

Test Report No.: SHAEC23012842501 **Date**: Aug 21, 2023 Page 1 of 7

Client Name: Jiangsu JieJie Microelectronics Co.,Ltd.

Client Address: 3000 Qiantangjiang Road, Economic Development Zone, Qidong, Jiangsu, China

Sample Name: TO-220A

Client Ref. Information: See the attachment

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

SGS Job No.: SHP23-010738 Sample Receiving Date: Aug 17, 2023

Testing Period: Aug 17, 2023 ~ Aug 21, 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
European Regulation POPs (EU) 2023/1608 amending to Regulation (EU)	Pass
2019/1021-PFHxS, its salts and PFHxS related compounds	r ass

Signed for and on behalf of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

Tom N

Tom Ni

Approved Signatory





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Test Result(s):

Test Part Description:

SN ID	Sample No.	SGS Sample ID	Description
SN1	A1	SHA23-0128425-0001.C001	Black solid

Remarks:

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

<u>European Regulation POPs (EU) 2023/1608 amending to Regulation (EU) 2019/1021-PFHxS, its salts and PFHxS related compounds</u>

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.	Limit	Unit(s)	MDL	A1
PFHxS, its salts					
Perfluorohexanesulfonic acid (PFHxS), its salts#	355-46-4	0.025	mg/kg	0.010	ND
PFHxS-related compounds					
N-Methylperfluoro-1-hexane sulfonamide (N-Me-FHxSA)	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	0.500	ND
Sum of PFHxS-related compounds	-	1	mg/kg	-	ND
Conclusion				Pass	

Notes:

(1) Commission Delegated Regulation (EU) 2023/1608 of May 30, 2023, amending Annex I to Regulation (EU) 2019/1021 as regards the listing of perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds, Official Journal of the EU, August 8, 2023

Substance	Scope	Specific exemption on intermediate	Effective Date
		use or other specification	
PFHxS and its	Substances,	≤ 0.025 mg/kg	August 28, 2023
salts	mixtures or articles		
PFHxS-related	Substances,	≤ 1 mg/kg (sum of all PFHxS-related	August 28, 2023
compounds	mixtures or articles	compounds)	
PFHxS, its salts	Concentrated	≤ 0.1 mg/kg (to be reviewed within three	August 28, 2023
and PFHxS-	firefighting foam	years after entry into force of this	
related	mixtures	amending regulation with a view to	
compounds		lower the limit)	

(2) The tested perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds in this report



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comes from the "Listed under the POPs Regulation" of ECHA, please find more information via below weblink: List of substances proposed as POPs - ECHA (europa.eu)

(3) # Substances refer to its salts/derivative listed in Appendix 1 Salts of listed PFAS is subjected to the detection of its parent PFAS

Appendix 1

PFHxS, its salts & derivatives	CAS No.
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4
1-Hexanesulfonic acid, 1,1,2,2,3,3, 4,4,5,5,6,6,6-tridecafluoro-, sodium salt (PFHxS-Na)	82382-12-5
Potassium perfluorohexane-1-sulphonate (PFHxS-K)	3871-99-6
Perfluorohexane Sulfonic acid, lithium salt (PFHxS-Li)	55120-77-9
Perfluorohexane Sulfonic acid, ammonium salt (PFHxS-NH ₄)	68259-08-5
Benzyltriphenylphosphanium tridecafluorohexane-1-sulfonate (PFHxS-BTPP)	1000597-52-3
N,N,N-Tributylbutan-1-aminium tridecafluorohexane-1-sulfonate (PFHxS-N(C $_{40}$ H $_{9}$) $_{4}$)	108427-54-9
Tetraethylammonium perfluorohexane sulfonate (PFHxS-N(C ₂ H ₅) ₄)	108427-55-0
Tridecafluorohexane-1-sulfonic acid-pyrrolidine (PFHxS-NC ₄ H ₉)	1187817-57-7
4-{[4-(Diethylamino)phenyl][4-(ethylamino)naphthalen-1-yl]methylidene}- N,N-diethylcyclohexa-2,5-dien-1-iminium tridecafluorohexane-1-sulfonate (PFHxS-(NC $_{10}$ H $_{14}$) $_{3}$ C $_{5}$ H $_{4}$)	1310480-24-0
4-{[4-(Dimethylamino)phenyl][4-(ethylamino)naphthalen-1-yl]methylidene}-N,N-dimethylcyclohexa-2,5-dien-1-iminium tridecafluorohexane-1-sulfonate (PFHxS-(NC ₈ H ₁₀₎₂ C ₁₃ H ₁₂)	1310480-27-3
4-{[4-(Dimethylamino)phenyl][4-(phenylamino)naphthalen-1-yl]methylidene}-N,N-dimethylcyclohexa-2,5-dien-1-iminium tridecafluorohexane-1-sulfonate (PFHxS-(NC ₈ H ₁₀) ₂ C ₁₇ H ₁₂)	1310480-28-4
Beta-Cyclodextrin, compd. with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexane-1-sulfonate (PFHxS-C ₄₂ H ₇₀ O ₃₅)	1329995-45-0
Gamma-Cyclodextrin, compd. with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexane-1-sulfonate (PFHxS-C ₄₈ H ₈₀ O ₄₀)	1329995-69-8
Triphenylsulfanium tridecafluorohexane-1-sulfonate (TPS-PFHxS)	144116-10-9
1-(Carboxymethyl)-4-(2-{4-[4-(2,2-diphenylethenyl)phenyl]- 1H,2H,3H,3aH,4H,8bH-cyclopenta[b]indol-7-yl}ethenyl)quinolin-1-ium tridecafluorohexane-1-sulfonate (PFHxS-C ₄₄ H ₃₇ N ₂ O ₂)	1462414-59-0
Diphenyliodanium tridecafluorohexane-1-sulfonate (PFHxS-I(C ₆ H ₅) ₂)	153443-35-7
Tetramethylammonium perfluorohexane sulfonate (PFHxS-TMA)	189274-31-5
Tert-butylazanium;1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluorohexane-1-sulfonate (PFHxS-NH ₂ (CH ₃) ₃)	202189-84-2
Bis(4-tert-butylphenyl)iodanium tridecafluorohexane-1-sulfonate (PFHxS-I(C ₆ H ₄) ₂ (C ₄ H ₉) ₂)	213740-81-9
Bis(4-methylphenyl)(phenyl)sulfanium tridecafluorohexane-1-sulfonate (PFHxS-S(C ₇ H ₇) ₂ C ₆ H ₅)	341548-85-4
Sulfonium, (thiodi-4,1-phenylene)bis[diphenyl-, salt with perfluorohexanesulfonic acid (1:2) (PFHxS-S3(C ₆ H ₅) ₄ (C ₆ H ₄) ₂)	421555-73-9
Perfluorohexanesulfonic acid, Gallium(3+) salt (3:1) (PFHxS-Ga)	341035-71-0
Perfluorohexanesulfonic acid, Scandium(3+) salt (3:1) (PFHxS-Sc)	350836-93-0



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<u> </u>	
Perfluorohexanesulfonic acid, Neodymium(3+) salt (3:1) (PFHxS-Nd)	41184-65-0
Perfluorohexanesulfonic acid, Yttrium(3+) salt (3:1) (PFHxS-Y)	41242-12-0
Cesium perfluorohexanesulfonate (PFHxS-Cs)	92011-17-1
Perfluorohexanesulfonic acid, Zinc salt (PFHxS-Zn)	70136-72-0
lodonium, bis[4-(1,1-dimethylpropyl)phenyl]-, perfluorohexanesulfonate (1:1) (PFHxS-I(C_6H_4) ₂ (C_5H_{11}) ₂)	421555-74-0
Tris(4-tert-butylphenyl)sulfanium tridecafluorohexane-1-sulfonate (PFHxS-S(C ₆ H ₄) ₃ (C ₄ H ₉) ₃) (PFHxS-S(C ₆ H ₄) ₃ (C ₄ H ₉) ₃)	425670-70-8
Tridecafluorohexanesulphonic acid, compound with 2,2'-iminodiethanol (1:1) (PFHxS-NH(C_2H_5O) ₂)	70225-16-0
Triethylammonium perfluorohexane sulfonate (PFHxS-N(C ₂ H ₅) ₃)	72033-41-1
lodonium, bis[(1,1-dimethylethyl)phenyl]-, salt with perfluorohexanesulfonic acid (1:1) (PFHxS-I(C_6H_4) ₂ (C_4H_9) ₂)	866621-50-3
(4-Methylphenyl)diphenylsulfanium tridecafluorohexane-1-sulfonate (PFHxS-S(C ₆ H ₅) ₂ C ₇ H ₇)	910606-39-2
{4-[(2-Methylprop-2-enoyl)oxy]phenyl}diphenylsulfanium tridecafluorohexane-1-sulfonate (PFHxS-S(C ₆ H ₅) ₂ C ₁₀ H ₉ O ₂)	911027-68-4
Dibenzo[k,n][1,4,7,10,13]tetraoxathiacyclopentadecinium, 19-[4-(1,1-dimethylethyl)phenyl]-6,7,9,10,12,13-hexahydro-, 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonate (1:1) (PFHxS-SC ₂ 8H ₃ 1O ₄)	928049-42-7
Perfluorohexylsulfonyl fluoride (PFHxS-F)	423-50-7
Perfluorohexylsulfonyl chloride (PFHxS-CI)	55591-23-6
Sulfonium, [4-[(2-methyl-1-oxo-2-propenyl)oxy]phenyl]diphenyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,6-tridecafluoro-1-hexanesulfonic acid (1:1), polymer with 2-ethyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl 2-methyl-2-propenoate and tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (PFHxS-Sulfonium, propenoate polymer)	911027-69-5

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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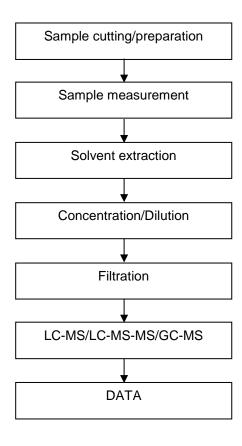
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PFASs/ PFOS/PFOA Testing Flow Chart





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Attachment:

402、603、2510、62mm、ABS、DBS、DFN0603-2L、DFN0603-2L、DFN1006-2L、DFN1006-2L、 DFN1006-3L、DFN1006-3L、DFN10x15-5L、DFN10x15-5L-XX、DFN10x15-5L-XX、DFN1610-2L、 DFN1610-2L、DFN1610-6L、DFN1610-6L、DFN2010-5L、DFN2010-5L、DFN2010-8L、DFN2010-8L、 DFN2020-2L、DFN2020-2L、DFN2020-3L、DFN2020-3L、DFN2020-6L、DFN2020-6L、DFN2020-6L XX、DFN2020-6L-XX、DFN2020-8L、DFN2510-10L、DFN2510-10L、DFN2626-10L、DFN2626-10L、 DFN2x2-3L、DFN2x2-3L、DFN2x2-6L、DFN2x2-6L、DFN2x2-6L-D、DFN2x2-6L-XX、DFN3.0x3.0-8L、 DFN3.0x3.0-8L-SD (Type、B) DFN3.3x3.3-8L-XX、DFN3.0x3.0-8L-XX、DFN3.3x3.3-8L、DFN3.3x3.3-8L、DFN3.3x3.3-8L (Type、B) 、DFN3.3x3.3-8L-XX、DFN3020-10L、DFN3020-10L、DFN3030-8L、 DFN3030-8L、DFN3030-8L-XX、DFN3030-8L-XX、DFN3030-12L、DFN3333-2L、DFN3333-2L、 DFN3333-8L、DFN3333-8L、DFN3810-9L、DFN3810-9L、DFN3x3-8L-XX、DFN3x3-8L-XX、DFN4120-10L、DFN5060-8L、DFN5060-8L、DFN5060-8L-XX、DFN5060-8L-XX、DFN5515-18L、DFN5x6-8L、 DFN5x6-8L(Dual)、DFN5x6-8L-XX、DFN5x6-8L-XX、DFN8080-2L、DFN8080-2L、DFN8080-4L、 DFN8080-4L、DFN8x8-2L、DFN8x8-2L、DFN8x8-4L、DFN8x8-4L-XX、DIP-4、DO-15、DO-218AB、DO-27、DO-41、DriveJM-34、DriveJM-62、DriveJM-DC、DriveJM-E1、DriveJM-E2、DriveJM-EC、DriveJM-E0 (DriveJM-E0 ED、DriveJM-H1、DriveJM-H2、EasyPack1B、EconoDual、FBP-02C-A、GBJ、GBL、GBU、ITO-247、 ITO-247-XX、KBL、KBP、LSOP-4、LSOP-4、MBF、MBS、PDFN3.3x3.3-8L、PDFN3.3x3.3-8L、 PDFN3x3-8L-XX、PDFN3x3-8L、PDFN3x3-8L、PDFN3x3-8L-XX、PDFN3x3-8L-XX、PDFN5x6-8L NDFN5x6-8L ND PDFN5x6-8L、PDFN5x6-8L-XX、PDFN5x6-8L-XX、PowerJE10x12、PowerJE10x12、PowerJE5x6、 PowerJE5x6、PowerJE7x8、PowerJE8x8、PowerJE8x8、PPTC、PPTC、R6、SGBJ、 SGD0201、SGD0402、SMA、SMAF、SMB、SMBF、SMC、SMC-3、SMD-3225、SMD-4032、SMT、 SMT-4、SMTF、SMTJ、SMTO-218Tab、SOD-123、SOD-123、SOD-123FL、SOD-123FL、SOD-123FLT、SOD-123FLT、SOD-323、SOD-323F、SOD-323FL、SOD-323FL、SOD-523、SOD-523、SOD-723、SOD-723、SOD-923、SOD-923、SOP-10、SOP-16、SOP-16、SOP-4、SOP-4、SOP-5、SOP-5、SOP-7、SOP-7、SOP-8、SOP-8、SOT-143、SOT-143-XX、SOT-143-XX、SOT-223、SOT-223、SOT-223-XX、SOT-223-XX、SOT-227、SOT-227-XX、SOT-227-XX、SOT-23、SOT-23、SOT-23-XX、SOT-23-XX、SOT-323、SOT-323-XX、SOT-323-XX、SOT-353、SOT-353-XX、SOT-353-XX、SOT-363、SOT-363-XX、SOT-523、SOT-523-XX、SOT-523-XX、 SOT-563、SOT-563-XX、SOT-563-XX、SOT-723、SOT-723-XX、SOT-723-XX、SOT-82、SOT-82、 SOT-89、SOT-89R-XX、SOT-89R-XX、SOT-89-XX、SOT-89-XX、SSOP-16、SSOP-4、SSOP-4、 STOLL7x8-5L、TO-126、TO-202、TO-202-XX、TO-220A、TO-220A-2D-XX、TO-220AB、TO-220A-XX、 TO-220B、TO-220B-XX、TO-220C、TO-220C-XX、TO-220F、TO-220FA、TO-220FA-XX、TO-220FP、 TO-220FP-XX、TO-220HF、TO-220H-XX、TO-220-XX、TO-247、TO-247-XX、TO-247iPS-2L、TO-247iPS-3L、TO-247J、TO-247J-XX、TO-247plus、TO-247S、TO-247S-XX、TO-247-XX、TO-251、TO-251L-XX、TO-251S、TO-251-XX、TO-252、TO-252-XX、TO-262、TO-262-XX、TO-263、TO-263-XX、 TO-277B、TO-3P、TO-3P-3L、TO-3PF-3L、TO-92、TO-92CR、TO-92KR、TO-92KRF、TO-92UR、TO-92-XX、TOLL9.9x10.38-8L、TSSOP-8、TSSOP-8、WSOP-6



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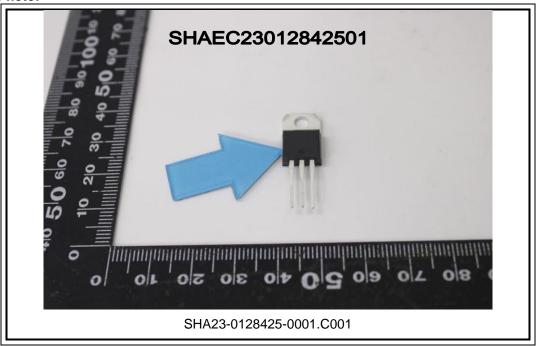
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Sample Photo:



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