	=	Not detected
Refer to result	=	Legal parameter(s) and/or parameter(s) requested by factory, please refer to test result



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**Test Result - ZDHC MRSL Parameters**

Test Parameters	Results of Test Items					Requirements [Textile]		
	I001 (µg/L)	I002 (µg/L)	I003 <sup>#</sup> (mg/kg)	I004 <sup>#</sup> (mg/L)	I005 (µg/L)	Wastewater (µg/L)	Sludge <sup>#</sup> (mg/kg)	Leachate <sup>#</sup> -
<b>1A) AP and APEOs: including all isomers</b>								
NPEO	ND	NR	ND	NR	NR	5	0.4	-
NP, mixed isomers	ND		ND		NR			
OPEO	ND		ND		NR			
OP, mixed isomers	ND		ND		NR			
<b>1B) Anti-Microbials &amp; Biocides</b>								
o-Phenylphenol (+salts)	ND	NR	NR	NR	NR	100	-	-
Triclosan	ND				NR			
Permethrin	ND				NR			
<b>1C) Chlorinated Parafins</b>								
MCCPs (C14-C17)	ND	NR	NR	NR	NR	500	-	-
SCCPs (C10-C13)	ND				NR			
<b>1D) Chlorobenzenes and Chlorotoluenes</b>								
1,2-dichlorobenzene	ND	NR	NR	NR	NR	0.2	-	-
Other isomers of mono-, di-, tri-, tetra-, penta- and hexa- chlorobenzene	ND				NR			
Other isomers of mono-, di-, tri-, tetra- and penta- chlorotoluene	ND		ND		NR			
<b>1E) Chlorophenols</b>								
2-chlorophenol	ND	NR	NR	NR	NR	0.5	-	-
3-chlorophenol	ND				NR			
4-chlorophenol	ND				NR			
2,3-dichlorophenol	ND				NR			
2,4-dichlorophenol	ND				NR			
2,5-dichlorophenol	ND				NR			
2,6-dichlorophenol	ND				NR			
3,4-dichlorophenol	ND				NR			
3,5-dichlorophenol	ND				NR			
2,3,4-trichlorophenol	ND				NR			
2,3,5-trichlorophenol	ND				NR			
2,3,6-trichlorophenol	ND				NR			
2,4,5-trichlorophenol	ND				NR			
2,4,6-trichlorophenol	ND				NR			
3,4,5-trichlorophenol	ND				NR			
2,3,5,6-tetrachlorophenol	ND				NR			
2,3,4,6-tetrachlorophenol	ND				NR			
2,3,4,5-tetrachlorophenol	ND				NR			
Pentachlorophenol (PCP)	ND				NR			
<b>1F) N,N-di-methylformamide (DMFa)</b>								
Dimethyl formamide;								
N,N-dimethylformamide (DMFa) <sup>a</sup>	ND	NR	NR	NR	NR	1000	-	-

a = Report only for mock leather

<sup>#</sup>Limit refers to the chosen ZDHC sludge disposal pathway in Table 4 in accordance with the ZDHC Wastewater Guidelines.



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**Test Result - ZDHC MRSL Parameters (continued)**

Test Parameters	Results of Test Items					Requirements [Textile]		
	I001	I002	I003 <sup>#</sup>	I004 <sup>#</sup>	I005	Wastewater	Sludge <sup>#</sup>	Leachate <sup>#</sup>
	(µg/L)	(µg/L)	(mg/kg)	(mg/L)	(µg/L)	(µg/L)	(mg/kg)	-
<b>1G) Dyes - Carcinogenic or Equivalent Concern</b>								
Basic violet 3 with >0.1% of Michler's Ketone	ND				NR			
C.I. Acid Red 26	ND				NR			
C.I. Acid Violet 49	ND				NR			
C.I. Basic Blue 26 (with Michler's Ketone >0/1%)	ND				NR			
C.I. Basic Green 4 (Malachite Green Chloride)	ND				NR			
C.I. Basic Green 4 (Malachite Green Oxalate)	ND				NR			
C.I. Basic Green 4 (Malachite Green)	ND				NR			
C.I. Basic Red 9	ND	NR	NR	NR	NR	500	-	-
C.I. Basic Violet 14	ND				NR			
C.I. Direct Black 38	ND				NR			
C.I. Direct Blue 6	ND				NR			
C.I. Direct Red 28	ND				NR			
C.I. Disperse Blue 1	ND				NR			
C.I. Disperse Blue 3	ND				NR			
Disperse Orange 11	ND				NR			
<b>1H) Dyes - Disperse (Allergenic)</b>								
Disperse Blue 102	ND				NR			
Disperse Blue 106	ND				NR			
Disperse Blue 124	ND				NR			
Disperse Blue 26	ND				NR			
Disperse Blue 35 (CAS 12222-75-2)	ND				NR			
Disperse Blue 35 (CAS 56524-77-7)	ND				NR			
Disperse Blue 7	ND				NR			
Disperse Brown 1	ND				NR			
Disperse Orange 1	ND				NR			
Disperse Orange 3	ND	NR	NR	NR	NR	50	-	-
Disperse Orange 37/59/76	ND				NR			
Disperse Red 1	ND				NR			
Disperse Red 11	ND				NR			
Disperse Red 17	ND				NR			
Disperse Yellow 1	ND				NR			
Disperse Yellow 3	ND				NR			
Disperse Yellow 39	ND				NR			
Disperse Yellow 49	ND				NR			
Disperse Yellow 9	ND				NR			
<b>1I) Dyes - Navy Blue Colourant</b>								
Component 1: C39H23Cl-CrN7O12S 2Na	ND	NR	NR	NR	NR	500	-	-
Component 2: C46H-30CrN10O20S2 3Na	ND				NR			

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**Test Result - ZDHC MRLS Parameters (continued)**

Test Parameters	Results of Test Items					Requirements [Textile]					
	I001 (µg/L)	I002 (µg/L)	I003# (mg/kg)	I004# (mg/L)	I005 (µg/L)	Wastewater (µg/L)	Sludge# (mg/kg)	Leachate# -			
<b>1J) Flame Retardants</b>											
2,2-bis(bromomethyl)-1,3-propanediol (BBMP)	ND				NR	25	-	-			
Dis(2,3-dibromopropyl) phosphate (BIS)	ND				NR						
Decabromophenyl ether (DecaBDE)	ND				NR						
Hexabromocyclodecane (HBCDD)	ND				NR						
Octabromodiphenyl ether (OctaBDE)	ND				NR						
Pentabromodiphenyl ether (PentaBDE)	ND				NR						
Polybromobiphenyls (PBB)	ND				NR						
Tetrabromobisphenol A (TBBPA)	ND				NR						
Tris-(2-chloro-1-methylethyl) phosphate (TCPP)	ND				NR						
Tris(1-aziridinyl)phosphone oxide (TEPA)	ND				NR						
Tris(1,3-dichloro-isopropyl) phosphate (TDCP)	ND				NR						
Tris(2-chloroethyl) phosphate (TCEP)	ND				NR						
Tris(2,3-dibromopropyl) phosphate (TRIS)	ND				NR						
Decabromobiphenyl (DecaBB)	ND	NR	NR	NR	NR						
Dibromobiphenyls (DiBB)	ND				NR						
Octabromobiphenyls (OctaBB)	ND				NR						
Dibromopropylether	ND				NR						
Heptabromodiphenyl ether (HeptaBDE)	ND				NR						
Hexabromodiphenyl ether (HexaBDE)	ND				NR						
Monobromobiphenyls (MonoBB)	ND				NR						
Monobromodiphenylethers (MonoBDEs)	ND				NR						
Nonabromobiphenyls (NonaBB)	ND				NR						
Nonabromodiphenyl ether (NonaBDE)	ND				NR						
Tetrabromodiphenyl ether (TetraBDE)	ND				NR						
Tribromophenylethers (TriBDEs)	ND				NR						
Boric acid <sup>b</sup>	ND							NR	100		
Diboron trioxide <sup>b</sup>	ND							NR			
Disodium octaborate <sup>b</sup>	ND							NR			
Disodium tetraborate anhydrous <sup>b</sup>	ND							NR			
Tetraboron disodium heptaoxide, hydrate <sup>b</sup>	ND							NR			
<b>1K) Glycols / Glycol Ethers</b>											
2-ethoxyethanol	ND							NR	50	-	-
2-ethoxyethyl acetate	ND							NR			
2-methoxyethanol	ND				NR						
2-methoxyethylacetate	ND	NR	NR	NR	NR						
2-methoxypropylacetate	ND				NR						
Bis(2-methoxyethyl)-ether	ND				NR						
Ethylene glycol dimethyl ether	ND				NR						
Triethylene glycol dimethyl ether	ND				NR						
<b>1L) Halogenated Solvents</b>											
1,2-dichloroethane	ND							NR	1	-	-
Methylene chloride	ND				NR	NR	NR	NR			
Tetrachloroethylene	ND	NR									
Trichloroethylene	ND	NR									

b = Limit refers to elemental boron, not the salt.

#Limit refers to the chosen ZDHC sludge disposal pathway in Table 4 in accordance with the ZDHC Wastewater Guidelines.



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**Test Result - ZDHC MRSL Parameters (continued)**

Test Parameters	Results of Test Items					Requirements [Textile]								
	I001 (µg/L)	I002 (µg/L)	I003# (mg/kg)	I004# (mg/L)	I005 (µg/L)	Wastewater (µg/L)	Sludge# (mg/kg)	Leachate#						
<b>1M) Organotin Compounds</b>														
Dipropyltin compounds (DPT)	ND	NR	NR	NR	NR	0.01	-	-						
Mono, di-, and tri-butyltin derivatives	ND				NR									
Mono, di-, and tri-methyltin derivatives	ND				NR									
Mono, di-, and tri-octyltin derivatives	ND				NR									
Mono, di-, and tri-phenyltin derivatives	ND				NR									
Tetrabutyltin compounds (TeBT)	ND				NR									
Tripropyltin compounds (TPT)	ND				NR									
Tetraoctyltin compounds (TeOT)	ND				NR									
Tricyclohexyltin (TCyHT)	ND				NR									
Tetraethyltin compounds (TeET)	ND				NR									
<b>1N) Other / Miscellaneous Chemicals</b>														
AEEA [2-(2-aminoethylamino)ethanol]	ND				NR				NR	NR	NR	500	-	-
Bisphenol A	ND	NR												
Thiourea	ND	NR												
Quinoline	ND	NR												
Borate, zinc salt <sup>c</sup>	ND	NR												
Silica (used in sand blasting) <sup>d</sup>	NR	NR												
<b>1O) Perfluorinated and Polyfluorinated Chemicals (PFCs)</b>														
Perfluorooctane sulfonate (PFOS) and related substances, Perfluorooctanoic acid (PFOA)	ND	NR	NR	NR	NR	0.01	-	-						
Perfluorooctanoic acid (PFOA) related substances	ND				NR									
<b>1P) Phthalates - including all other esters of ortho-phthalic acid</b>														
1,2-benzenedicarboxylic acid, di-C6-8 branched and linear alkyl esters, C7-rich (DIHP)	ND	NR	NR	NR	NR	10	-	-						
1,2-benzenedicarboxylic acid, di-C7-11 branched and linear alkyl esters (DHNP)	ND				NR									
Bis(2-methoxyethyl)phthalate (DMEP)	ND				NR									
Butyl benzyl phthalate (BBP)	ND				NR									
Di-cyclohexyl phthalate (DCHP)	ND				NR									
Di-iso-decyl phthalate (DIDP)	ND				NR									
Di-iso-octyl phthalate (DIOP)	ND				NR									
Di-iso-butyl phthalate (DIBP)	ND				NR									
Di-iso-nonyl phthalate (DINP)	ND				NR									
Di-n-hexyl phthalate (DnHP)	ND				NR									
Di-n-octyl phthalate (DNOP)	ND				NR									
Di-n-pentylphthalates	ND				NR									
Di-n-propyl phthalate (DPRP)	ND				NR									
Di(ethylhexyl) phthalate (DEHP)	ND				NR									
Dibutyl phthalate (DBP)	ND				NR									
Diethyl phthalate (DEP)	ND				NR									
Diisopentylphthalates	ND				NR									
Dinonyl phthalate (DNP)	ND				NR									

c = Limit refers to elemental boron and/or zinc, not the salt.

d = Not a ZDHC wastewater parameter, and not required to test this parameter as this is related to sand blasting

#Limit refers to the chosen ZDHC sludge disposal pathway in Table 4 in accordance with the ZDHC Wastewater Guidelines.





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**Test Result - ZDHC MRSL Parameters (continued)**

Test Parameters	Results of Test Items					Requirements [Textile]		
	I001 (µg/L)	I002 (µg/L)	I003# (mg/kg)	I004# (mg/L)	I005 (µg/L)	Wastewater (µg/L)	Sludge# (mg/kg)	Leachate# -
<b>1Q) Polycyclic Aromatic Hydrocarbons (PAHs)</b>								
Acenaphthene	ND		ND		NR			
Acenaphthylene	ND		ND		NR			
Anthracene	ND		ND		NR			
Benzo[a]anthracene	ND		ND		NR			
Benzo[a]pyrene (BaP)	ND		ND		NR			
Benzo[b]fluoranthene	ND		ND		NR			
Benzo[e]pyrene	ND		ND		NR			
Benzo[ghi]perylene	ND		ND		NR			
Benzo[j]fluoranthene	ND	NR	ND	NR	NR	1	0.2	-
Benzo[k]fluoranthene	ND		ND		NR			
Chrysene	ND		ND		NR			
Dibenz[a,h]anthracene	ND		ND		NR			
Fluoranthene	ND		ND		NR			
Fluorene	ND		ND		NR			
Indeno[1,2,3-cd]pyrene	ND		ND		NR			
Naphthalene	ND		ND		NR			
Phenanthrene	ND		ND		NR			
Pyrene	ND		ND		NR			
<b>1R) Restricted Aromatic Amines (Cleavable from Azo-colourants)</b>								
2-naphthylamine	ND				NR			
2-naphthylammoniumacetate	ND				NR			
2,4-xylidine	ND				NR			
2,4,5-trimethylaniline	ND				NR			
2,4,5-trimethylaniline hydrochloride	ND				NR			
2,6-xylidine	ND				NR			
3,3'-dichlorobenzidine	ND				NR			
3,3-dimethoxybenzidine	ND				NR			
3,3-dimethylbenzidine	ND				NR			
4-aminoazobenzene	ND				NR			
4-aminodiphenyl	ND				NR			
4-chloro-o-toluidine	ND				NR			
4-chloro-o-toluidinium chloride	ND				NR			
4-chloroaniline	ND				NR			
4-methoxy-m-phenylene diammonium sulphate; 2,4-diaminoaniline sulphate	ND	NR	NR	NR	NR	0.1	-	-
4-methoxy-m-phenylenediamine	ND				NR			
4-methyl-m-phenylenediamine	ND				NR			
4,4-methylene-bis-(2-chloro-aniline)	ND				NR			
4,4-methylenedi-o-toluidine	ND				NR			
4,4-methylenedianiline	ND				NR			
4,4-oxydianiline	ND				NR			
4,4-thiodianiline	ND				NR			
5-nitro-o-toluidine	ND				NR			
6-methoxy-m-toluidine	ND				NR			
Benzidine	ND				NR			
o-aminoazotoluene	ND				NR			
o-anisidine	ND				NR			
o-toluidine	ND				NR			

#Limit refers to the chosen ZDHC sludge disposal pathway in Table 4 in accordance with the ZDHC Wastewater Guidelines.



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**Test Result - ZDHC MRSL Parameters (continued)**

Test Parameters	Results of Test Items					Requirements [Textile]		
	I001 (µg/L)	I002 (µg/L)	I003 <sup>#</sup> (mg/kg)	I004 <sup>#</sup> (mg/L)	I005 (µg/L)	Wastewater (µg/L)	Sludge <sup>#</sup> (mg/kg)	Leachate <sup>#</sup> -
<b>1S) UV Absorbers</b>								
2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl) phenol (UV-350)	ND	NR	NR	NR	NR	100	-	-
2-(2H-benzotriazol-2-yl)-4,6- ditertpentylphenol (UV-328)	ND				NR			
2-benzotriazol-2-yl-4,6-di-tert- butylphenol (UV-320)	ND				NR			
2,4-Di-tert-butyl-6-(5- chlorobenzotriazole-2-yl) phenol (UV-327)	ND				NR			
<b>1T) Volatile Organic Compounds (VOC)</b>								
Benzene	ND	NR	NR	NR	NR	1	-	-
m-cresol	ND				NR			
o-cresol	ND				NR			
p-cresol	ND				NR			
Xylene	ND				NR			
Toluene <sup>a</sup>	ND				NR			

a = Report only for mock leather

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**Test Result - ZDHC Heavy Metals Parameters**

Test Parameters	Unit			Results of Test Items					Requirements [Textile]				
	Wastewater	Sludge	Leachate	I001	I002	I003#	I004#	I005	Wastewater			Discharge Limit	Sludge Threshold Values
									Foundational	Progressive	Aspirational		
<b>ZDHC Heavy Metals</b>													
Antimony	mg/L	mg/kg	mg/L	NR	NR	6	NR	NR	0.1	0.05	0.01	-	12
Chromium (VI)	mg/L	mg/kg	mg/L			ND	NR	NR	0.05	0.005	0.001	-	50
Barium	mg/L	mg/kg	mg/L			ND	NR	NR	Sample & Report			-	700
Selenium	mg/L	mg/kg	mg/L			ND	NR	NR				-	10
Tin	mg/L	-	-			ND	NR	NR	-	-			
Arsenic	mg/L	mg/kg	mg/L			ND	NR	NR	0.05	0.01	0.005	-	10
Total Chromium	mg/L	mg/kg	mg/L			ND	NR	NR	0.2	0.1	0.05	-	100
Cobalt	mg/L	mg/kg	mg/L			ND	NR	NR	0.05	0.02	0.01	-	1600
Cadmium	mg/L	mg/kg	mg/L			ND	NR	NR	0.1	0.05	0.01	-	3
Copper	mg/L	mg/kg	mg/L			144	NR	NR	1	0.5	0.25	-	200
Lead	mg/L	mg/kg	mg/L			5	NR	NR	0.1	0.05	0.01	-	10
Nickel	mg/L	mg/kg	mg/L			ND	NR	NR	0.2	0.1	0.05	-	70
Silver	mg/L	mg/kg	mg/L			ND	NR	NR	0.1	0.05	0.005	-	100
Zinc	mg/L	mg/kg	mg/L			ND	NR	NR	5	1	0.5	-	1000
Mercury	mg/L	mg/kg	mg/L			ND	NR	NR	0.01	0.005	0.001	-	1

#Limit refers to the chosen ZDHC sludge disposal pathway in Table 4 in accordance with the ZDHC Wastewater Guidelines.



BUREAU  
VERITAS

Report Date: April 15, 2023

**Test Result - ZDHC Conventional and Anions Parameters**

Test Parameters	Unit			Results of Test Items					Requirements [Textile]				
	Wastewater	Sludge	Leachate	I001	I002	I003#	I004#	I005	Wastewater			Discharge Limit	Sludge Threshold Values
									Foundational	Progressive	Aspirational		
<b>ZDHC Conventional</b>													
pH	pH					8.45					6 - 9		
Temparture difference	Δ °C									15	10	5	
E.coli	MPN/100-ml									126			
Colour (436 nm)	m <sup>-1</sup>									7	5	2	
Colour (525 nm)	m <sup>-1</sup>									5	3	1	
Colour (620 nm)	m <sup>-1</sup>									3	2	1	
Persistent Foam	-									No indication of Persistent Foam			
Wastewater Flowrate	m <sup>3</sup> /day									-			
Ammonium-Nitrogen	mg/L									10	1	0.5	
AOX	mg/L									3	0.5	0.1	
BOD <sub>5</sub>	mg/L									30	15	8	
COD	mg/L			NR	NR	NR	NR	NR		150	80	40	
DO	mg/L									Sample & Report			
Oil & Grease	mg/L									10	2	0.5	
Total Phenols / Phenol Index	mg/L									0.5	0.01	0.001	
Total Chlorine	mg/L									Sample & Report			
TDS	mg/L									20	10	5	
Total Nitrogen	mg/L									3	0.5	0.1	
Total Phosphorus	mg/L									50	15	5	
TSS	mg/L												
% Solids	-	%				36.19							
Paint Filter Test	-	-				Pass							
Fecal Coliform	-	MPN/g				160.9							
<b>ZDHC Anions</b>													
Chloride	mg/L	-	-			NR				Sample & Report			
Cyanide, total	mg/L	mg/kg	-			ND				0.2	0.1	0.05	
Sulfate	mg/L			NR	NR		NR	NR		Sample & Report			
Sulfide	mg/L					NR				0.5	0.05	0.01	
Sulfite	mg/L									2	0.5	0.2	

#Limit refers to the chosen ZDHC sludge disposal pathway in Table 4 in accordance with the ZDHC Wastewater Guidelines.

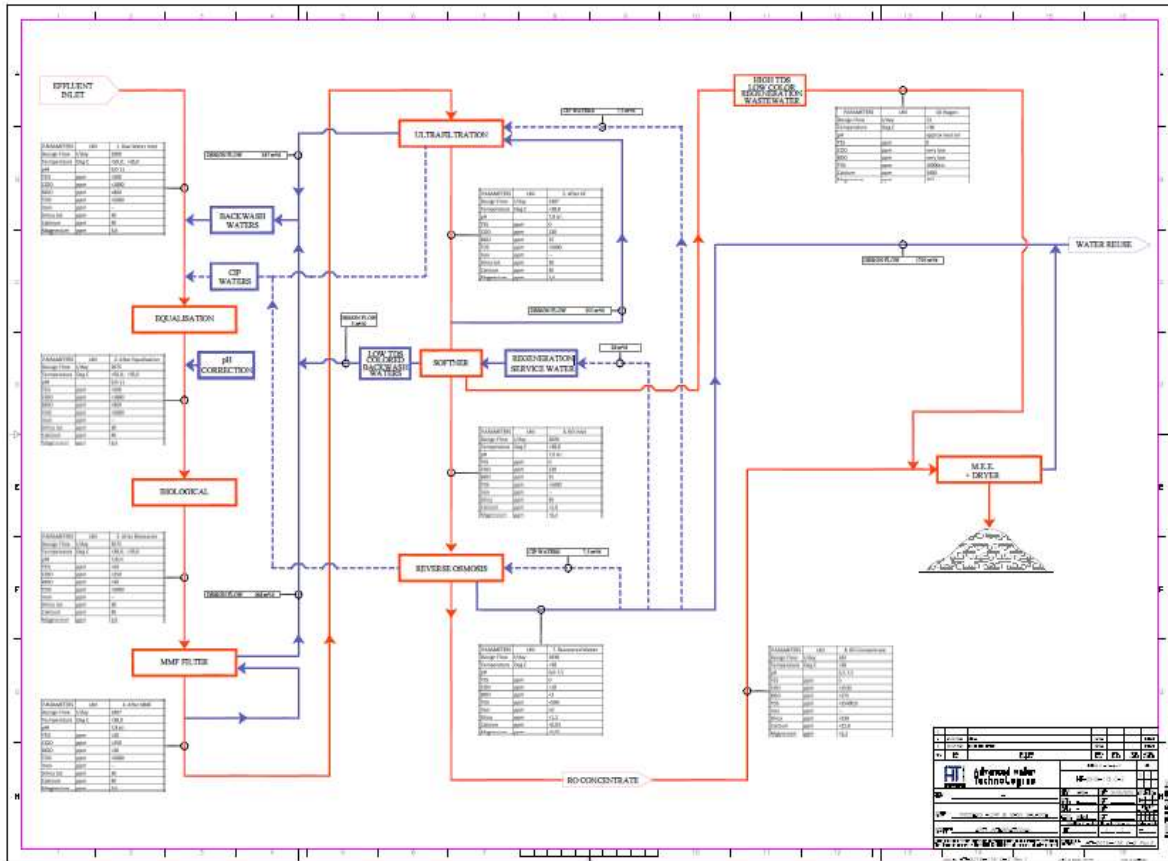


BUREAU VERITAS

Test Report: (6723)096-0055

Report Date: April 15, 2023

Appendix A - Discharge limit according to regulation / contract limit with CETP





Test Report: (6723)096-0055

Report Date: April 15, 2023

**Appendix B - Sample Photos**

**I001) Sampling point**  
Lat 30.9087, Long 76.130752



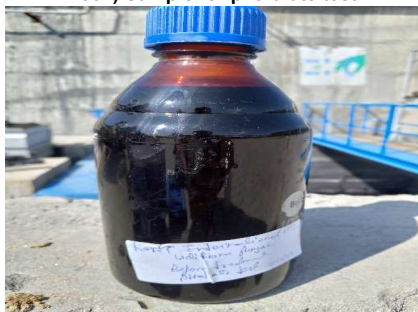
**I001) Sampling location surrounding**  
Lat 30.9087, Long 76.130752



**I001) Labelled sample bottles**



**I001) Sample for phthalate test**



**I001) Sample packaging**



**I002) Sampling point**  
<Geolocation>

Not tested

**I002) Sampling location surrounding**  
<Geolocation>

Not tested

**I002) Labelled sample bottles**

Not tested

**I002) pH measurement**

Not tested

**I002) Sample packaging**

Not tested



Test Report: (6723)096-0055

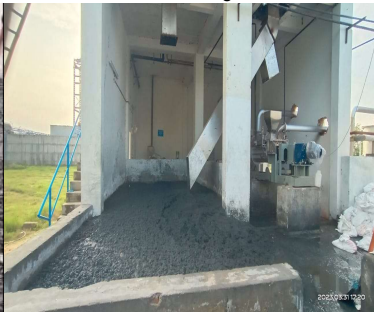
Report Date: April 15, 2023

**Appendix B - Sample Photos (continued)**

**I003) Sampling point**  
Lat 30.908824, Long 76.131076



**I003) Sampling location surrounding**  
Lat 30.908824, Long 76.131076



**I003) Labelled sample bottles**



**I003) Sample packaging**



**I005) Sampling point**  
<Geolocation>

Not tested
------------

**I005) Sampling location surrounding**  
<Geolocation>

Not tested
------------

**I005) Labelled sample bottles**

Not tested
------------

**I005) pH measurement**

Not tested
------------

**I005) Sample packaging**

Not tested
------------





Test Report: (6723)096-0055  
 Report Date: April 15, 2023

**Appendix C - On-site Field Data Record Sheet**

**FIELD DATA RECORD ON ZERO DISCHARGE SAMPLE  
(COMPOSITE / INDIVIDUAL SAMPLING)**

**CPSD-AN-00613-DATA 04**

Issue Date: \_\_\_\_\_

Version No.: 18

Business Line: Analytical

---

**General Data**

Laboratory Sample Number: \_\_\_\_\_

Client Name: \_\_\_\_\_

Field Contact Person: \_\_\_\_\_

Project (Facility Name and Address): \_\_\_\_\_

Sample Identification: \_\_\_\_\_

Sample Type: \_\_\_\_\_

Discharge mode: \_\_\_\_\_

Date of collection: \_\_\_\_\_

Factory Type: \_\_\_\_\_

960055

*Mast International Limited villeg Bhamer Kerkar  
 Madhivasa road  
 Ludhiana*

Phone No: \_\_\_\_\_

Zero discharge with sampling plan \_\_\_\_\_

Composite Sample / Grab Sample (Please delete as appropriate) \_\_\_\_\_

Direct discharge to environment (Specify destination: River, Sea, Stream...) OR indirect discharge to sewage treatment plant \_\_\_\_\_

*ZLD*

Dyeing / Printing / Washing / Finishing / Others (please specify): \_\_\_\_\_

*Note: It would be selected more than one*

---

**Sampling Collection Information**

Sampling Location / Description: \_\_\_\_\_

Sampling Device Description/ Owner: \_\_\_\_\_

Sampling mode: \_\_\_\_\_

*Byjore (ETP Inlet)*

Autosampler/ Manual: *grad*

---

**Sampler Information**

Sampler Name/ Email: \_\_\_\_\_

Sampler ZDHC Accredited no: \_\_\_\_\_

ZDHC Composite Sample Code: \_\_\_\_\_

*Ranjitkumar high / ranjitkumar@b2506@gmail.com*

---

**Field Data for Wastewater**

Arrival Time: _____	Departure Time: _____
Field Parameters: pH <i>7.60</i>	Temp: <i>31.5</i> °C
Control No. of field equipment: _____	Color: <i>Brown</i>
Factory with effluent treatment plant: <input checked="" type="checkbox"/> Yes	Flow rate: (volume/min) _____
Sample matrix: <input checked="" type="checkbox"/> Incoming water (if required)	Wastewater before treatment _____
Sampler container number: _____	Wastewater after treatment – water at discharge point _____

---

**ZDHC Wastewater Flow Device Dimensions**

Measurement (cm)	Meter	Pipe (O)	Flume (U)	Wier (V)
Diameter	NA			
Depth	NA	NA	NA	

---

**ZDHC Wastewater Sampling Field Testing QA/ QC**

Parameter	Laboratory control sample (LCS) Known	LCS Measured	Accuracy %
pH			
Total Chlorine	<i>1.97</i>	<i>1</i>	

---

**ZDHC Wastewater Sample Collection Field Test Measurements**

Recording time	ID	Sampling Time (Hours)						Average (Report with lab data)	
		0	1	2	3	4	5		6
Temp (°C)	Wastewater Discharge	<i>31.5</i>							
	Receiving Water	<i>25.1</i>							
pH		<i>7.60</i>							
Dissolved Oxygen (mg/L)		<i>7.9</i>							
Total Chlorine (mg/L)		<i>7.9</i>							
Persistent Foam (Yes/ No)			<i>No</i>						
Wastewater Flow meter (L/min)									
Alternate measured Flow	Depth (cm)								
	Velocity (cm/sec)								
Color (visual estimation)									<i>Brown</i>

CPSD-AN-00613-DATA 04-FIELD DATA RECORD ZDHC SAMPLING-V18

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Bureau Veritas Consumer Products Services (India) Pvt. Ltd.  
 C-19, Sec – 7 Noida (U.P.) 201301 PH: 4368283/205





Test Report: (6723)096-0055

Report Date: April 15, 2023

**Appendix C - On-site Field Data Record Sheet (continued)**

		<b>FIELD DATA RECORD ON ZERO DISCHARGE SAMPLE (COMPOSITE / INDIVIDUAL SAMPLING)</b>						CPSD-AN-00613-DATA 04 Issue Date: _____ Version No.: 18 Business Line: Analytical	
Volume collected, mL		120	180	180	180	180	180	180	180
Total volume collected	120	Remark: Total volume collected must be greater than total of sample size required							

**Analysis Required and Preservation Method**

Tests (ZDHC MRSL Parameters)	Test required (✓)	Total of sample size	Type of container	Preservation method (Store sample at 2-8°C)
Combined test or Individual test (Remark 4)	1 Phthalate	✓	Amber Glass, washed with nitric acid.	Without adding acid
	2 Chlorobenzenes, Chlorotoluene & PAH	✓		
	3 SCCPs	✓		
	4. APS	✓		
5. APEOs	✓	100 mL		
6. Chlorophenols & Cresols		100 mL		
7. Flame retardant		500 mL		
8. Dyes	✓	10 mL		
9. Glycol	✓	50 mL		
10. *Pesticides	✓	1000 mL		
11. *Nitrosamine		10 mL		
12. Banned Azodyes		2000 mL		
13. *Free primary aromatic amines		500 mL		
14. Organotin Compounds	✓	500 mL		
15. UV absorbers		100		
16. BPA	✓	2		
17. Preservatives	✓	52		
18. VOC & Halogenated Solvents (Remark 6)		10 mL		
19. PFCs (Remark 6)		2 mL		



Test Report: (6723)096-0055

Report Date: April 15, 2023

**Appendix C - On-site Field Data Record Sheet (continued)**

Tests (Conventional Parameters)		Test required (v)	Total of sample size	Type of container	Preservation method (Store sample at 2-8°C)
Combined test or Individual test (Remark 4)	20. Total suspended solids (TSS)		2000 mL total or 2000 mL each	Amber Glass, washed with nitric acid,	Without adding acid
	21. Total dissolved solids (TDS)				
22. 5-day Biochemical Oxygen Demand (BOD <sub>5</sub> )			1000 mL		
23. Colour			100 mL		
24. Heavy Metals except Cr(VI) & Total-P (Remark 6)			9 mL	PE, washed with nitric acid	Acidify to pH 2 with HNO <sub>3</sub>
25. Cyanide			500 mL	Amber Glass, washed with pesticide grade acetone	Adjust pH 12 with 50% NaOH, add 0.05 ml of 10% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>
26. Cr(VI)			95 mL	Amber Glass, washed with nitric acid	Filter by 0.45µm filter in field, fill to full container without air gap; adjust pH to 9.0-9.5 by adding ammonium buffer
27. Chemical oxygen demand (COD)			150 mL		
28. Phenols			500 mL	Amber Glass, washed with nitric acid	Acidify to pH 2 with H <sub>2</sub> SO <sub>4</sub>
29. Oil and Grease & Total Hydrocarbon			1000 mL		
30. Formaldehyde			25 mL	PE, washed with pesticide grade Acetone;	Fill to full container without air gap; acidify to pH 2 with H <sub>2</sub> SO <sub>4</sub>
31. Sulfide (Remark 5)			50 mL		
32. E. coli (Remark 6)			125 mL	PE, clean, sterile, non-reactive	Fill to full container without air gap; add 2 drops of 2M zinc acetate; adjust pH to 9 with 6M NaOH
33. Sulfite			100 mL	Amber Glass, washed with pesticide grade acetone	Add 0.1 ml of 10% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> ; keep in dark
34. Total-N			100 mL	Amber Glass, washed with nitric acid;	Acidify to pH 2 with H <sub>2</sub> SO <sub>4</sub>
35. Ammonium-N			500 mL		
36. Adsorbable organically bound halogens (AOX)			100 mL	Amber Glass, washed with nitric acid;	Acidify to pH 2 with HNO <sub>3</sub>
37. Acute aquatic toxicity: Luminescent Bacteria: Fish Egg, Daphne; Algae;			1000 mL		
38. Sulphate			100 mL	Amber Glass, washed with nitric acid;	Without adding acid
39. Chloride		✓	100 mL		
40. Others					

Observation/Remark:

\*Remarks:

- Individual sampling can be performed upon request.
- The minimum sampling time for 2019 ZDHC guideline is 6 hours with no more than one hour between discrete samples. Sampling time could be adjusted upon request.
- Scope of ZDHC guideline: Parameter 1-9, 12, 14-29, 31-36, 38, 39  
 Scope of synthetic leather industry: Parameter 1-9, 12, 14-24, 26-29, 31, 32, 34, 35, 38, 39  
 Scope of MMCF: Parameter 5, 18, 20, 22-24, 26-29, 31, 34-37  
 Free primary aromatic amine, pesticides, nitrosamine and formaldehyde are not in the scope of ZDHC Guideline, they are tested upon request.
- Refer to CPSD-AN-G00019-STIP01, locations with those CPSD test capability inside TCD matrix can perform the combined test.
- Refer to CPSD-AN-000570-MTHD for additional pretreatment of sulfide if only dissolved sulfide is required to be tested.
- Refer to CPSD-AN-00613-MTHD for preparation of field blank for specific parameters.

Recorded by: \_\_\_\_\_ Full name: \_\_\_\_\_ Date: \_\_\_\_\_

Comment from factory: \_\_\_\_\_

Acknowledgement by factory: \_\_\_\_\_

I hereby confirmed that Bureau Veritas has completed the stated sampling activity at captioned date, time and location. All sample(s) is/are collected in designated container(s) and without any observation in leakage. Sample(s) collected by Bureau Veritas is/are stored in portable freezer / fridge that is maintained in 1-6°C.

Signatory of Factory Representative: *[Signature]* Date: \_\_\_\_\_

**ARTI INTERNATIONAL LIMITED**  
 (Processing Unit)  
 Vill.- Bhama Kalan & Harhian,  
 Khabra Machiwar  
 Link Road, LUDHIANA-141 113.  
 Phones: 91-161-3000  
 Fax:- 91-161-3000  
 CIN:UJ109PB1993PLC



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Report Date: April 15, 2023

**Appendix C - On-site Field Data Record Sheet (continued)**

960055

FIELD DATA RECORD ON ZERO DISCHARGE SAMPLE (COMPOSITE / INDIVIDUAL SAMPLING)				CPSD-AN-00613-DATA 04	
				Issue Date:	
				Version No.: 18	
				Business Line: Analytical	

67230960055

Field Data for Sludge						
Arrival Time:	18:45 PM		Departure Time: 2:45 PM			
Field Parameters	pH: 8.13	Temp: 25.1 °C	Flow rate (volume/time) / sludge flux (weight/time):			
Control No. of field equipment						
Sampling Time (Hours)	0	1	2	3	4	5
Recording time	ID	1	2	3	4	5
	Time	12:30				
pH		8.45				
Temp (°C)		25.1				
Flow rate (volume/time) / sludge flux (weight/time)						
Volume collected, mL	K9					
Total volume collected	6Kg					
Remark: Total volume collected must be greater than total of sample size required						

Analysis Required and Preservation Method					
Factory with effluent treatment plant	Yes				
Sample matrix	Sludge in clarifier (sedimentation tank)		No		
Sampler container number					
Recording time					
Tests (MRSL Parameter)	Test required (v)	Total of sample size	Preservation method (Store sample at 2-8°C)		
Combined test or Individual test (Remark 3)	1. Phthalate	10g total or 10g each	Amber Glass, washed with nitric acid		
	2. Chlorobenzenes, Chlorotoluene & PAHs				
	3. SCCPs				
	4. APS				
5. APEOs		20 g		Add 0.2 mL of 10% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (0.008% WV)	
6. Flame retardant		10 g			
7. Dyes		10 g			
8. Glycols		100 g			
9. *Pesticides		20 g			
10. Banned Azodyes		20 g			
11. *Free primary aromatic amines		10 g			
12. Chlorophenols & Cresols		20 g			Acidify to ~pH 2 with H <sub>2</sub> SO <sub>4</sub> , Add 0.02 mL of 10% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (0.008% WV)
13. Organotin Compounds		10 g			Fill to full container without any air gap and acid add
14. VOC & Halogenated Solvents (Remark 5)		10 g			Fill to full bottle without any air gap. Acidify to ~pH 2 with HCl
15. PFCs (Remark 5)		10 g			PE, wash with pesticide grade acetone Add 0.02 mL of 10% Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (0.008% WV)
Tests (Conventional Parameters)	Test required (v)	Total of sample size	Preservation method (Store sample at 2-8°C)		
16. Heavy Metals except Cr(VI) (Remark 5)	✓	0.2 g	PE, wash with nitric acid Acidify to ~pH 2 with HNO <sub>3</sub>		
17. Cr(VI)	✓	2.5 g	Amber Glass, wash with nitric acid Fill to full container without any air gap and acid add		
18. Adsorbable organically bound halogens (AOX)		1 g			
19. Extractable organochlorides (EOX)		20 g			
20. Total organic carbon (TOC)		20 g			
21. Cyanide	✓	50 g	Amber Glass, wash with pesticide grade acetone Adjust pH to 12-13 with 50% NaOH		

CPSD-AN-00613-DATA 04-FIELD DATA RECORD ZDHC SAMPLING-V18


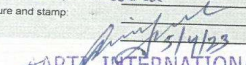
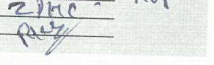


BUREAU VERITAS

Test Report: (6723)096-0055

Report Date: April 15, 2023

Appendix C - On-site Field Data Record Sheet (continued)

 <b>FIELD DATA RECORD ON ZERO DISCHARGE SAMPLE (COMPOSITE / INDIVIDUAL SAMPLING)</b>		<b>CPSD-AN-00613-DATA 04</b> Issue Date: _____ Version No.: 18 Business Line: Analytical
<p><b>*Remarks</b></p> <ol style="list-style-type: none"> <li>Individual sampling can be performed upon request</li> <li>The minimum sampling time for 2019 ZDHC guideline is 6 hours with no more than one hour between discrete samples. Sampling time could be adjusted upon request.</li> <li>Scope of ZDHC guideline: Parameter 1, 2, 4, 5, 16-17, 21-24            Scope of synthetic leather industry: Parameter 1-8, 10, 12-17            Scope of MMCF: Parameter 16, 18-20            Free primary aromatic amine and pesticides are not in the scope of ZDHC Guideline, they are tested upon request.</li> <li>Refer to CPSD-AN-Q0019-STIP01, locations with those CPSD test capability inside TCD matrix can perform the combined test.</li> <li>Refer to CPSD-AN-00613-MTHD for preparation of field blank for specific parameters.</li> </ol>		
<p><b>ZDHC Wastewater Sampling - Facility Confirmation</b></p> <p>The Wastewater samples have been collected under the facilities' normal production scale and wastewater flow rate. The sampler listed below was on-site and collected the samples</p>		
Facility Name: <u>Aarti International Limited</u> Facility Representative Name: <u>Bun Sharma</u> Facility Representative Signature and stamp: 	Sampler's Name: <u>Ranjit Kumar Singh</u> Sampler's ZDHC Accreditation: <u>ZDHC</u> Sampler's Signature: 	
<p><b>AARTI INTERNATIONAL LIMITED</b>          (Processing Unit)          Vill.- Bhama Kalan &amp; Marhian,          P. O. Kohara Machiwara,          Link Road, LUDHIANA-141113.          Phones: 91-161-2075100          Fax: 91-161-3041150          CIN-U27109PB2005PLN000037</p>		





Test Report: (6723)096-0055

Report Date: April 15, 2023

**Appendix D - Test methods, reporting limits and CAS numbers**

Test Parameters	Unit		CAS No.	LOQ		Test methods
	Wastewater	Sludge		Wastewater	Sludge	
<b>1A) AP and APEOs: including all isomers</b>						
Nonylphenol ethoxylates (NPEO)	µg/L	mg/kg	9016-45-9, 26027-38-3, 37205-87-1, 68412-54-4, 127087-87-0	5	0.4	NP/OP: ISO 18857-2 (modified dichloromethane extraction) or ASTM D7065 (GC-MS or LC-MS(-MS)), OPEO/NPEO (n>2): ASTM D7742 ISO 18857-2
Nonylphenol (NP), mixed isomers			104-40-5, 11066-49-2, 25154-52-3, 84852-15-3			
Octylphenol ethoxylates (OPEO)			9002-93-1, 9036-19-5, 68987-90-6			
Octylphenol (OP), mixed isomers			140-66-9, 1806-26-4, 27193-28-8			
<b>1B) Anti-Microbials &amp; Biocides</b>						
o-Phenylphenol (+salts)	µg/L	-	90-43-7	100	-	USEPA 8270E Solvent extraction, derivatisation with KOH, acetic anhydride followed by GC-MS BS EN 12673-1999
Triclosan			3380-34-5			
Permethrin			Multiple	500		
<b>1C) Chlorinated Paraffins</b>						
Medium-chain chlorinated paraffins (MCCPs) (C14-C17)	µg/L	-	85535-85-9	500	-	EPA 3510 and analyzed by ISO18219-2:2021 Method for MCCP with GC-MS(NCI) or LC-MS/MS
Short-chain chlorinated paraffins (SCCPs) (C10-C13)			85535-84-8	25		
<b>1D) Chlorobenzenes and Chlorotoluenes</b>						
1,2-dichlorobenzene	µg/L	-	95-50-1	0.2	-	USEPA 8260D, 8270E, Purge and Trap, Head Space, Dichloromethane extraction followed by GC-MS
Other isomers of mono-, di-, tri-, tetra-, and hexa- chlorobenzene			Multiple			
Other isomers of mono-, di-, tri-, tetra-, and penta- chlorotoluene		mg/kg				
<b>1E) Chlorophenols</b>						
2-chlorophenol	µg/L	-	95-57-8	0.5	-	USEPA 8270E Solvent extraction, derivatisation with KOH, acetic anhydride followed by GC-MS, BS EN 12673-1999 the procedure of solvent extraction and derivatization are included
3-chlorophenol			108-43-0			
4-chlorophenol			106-48-9			
2,3-dichlorophenol			576-24-9			
2,4-dichlorophenol			120-83-2			
2,5-dichlorophenol			583-78-8			
2,6-dichlorophenol			87-65-0			
3,4-dichlorophenol			95-77-2			
3,5-dichlorophenol			591-35-5			
2,3,4-trichlorophenol			15950-66-0			
2,3,5-trichlorophenol			933-78-8			
2,3,6-trichlorophenol			933-75-5			
2,4,5-trichlorophenol			95-95-4			
2,4,6-trichlorophenol			88-06-2			
3,4,5-trichlorophenol			609-19-8			
2,3,5,6-tetrachlorophenol			935-95-5			
2,3,4,6-tetrachlorophenol			58-90-2			
2,3,4,5-tetrachlorophenol			4901-51-3			
Pentachlorophenol (PCP)			87-86-5			
<b>1F) Dimethyl Formamide (DMFa)</b>						
Dimethyl formamide; N,N-dimethylformamide (DMFa) <sup>a</sup>	µg/L	-	68-12-2	1000	-	EPA 8015, EPA 8270E

a = Report only for mock leather



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Report Date: April 15, 2023

**Appendix D - Test methods, reporting limits and CAS numbers (continued)**

Test Parameters	Unit		CAS No.	LOQ		Test methods
	Wastewater	Sludge		Wastewater	Sludge	
<b>1G) Dyes - Carcinogenic or Equivalent Concern</b>						
Basic Violet 3 with >0.1% of Michler's Ketone	µg/L	-	548-62-9	500	-	Liquid extraction, LC-MS
C.I. Acid Red 26			3761-53-3			
C.I. Acid Violet 49			1694-09-3			
C.I. Basic Blue 26 (with Michler's Ketone > 0.1%)			2580-56-5			
C.I. Basic Green 4 (Malachite Green Chloride)			569-64-2			
C.I. Basic Green 4 (Malachite Green Oxalate)			2437-29-8			
C.I. Basic Green 4 (Malachite Green)			10309-95-2			
C.I. Basic Red 9			569-61-9			
C.I. Basic Violet 14			632-99-5			
C.I. Direct Black 38			1937-37-7			
C.I. Direct Blue 6			2602-46-2			
C.I. Direct Red 28			573-58-0			
C.I. Disperse Blue 1			2475-45-8			
C.I. Disperse Blue 3			2475-46-9			
Disperse Orange 11			82-28-0			
<b>1H) Dyes - Disperse (Allergenic)</b>						
Disperse Blue 102	µg/L	-	12222-97-8	50	-	Liquid extraction, LC-MS
Disperse Blue 106			12223-01-7			
Disperse Blue 124			61951-51-7			
Disperse Blue 26			3860-63-7			
Disperse Blue 35			12222-75-2			
			56524-77-7			
Disperse Blue 7			3179-90-6			
Disperse Brown 1			23355-64-8			
Disperse Orange 1			2581-69-3			
Disperse Orange 3			730-40-5			
Disperse Orange 37/59/76			13301-61-6			
Disperse Red 1			2872-52-8			
Disperse Red 11			2872-48-2			
Disperse Red 17			3179-89-3			
Disperse Yellow 1			119-15-3			
Disperse Yellow 3			2832-40-8			
Disperse Yellow 39			12236-29-2			
Disperse Yellow 49			54824-37-2			
Disperse Yellow 9			6373-73-5			
<b>1I) Dyes - Navy Blue Colourant</b>						
Component 1: C <sub>39</sub> H <sub>23</sub> Cl-CrN <sub>7</sub> O <sub>12</sub> S <sub>2</sub> Na	µg/L	-	118685-33-9	500	-	Liquid extraction, LC-MS
Component 2: C <sub>46</sub> H <sub>30</sub> CrN <sub>10</sub> O <sub>20</sub> S <sub>2</sub> 3Na			Not Allocated			



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**Appendix D - Test methods, reporting limits and CAS numbers (continued)**

Test Parameters	Unit		CAS No.	LOQ		Test methods			
	Wastewater	Sludge		Wastewater	Sludge				
<b>1J) Flame Retardants</b>									
2,2-bis(bromomethyl)- 1,3-propanediol (BBMP)	µg/L	-	3296-90-0	25	-	USEPA 8270E, ISO 22032, USEPA 527 and USEPA 8321B Dichloromethane extraction GC-MS or LC-MS(-MS)			
Bis(2,3-dibromopropyl) phosphate (BIS)			5412-25-9						
Decabromodiphenyl ether (DecaBDE)			1163-19-5						
Hexabromocyclodecane (HBCDD)			3194-55-6						
Octabromodiphenyl ether (OctaBDE)			32536-52-0						
Pentabromodiphenyl ether (PentaBDE)			32534-81-9						
Polybromobiphenyls (PBB)			59536-65-1						
Tetrabromobisphenol A (TBBPA)			79-94-7						
Tris-(2-chloro-1-methylethyl)phosphate (TCPP)			13674-84-5						
Tris(1-aziridinyl)phosphine oxide (TEPA)			545-55-1						
Tris(1,3-dichloro-isopropyl)phosphate (TDCP)			13674-87-8						
Tris(2-chloroethyl)phosphate (TCEP)			115-96-8						
Tris(2,3,-dibromopropyl)-phosphate (TRIS)			126-72-7						
Decabromobiphenyl (DecaBB)			13654-09-6						
Dibromobiphenyls (DiBB)			Multiple						
Octabromobiphenyls (OctaBB)			Multiple						
Dibromopropylether			21850-44-2						
Heptabromodiphenyl ether (HeptaBDE)			68928-80-3						
Hexabromodiphenyl ether (HexaBDE)			36483-60-0						
Monobromobiphenyls (MonoBB)			Multiple						
Monobromodiphenylethers (MonoBDEs)			Multiple						
Nonabromobiphenyls (NonaBB)			Multiple						
Nonabromodiphenyl ether (NonaBDE)			63936-56-1						
Tetrabromodiphenyl ether (TetraBDE)			40088-47-9						
Tribromodiphenylethers (TriBDEs)			Multiple						
Boric acid <sup>b</sup>			10043-35-3, 11113-50-1				100	-	Determined as total boron via ICP
Diboron trioxide <sup>b</sup>			1303-86-2						
Disodium octaborate <sup>b</sup>			12008-41-2						
Disodium tetraborate anhydrous <sup>b</sup>	1303-96-4, 1330-43-4								
Tetraboron disodium heptaoxide, hydrate <sup>b</sup>	12267-73-1								
<b>1K) Glycols / Glycol Ethers</b>									
2-ethoxyethanol	µg/L	-	110-80-5	50	-	USEPA 8270E Liquid extraction, LC-MS GC-MS			
2-ethoxyethyl acetate			111-15-9						
2-methoxyethanol			109-86-4						
2-methoxyethylacetate			110-49-6						
2-methoxypropylacetate			70657-70-4						
Bis(2-methoxyethyl)-ether			111-96-6						
Ethylene glycol dimethyl ether			110-71-4						
Triethylene glycol dimethyl ether			112-49-2						
<b>1L) Halogenated Solvents</b>									
1,2-dichloroethane	µg/L	-	107-06-2	1	-	USEPA 8260D Headspace GC-MS or Purge and trap GC-MS			
Methylene chloride			75-09-2						
Tetrachloroethylene			127-18-4						
Trichloroethylene			79-01-6						

b = Limit refer to elemental boron, not the salt.



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**Appendix D - Test methods, reporting limits and CAS numbers (continued)**

Test Parameters	Unit		CAS No.	LOQ		Test methods
	Wastewater	Sludge		Wastewater	Sludge	
<b>1M) Organotin Compounds</b>						
Dipropyltin compounds (DPT)	µg/L	-	Multiple	0.01	-	ISO 17353 Derivatisation with NaB (C2H5)4 GC-MS
Mono-, di- and tri-butyltin derivatives						
Mono-, di- and tri-methyltin derivatives						
Mono-, di- and tri-octyltin derivatives						
Mono-, di- and tri-phenyltin derivatives						
Tetrabutyltin compounds (TeBT)						
Tripropyltin Compounds (TPT)						
Tetraoctyltin compounds (TeOT)						
Tricyclohexyltin (TCyHT)						
Tetraethyltin Compounds (TeET)						
<b>1N) Other/Miscellaneous Chemicals</b>						
AEEA [2-(2-aminoethylamino)ethanol]	µg/L	-	111-41-1	500	-	Liquid extraction, LC-MSMS
Bisphenol A			80-05-7	10		
Thiourea			62-56-6	50		Liquid extraction, LC-MS
Quinoline			91-22-5	50		
Borate, zinc salt <sup>c</sup>			12767-90-7	100		Determine as total boron and total zinc via ICP
Silica (Used in sand blasting) <sup>d</sup>			14464-46-1	NA		Not a ZDHC Wastewater parameter
<b>1O) Perfluorinated and Polyfluorinated Chemicals (PFCs)</b>						
Perfluorooctane sulfonate (PFOS) and related substances, Perfluorooctanoic acid (PFOA)	µg/L	-	Multiple	0.01	-	PFCs: EPA 537:2020 FTOH: BS EN 12673-1999, EPA 8270 PFCs: LC-MSMS FTOH: GC-MS Derivatisation with acetic anhydride followed by GC-MS
Perfluorooctanoic acid (PFOA) related substances				1		
<b>1P) Phthalates - including all other esters of ortho-phthalic acid</b>						
1,2-benzenedicarboxylic acid, di-C6-8 branched and linear alkyl esters, C7-rich (DIHP)	µg/L	-	71888-89-6, 84777-06-0	10	-	USEPA 8270E, ISO 18856 Dichloromethane extraction GC-MS
1,2-benzenedicarboxylic acid, di-C7-11 branched and linear alkyl esters (DHNUP)			68515-42-4, 68515-50-4			
Bis(2-methoxyethyl)phthalate (DMEP)			117-82-8			
Butyl benzyl phthalate (BBP)			85-68-7			
Di-cyclohexyl phthalate (DCHP)			84-61-7			
Di-iso-decyl phthalate (DIDP)			26761-40-0			
Di-iso-octyl phthalate (DIOP)			27554-26-3			
Di-iso-butyl phthalate (DIBP)			84-69-5			
Di-iso-nonyl phthalate (DINP)			28553-12-0			
Di-n-hexyl phthalate (DnHP)			84-75-3			
Di-n-octyl phthalate (DNOP)			117-84-0			
Di-n-pentylphthalates			131-18-0			
Di-n-propyl phthalate (DPRP)			131-16-8			
Di(ethylhexyl) phthalate (DEHP)			117-81-7			
Dibutyl phthalate (DBP)			84-74-2			
Diethyl phthalate (DEP)			84-66-2			
Diisopentylphthalates			605-50-5			
Dinonyl phthalate (DNP)			84-76-4			

c = Limit refers to elemental boron and/or zinc, not the salt.

d = Not required to test this parameter as this is related to sand blasting





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**Appendix D - Test methods, reporting limits and CAS numbers (continued)**

Test Parameters	Unit		CAS No.	LOQ		Test methods				
	Wastewater	Sludge		Wastewater	Sludge					
<b>1Q) Polycyclic Aromatic Hydrocarbons (PAHs)</b>										
Acenaphthene	µg/L	mg/kg	83-32-9	1	0.2	USEPA 8270E DIN 38407-39 Solvent extraction GC-MS				
Acenaphthylene			208-96-8							
Anthracene			120-12-7							
Benzo[a]anthracene			56-55-3							
Benzo[a]pyrene (BaP)			50-32-8							
Benzo[b]fluoranthene			205-99-2							
Benzo[e]pyrene			192-97-2							
Benzo[ghi]perylene			191-24-2							
Benzo[j]fluoranthene			205-82-3							
Benzo[k]fluoranthene			207-08-9							
Chrysene			218-01-9							
Dibenz[a,h]anthracene			53-70-3							
Fluoranthene			206-44-0							
Fluorene			86-73-7							
Indeno[1,2,3-cd]pyrene			193-39-5							
Naphthalene			91-20-3							
Phenanthrene			85-01-8							
Pyrene			129-00-0							
<b>1R) Restricted Aromatic Amines (Cleavable from Azo-colourants)</b>										
2-naphthylamine	µg/L	-	91-59-8	0.1	-	Reduction step with sodium dithionite, solvent extraction EPA 8270				
2-naphthylammoniumacetate			553-00-4							
2,4-xylidine			95-68-1							
2,4,5-trimethylaniline			137-17-7							
2,4,5-trimethylaniline hydrochloride			21436-97-5							
2,6-xylidine			87-62-7							
3,3'-dichlorobenzidine			91-94-1							
3,3-dimethoxybenzidine			119-90-4							
4-aminoazobenzene			60-09-3							
4-aminodiphenyl			92-67-1							
4-chloro-o-toluidine			95-69-2							
4-chloro-o-toluidinium chloride			3165-93-3							
4-chloroaniline			106-47-8							
4-methoxy-m-phenylene diammonium sulphate;			39156-41-7							
2,4-diaminoanisole sulphate			615-05-4							
4-methoxy-m-phenylenediamine			95-80-7							
4-methyl-m-phenylenediamine			101-14-4							
4,4-methylene-bis-(2-chloro-aniline)			838-88-0							
4,4-methylenedi-o-toluidine			101-77-9							
4,4-methylenedianiline			101-80-4							
4,4-thiodianiline			139-65-1							
5-nitro-o-toluidine			99-55-8							
6-methoxy-m-toluidine			120-71-8							
Benzidine			92-87-5							
o-aminoazotoluene			97-56-3							
o-anisidine			90-04-0							
o-toluidine			95-53-4							
										Reduction step with sodium dithionite, solvent extraction EPA 8270E and ISO 14362-1 GC/MS and LC/MS/MS



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**Appendix D - Test methods, reporting limits and CAS numbers (continued)**

Test Parameters	Unit		CAS No.	LOQ		Test methods
	Wastewater	Sludge		Wastewater	Sludge	
<b>1S) UV Absorbers</b>						
2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl) phenol (UV-350)	µg/L	-	36437-37-3	100	-	USEPA 8270 ISO 22032, USEPA 527 and USEPA 8321B. Dichloromethane extraction GC-MS or LC-MS(-MS)
2-(2H-benzotriazol-2-yl)-4,6- ditertpentylphenol (UV-328)			25973-55-1			
2-benzotriazol-2-yl-4,6-di-tert- butylphenol (UV-320)			3846-71-7			
2,4-Di-tert-butyl-6-(5- chlorobenzotriazole-2-yl) phenol (UV-327)			3864-99-1			
<b>1T) Volatile Organic Compounds (VOC)</b>						
Benzene	µg/L	-	71-43-2	1	-	ISO 11423-1 Headspace or Purge and trap GC-MS USEPA 8260D Add ISO 20595 Static headspace for determination  ISO 11423-1 Headspace or Purge and trap GC-MS EPA 8270 BS EN 12673-1999  ISO 11423-1 Headspace or Purge and trap GC-MS USEPA 8260D HJ 1067 or EPA 8260D or ISO 11423-1
m-cresol			108-39-4			
o-cresol			95-48-7			
p-cresol			106-44-5			
Xylene			1330-20-7			
Toluene <sup>a</sup>			108-88-3			

a = Report only for mock leather



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**Appendix D - Test methods, reporting limits and CAS numbers (continued)**

Test Parameters	Unit		CAS No.	LOQ		Test methods
	Wastewater & Leachate	Sludge		Wastewater	Sludge	
<b>Heavy Metals</b>						
Antimony	mg/L	mg/kg	7440-36-0	0.01	5	With reference to EPA 3015A, 6020A, 200.8, 6020B, 3051A and ISO 17294-2 and analyzed by ICP-MS With reference to EPA 1311 and HJ/T 300 for leachate
Chromium (VI)			18540-29-9	0.001	20	
Barium			7440-39-3	1	200	
Selenium			7782-49-2	1	5	
Tin			7440-31-5	1	-	
Arsenic			7440-38-2	0.005	5	
Total Chromium			7440-47-3	0.05	50	
Cobalt			7440-48-4	0.01	400	
Cadmium			7440-43-9	0.01	1	
Copper			7440-50-8	0.25	50	
Lead			7439-92-1	0.01	5	
Nickel			7440-02-0	0.05	20	
Silver			7440-22-4	0.005	50	
Zinc			7440-66-6	0.5	400	
Mercury			7439-97-6	0.001	1	
<b>Conventional</b>						
pH	pH	pH		6 - 9		With reference to ISO 10523, EPA 150.2, APHA 4500-H+
Temperature difference	°C			-		USEPA 170.1 or GB/T 13195
E.coli	MPN/100-ml			126		-
Colour	m <sup>-1</sup>			2;1;1		ISO 7887 (Method A and B)
Persistent Foam	-			-		-
Wastewater Flowrate	m <sup>3</sup> /day			-		-
Ammonium-Nitrogen	mg/L			0.5		ISO 11732, ISO 7150, USEPA 350.1, APHA 4500 NH <sup>3</sup> -N, HJ 535 or HJ 536
AOX	mg/L			0.1		ISO 9562, EN ISO 9563, USEPA 1650, H.J.T 83-2001
Biochemical Oxygen Demand 5-days concentration (BOD <sub>5</sub> )	mg/L			8		ISO 5815-1 & -2, EN1899-1, USEPA 405.1, APHA 5210B or HJ 505
Chemical Oxygen Demand (COD)	mg/L			40		ISO 6060, USEPA 410.4, APHA 5220D or GB/T 11914
Dissolved Oxygen (DO)	mg/L			-		ISO 5814, EPA 360.1 or HJ 506
Oil & Grease	mg/L			0.5		ISO 9377-2, USEPA 1664 or HJ 637
Total Phenols / Phenol Index	mg/L			0.001		ISO 14402, APHA 5530B, C, D or HJ 503
Total Chlorine	mg/L			0.1		ISO 7393-2, EPA 330.5 or HJ 586
Total Dissolved Solids (TDS)	mg/L			5		APHA 2540C, GB/T 5750.4
Total Nitrogen	mg/L			5		ISO 5663, ISO 29411, USEPA 351.2, APHA 4500P-J, APHA 4500N-C/ HJ 636 or GB 11891
Total Phosphorus	mg/L			0.1		ISO 11885, ISO 6878, USEPA 365.4, APHA 4500P-J or GB/T 11893
Total Suspended Solids (TSS)	mg/L			5		ISO 11923, USEPA 160.2, APHA 2540D or GB/T 11901
% Solids	-	%				USEPA 160.3, HJ 613
Paint Filter Test	-	-				EPA SW-846 or EPA 9095B
Fecal Coliform	-	bacteria/100m				EPA 1681



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**Appendix D - Test methods, reporting limits and CAS numbers (continued)**

Test Parameters	Unit		CAS No.	LOQ		Test methods
	Wastewater & Leachate	Sludge		Wastewater	Sludge	
<b>Anions</b>						
Chloride	mg/L	-	-	-	-	ISO 10304-1, ISO 15923-1, USEPA 300, HJ 84-2016, IS 3025 (part 32)
Cyanide, total		mg/kg		0.05	20	ISO 6703-1 & 2, ISO 14403-1 & 2, USEPA 335.2, APAAH 4500-CN or HJ 484
Sulfate		-		-	-	ISO 10304-1, ISO 15923-1, USEPA 300, HJ 84-2016, IS 3025 (part 24)
Sulfide		-		0.01	-	ISO 10530, SM 4500-S2-D, E, G or I, GB/T 16489 or IS 3025 (part 29), HJ 1226-2021
Sulfite		-		0.2	-	ISO 10304-3, SM 4500-SO32-C or HJ 84-2016

END OF REPORT