

Client:	DEF Products, LLC
Contact:	Joe Servin, General Manager
Address:	422 East Barioni Blvd Imperial, CA 02251
Email:	defproducts@gmail.com
Phone:	760 355 7997

Analytic ID	E1908056-001
Batch Number	308202019
Train Number	UTLX647604
Sample ID	DEF 32.5%
Date Sampled	8/20/2019
Date Received	8/23/2019
Report Date	8/28/2019

Certificate of Analysis

Diesel Exhaust Fluid Analytical ISO-22241


Client ID: 32.5% DEF Batch# 308202019 Train# UTLX647604

Test Parameter/Method	Units	Test Method (ISO) ¹	Acceptable Limit ²	Results	Chemist	Analysis Date	Pass/Fail
Urea Content	wt%	22241-2 Annex C	31.8-33.2	33.1	SPT	8/27/2019	Pass
Refractive Index @ 20degC	N _D ²⁰	22241-2 Annex C	1.3814-1.3843	1.3838	CND	8/26/2019	Pass
Alkalinity as NH ₃	%	22241-2 Annex D	<0.2	0.03	BDK	8/27/2019	Pass
Biuret	%	22241-2 Annex E	<0.3	0.16	CND	8/26/2019	Pass
Aldehyde	mg/kg	22241-2 Annex F	<5.0	<1.0	BDK	8/26/2019	Pass
Insolubles	mg/kg	22241-2 Annex G	<20	<2.0	CND	8/27/2019	Pass
Phosphate	mg/kg	22241-2 Annex H	<0.5	<0.25	CND	8/27/2019	Pass
Calcium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	8/26/2019	Pass
Iron by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.09	CLB	8/26/2019	Pass
Copper by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	8/26/2019	Pass
Zinc by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	8/26/2019	Pass
Chromium by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	8/26/2019	Pass
Nickel by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	8/26/2019	Pass
Aluminum by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.02	CLB	8/26/2019	Pass
Magnesium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	8/26/2019	Pass
Sodium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	8/26/2019	Pass
Potassium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	8/26/2019	Pass
Miscellaneous Secondary Unregulated Quality Standards							
Identify by FTIR (attached)	Spectra	22241-2 Annex J	Control Match	Match	BDK	8/26/2019	---
Density @ 20degC	g/cm ³	3675	Not Applicable	1.0920	CND	8/26/2019	---

Note 1: All ISO standards are up to date with the latest revisions

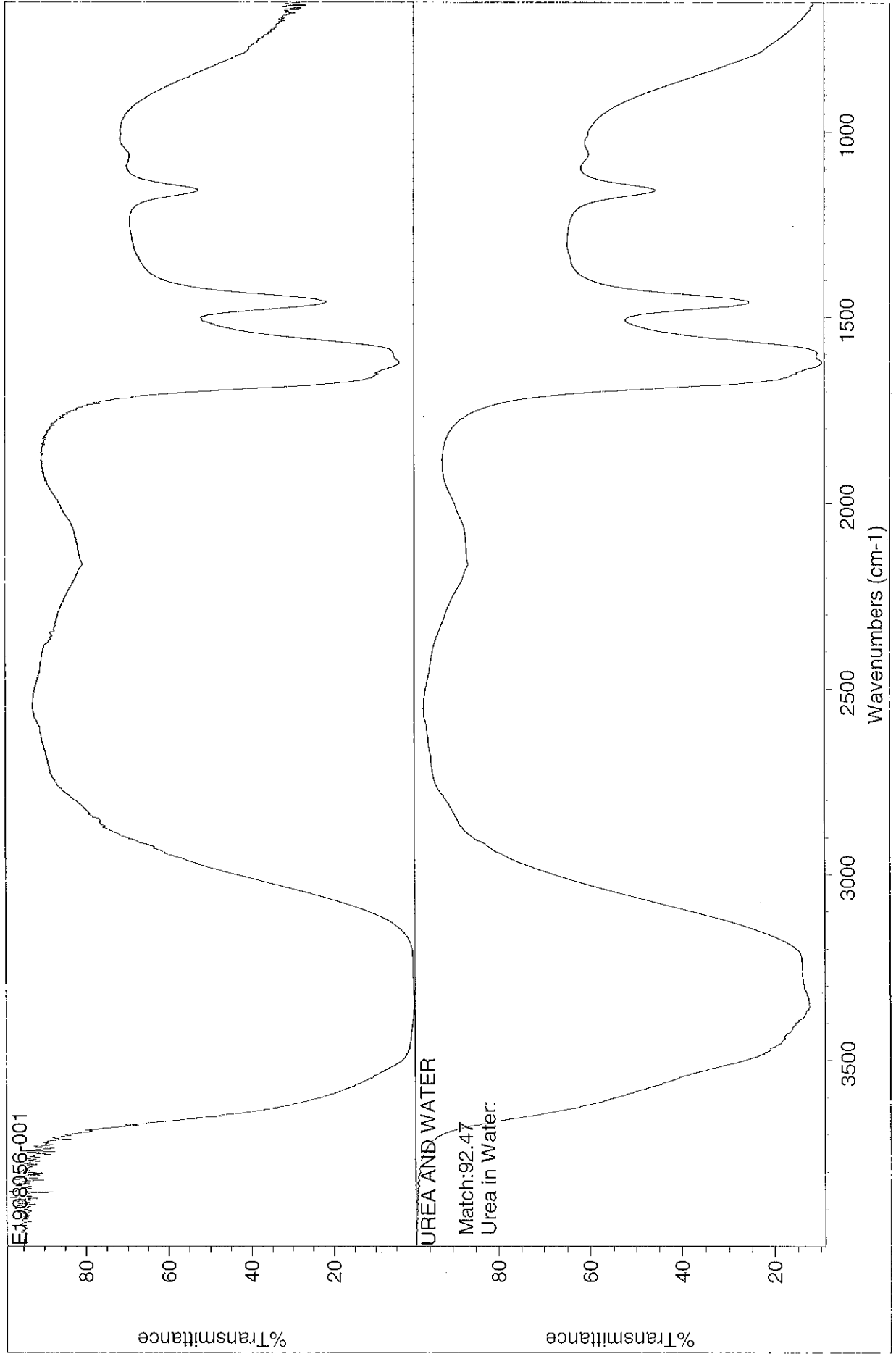
Note 2: The acceptable values are based on the standard 32.5% unless otherwise stated, and are less than or equal to the values shown.

"The undersigned certifies that the value(s) reported have met the highest analytical quality control standards."

Certification Approval 
 Laboratory Director: Anthony J Scala

Date: 8/27/2019

Search results for: E1908056-001
Date: Mon Aug 26 10:07:25 2019 (GMT-04:00)
Search algorithm: Search Expert
Regions searched: 2600.00-450.00



analytic

Analytical Testing Laboratories

6034 Corporate Drive, East Syracuse, NY 13057
 Phone: 315.437.0255 Fax: 315.437.1209

Chain of Custody Record

Quote Number:

Client:		Project #/ Project Name		Number of Containers										Remarks		
DEF Products, LLC		ISO 22241 DEF Testing		1	2	3	4	5	6	7	8	9	10	Product Testing Certificate of Analysis		
Client Contact:		Location (City/State)														
Sharon Stegmuller		422 E. Barioni Blvd., Imperial CA														
Sample ID	Date	Time	Matrix	Grab or Comp	Lab Internal Use Only											
Batch # 308202019	8/20/2019	N/A	Liquid	Comp	E1908056	1	2	3	4	5	6	7	8	9	10	
Train # UTLX647604					-001	2	X	X	X	X	X	X	X	X	X	
PERCENT DEF 32.5%																
Batch # 308212019	8/21/2019	N/A	Liquid	Comp	-002	2	X	X	X	X	X	X	X	X	X	
Train # UTLX647550																
PERCENT DEF 32.5%																
Parameter and Method		Sample bottle:		Type	Size	Preservative	Sampled by (Print)								Name of Courier	
1 Urea Content			HDPE	500 ml	None									FedEx Express		
2 Refractive Index @ 20degC						Company: DEF Products, LLC								Received by: (sign)		
3 Density @ 20degC						Relinquished by:(sign)								Date		
4 Alkalinity (as NH3)						DEF Products, LLC								Time		
5 Biuret						Relinquished by:(sign)								Date		
6 Aldehydes						Relinquished by:(sign)								Time		
7 Insolubles						Relinquished by:(sign)								Date		
8 Phosphate						Relinquished by:(sign)								Time		
9 Total Metals: Al,Ca,Cr,Cu,Fe,K,Mg,Ni,Na,Zn.						Relinquished by:(sign)								Date		
10 FTIR						Relinquished by:(sign)								Time		
										8/23/19	8:58 am	C. Scala				

Client:	DEF Products, LLC
Contact:	Joe Servin, General Manager
Address:	422 East Barioni Blvd Imperial, CA 02251
Email:	defproducts@gmail.com
Phone:	760 355 7997

Analytic ID	E1908056-002
Batch Number	308212019
Train Number	UTLX647550
Sample ID	DEF 32.5%
Date Sampled	8/21/2019
Date Received	8/23/2019
Report Date	8/28/2019

Certificate of Analysis

Diesel Exhaust Fluid Analytical ISO-22241


Client ID: 32.5% DEF Batch# 308212019 Train# UTLX647550

Test Parameter/Method	Units	Test Method (ISO) ¹	Acceptable Limit ²	Results	Chemist	Analysis Date	Pass/Fail
Urea Content	wt%	22241-2 Annex C	31.8-33.2	33.1	SPT	8/27/2019	Pass
Refractive Index @ 20degC	N _D ²⁰	22241-2 Annex C	1.3814-1.3843	1.3838	CND	8/26/2019	Pass
Alkalinity as NH ₃	%	22241-2 Annex D	<0.2	0.03	BDK	8/27/2019	Pass
Biuret	%	22241-2 Annex E	<0.3	0.17	CND	8/26/2019	Pass
Aldehyde	mg/kg	22241-2 Annex F	<5.0	<1.0	BDK	8/26/2019	Pass
Insolubles	mg/kg	22241-2 Annex G	<20	<2.0	CND	8/27/2019	Pass
Phosphate	mg/kg	22241-2 Annex H	<0.5	<0.25	CND	8/27/2019	Pass
Calcium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	8/26/2019	Pass
Iron by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.08	CLB	8/26/2019	Pass
Copper by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	8/26/2019	Pass
Zinc by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	8/26/2019	Pass
Chromium by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	8/26/2019	Pass
Nickel by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	8/26/2019	Pass
Aluminum by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.02	CLB	8/26/2019	Pass
Magnesium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	8/26/2019	Pass
Sodium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.18	CLB	8/26/2019	Pass
Potassium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	8/26/2019	Pass
Miscellaneous Secondary Unregulated Quality Standards							
Identify by FTIR (attached)	Spectra	22241-2 Annex J	Control Match	Match	BDK	8/26/2019	---
Density @ 20degC	g/cm ³	3675	Not Applicable	1.0925	CND	8/26/2019	---

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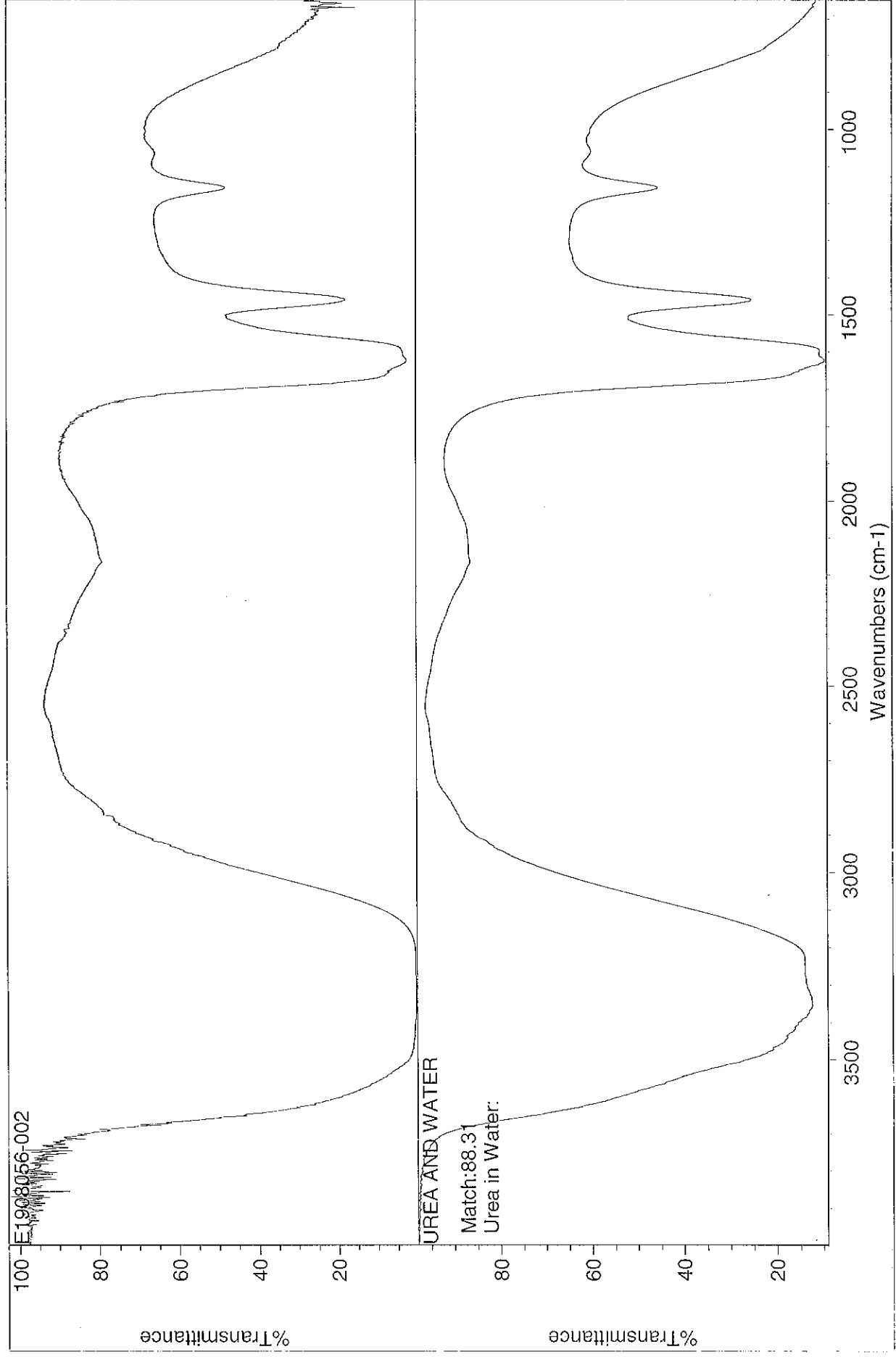
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Certification Approval 
 Laboratory Director: Anthony J Scala

Date: 8/27/2019

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Search algorithm: Search Expert
Regions searched: 2600.00-450.00



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Chain of Custody Record

Quote Number:

Client: DEF Products, LLC		Project #/Project Name: ISO 22241 DEF Testing		Number of Containers										Remarks		
Client Contact: Sharon Stegmuller		Location (City/State): 422 E. Barioni Blvd., Imperial CA		1	2	3	4	5	6	7	8	9	10	Product Testing Certificate of Analysis		
Sample ID	Date	Time	Matrix	Grab or Comp	Lab Internal Use Only											
Batch # 308202019	8/20/2019	N/A	Liquid	Comp	E1908056	2	X	X	X	X	X	X	X	X		
Train # UTLX647604																
PERCENT DEF 32.5%																
Batch # 308212019	8/21/2019	N/A	Liquid	Comp		2	X	X	X	X	X	X	X	X		
Train # UTLX647550																
PERCENT DEF 32.5%																
Parameter and Method		Sample bottle:	Type	Size	Preservative	Sampled by (Print)								Name of Counter		
1 Urea Content		HDPE	HDPE	500 ml	None	Company: DEF Products, LLC								FedEx Express		
2 Refractive Index @ 20degC						Relinquished by:(sign)								Received by: (sign)		
3 Density @ 20degC						DEF Products, LLC								Time		
4 Alkalinity (as NH3)						Relinquished by:(sign)								Date		
5 Biuret						DEF Products, LLC								Time		
6 Aldehydes						Relinquished by:(sign)								Date		
7 Insolubles						Relinquished by:(sign)								Time		
8 Phosphate						Relinquished by:(sign)								Date		
9 Total Metals: Al,Ca,Cr,Cu,Fe,K,Mg,Ni,Na,Zn.						Relinquished by:(sign)								Time		
10 FTIR						Relinquished by:(sign)								Date		
										8/23/19		8:58 am		C. Scala		