

Hazard Control Technologies, Inc.
F-500 Encapsulator Agent Analysis
SDG: 472138

Case Narrative

DOD-QSM Cover Sheet

F-500 Encapsulator Agent Analysis

March 19, 2019

GEL Laboratories, LLC

2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Project Manager: Hope Taylor

Phone Extension: 4778

Email: Hope.Taylor@gel.com

Contract Purchase Order: 19-3646

Work Order: 472138 **SDG:** 472138

Client Contact:

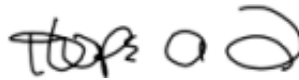
Sharon Greiner
Hazard Control Technologies, Inc.
150 Walter Way
Fayetteville, Georgia 30214

Project Identification: F-500 Encapsulator Agent Analysis

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

GEL appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 08, 2019. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. Revision 01 updates the client sample ID, project ID and method reference per client request. If you have any questions, please do not hesitate to contact me at the phone number or e-mail address listed above.

Sincerely,



Hope Taylor
Project Manager

Certificates of Analysis and QC Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 – (843) 556–8171 – www.gel.com

Certificate of Analysis Report for

HZCT001 Hazard Control Technologies, Inc.

Client SDG: 472138 GEL Work Order: 472138

The Qualifiers in this report are defined as follows:

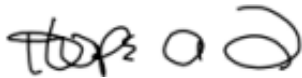
- * Indicates that a quality control analyte recovery is outside of specified acceptance criteria.
- ** Indicates the analyte is a Tracer compound.
- ** Indicates the analyte is a surrogate compound.
- J Concentration of the target analyte exceeds the instrument calibration range.
- J Indicates an estimated value. The result was greater than the detection limit, but less than the reporting limit or indicates that the analyte recovery in the MS or MSD is outside of specified acceptance criteria.
- J Spiked sample recovery not within control limits
- U Indicates the target analyte was analyzed for but not detected above the detection limit.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.

Reviewed by _____



GEL LABORATORIES LLC

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Certificate of Analysis

Company : Hazard Control Technologies, Inc.
Address : 150 Walter Way
Fayetteville, Georgia 30214

Report Date: March 19, 2019

Contact: Ms. Sharon Greiner
Project: **F-500 Encapsulator Agent Analysis EPA
537 Modified**

Client Sample ID: F-500 Encapsulator Agent Lot # 03219-3%
Sample ID: 472138001
Matrix: Water
Collect Date: 04-FEB-19 11:22
Receive Date: 08-FEB-19
Collector: Client

Project: HZCT00119
Client ID: HZCT001

Parameter	Qualifier	Result	DL	LOD	LOQ	Units	PF	DF	Analyst	Date Time	Batch	Mtd.
LCMSMS PFCs												
<i>EPA 537 Mod: PFASs by LC-MS/MS "As Received"</i>												
Fluorotelomer sulfonate 4:2 (4:2 FTS)	U	ND	66000	132000	188000	ng/L	5.00	200	JLS	02/14/19	1431848276	1
Fluorotelomer sulfonate 6:2 (6:2 FTS)	U	ND	66000	132000	190000	ng/L	5.00	200				
Fluorotelomer sulfonate 8:2 (8:2 FTS)	U	ND	66000	132000	192000	ng/L	5.00	200				
N-ethylperfluoro-1-octanesulfonamidoacetic acid (N-EtFOSAA)	U	ND	66000	132000	200000	ng/L	5.00	200				
N-methylperfluoro-1-octanesulfonamidoacetic acid (N-MeFOSAA)	U	ND	66000	132000	200000	ng/L	5.00	200				
Perfluorodecanoic acid (PFDA)	U	ND	39000	78000	100000	ng/L	5.00	200				
Perfluoropentanoic acid (PFPeA)	U	ND	33000	66000	100000	ng/L	5.00	200				
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (PFPrOPrA)	U	ND	165	330	500	ng/L	5.00	1	JLS	02/20/19	18171848276	2
Perfluorobutanesulfonate (PFBS)	U	ND	165	330	445	ng/L	5.00	1				
Perfluorobutyric acid (PFBA)	U	ND	165	330	500	ng/L	5.00	1				
Perfluorodecanesulfonate (PFDS)	U	ND	165	330	485	ng/L	5.00	1				
Perfluorododecanoic acid (PFDoA)	U	ND	165	330	500	ng/L	5.00	1				
Perfluoroheptanesulfonate (PFHpS)	U	ND	165	330	475	ng/L	5.00	1				
Perfluoroheptanoic acid (PFHpA)	U	ND	165	330	500	ng/L	5.00	1				
Perfluorohexanesulfonate (PFHxS)	U	ND	165	330	455	ng/L	5.00	1				
Perfluorohexanoic acid (PFHxA)	U	ND	165	330	500	ng/L	5.00	1				
Perfluorononanesulfonate (PFNS)	U	ND	175	350	480	ng/L	5.00	1				

GEL LABORATORIES LLC

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Certificate of Analysis

Company : Hazard Control Technologies, Inc.
Address : 150 Walter Way
Fayetteville, Georgia 30214

Report Date: March 19, 2019

Contact: Ms. Sharon Greiner
Project: **F-500 Encapsulator Agent Analysis EPA
537 Modified**

Client Sample ID: F-500 Encapsulator Agent Lot # 03219-3% Project: HZCT00119
Sample ID: 472138001 Client ID: HZCT001

Parameter	Qualifier	Result	DL	LOD	LOQ	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
LCMSMS PFCs													
<i>EPA 537 Mod: PFASs by LC-MS/MS "As Received"</i>													
Perfluorononanoic acid (PFNA)	U	ND	165	330	500	ng/L	5.00	1					
Perfluorooctanesulfonamide (PFOSA)	U	ND	165	330	465	ng/L	5.00	1					
Perfluorooctanesulfonate (PFOS)	U	ND	200	400	500	ng/L	5.00	1					
Perfluorooctanoic acid (PFOA)	U	ND	175	350	500	ng/L	5.00	1					
Perfluoropentanesulfonate (PFPeS)	U	ND	165	330	470	ng/L	5.00	1					
Perfluorotetradecanoic acid (PFTeDA)	U	ND	165	330	500	ng/L	5.00	1					
Perfluorotridecanoic acid (PFTrDA)	U	ND	165	330	500	ng/L	5.00	1					
Perfluoroundecanoic acid (PFUdA)	U	ND	165	330	500	ng/L	5.00	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 537 Modified	PFCs Extraction in AFFF Product	GXC1	02/12/19	1216	1848269

The following Analytical Methods were performed :

Method	Description	Analyst Comments
1	EPA 537 Modified	
2	EPA 537 Modified	

**LCMSMS-Misc
Technical Case Narrative
Hazard Control Technologies, Inc. (HZCT)
SDG #: 472138**

Product: The Extraction and Analysis of Per and Polyfluoroalkyl Substances Using LCMSMS

Analytical Method: EPA 537 Modified

Analytical Procedure: GL-OA-E-076 REV# 6

Analytical Batches: 1848276 and 1848269

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
472138001	F-500 Encapsulator Agent Lot # 03219-3%
1204216835	Method Blank (MB)
1204216836	Laboratory Control Sample (LCS)
1204230706	472138001(F-500 Encapsulator Agent Lot # 03219-3%) Sample Duplicate (DUP)
1204230707	472138001(F-500 Encapsulator Agent Lot # 03219-3%) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

470988

Bottle Order Request # 178501

Request Description:

Internal Due Date: 30-JAN-19
 Mode of Delivery: Ground
 Project Name: HZCT00119
 Client Contact: Ms. Sharon Greiner
 Shipping Address: 150 Walter Way
 Fayetteville, GA 30214

Additional Info:

Included	Deliverable Element	Comments
Y	Does client use GEL labels?	
Y	Does client allow packing material (peanuts) to be used?	

Short Hold	Number	Bottle Type	Preservative	Serial Number	Label / Test	Comments	Sample ID
N	2	Glass 40 ml Amber vial	None	3122	TCL VOC		
N	2	Plastic 250 ml (PFC Free)	None	BPC1410G (PFC)			

Return Sample To:

GEL Laboratories LLC
 ATTN: Hope Taylor
 2040 Savage Road
 Chareleston, S.C. 29407
 Tel: (843)556-8171

Lot 03219

F-500 EA 1%

F-500 EA 3%

40 ml = 2 1.5 oz
 250 ml = 2 8.5 oz

Rec'd: A. *[Signature]* 2/8/19
 8:55



Laboratory

HT

SAMPLE RECEIPT & REVIEW FORM

Client: HZCT SDG/ARCOC/Work Order: 470988

Received By: AA Date Received: 2/8/19

Carrier and Tracking Number
FedEx Express FedEx Ground UPS Field Services Courier Other
7743 8186 8207

Suspected Hazard Information	Yes	No	
A) Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____ If UN2910, Is the Radioactive Shipment Survey Compliant? Yes ___ No ___
B) Did the client designate the samples are to be received as radioactive?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	COC notation or radioactive stickers on containers equal client designation.
C) Did the RSO classify the samples as radioactive?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3
D) Did the client designate samples are hazardous?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	COC notation or hazard labels on containers equal client designation.
E) Did the RSO identify possible hazards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If D or E is yes, select Hazards below: PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____

Sample Receipt Criteria	Yes	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Client contacted and provided COC <u>COC created upon receipt</u> <u>Bottle order included with shipment</u>
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice Ice Packs Dry Ice <u>None</u> Other: _____ *all temperatures are recorded in Celsius
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>TR2-18</u> TEMP: <u>21°</u> Secondary Temperature Device Serial # (If Applicable): _____
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: _____
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Preservation added, Lot#: _____ If Yes, are Encores or Soil Kits present for solids? Yes ___ No <input checked="" type="checkbox"/> NA (If yes, take to VOA Freezer) Do liquid VOA vials contain acid preservation? Yes ___ No <input checked="" type="checkbox"/> NA (If unknown, select No) Are liquid VOA vials free of headspace? Yes ___ No <input checked="" type="checkbox"/> NA Sample ID's and containers affected: <u>Both vials have headspace</u>
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and containers affected: <u>No COC</u>
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No dates on containers No times on containers <u>COC missing info</u> Other (describe)
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: No container count on COC Other (describe) <u>Container count matches bottle order</u>
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: <u>Not relinquished</u> Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials JMC Date 2/11/19 Page 1 of 1

List of current GEL Certifications as of 19 March 2019

State	Certification
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA024
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122019-2
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-19-14
Utah NELAP	SC000122018-27
Vermont	VT87156
Virginia NELAP	460202
Washington	C780