

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	E2001028-001
Batch Number	301092020L
Train Number	UTLX647975
Sample ID	DEF 32.5%
Date Sampled	1/9/2020
Date Received	1/13/2020
Report Date	1/16/2020

Certificate of Analysis

Diesel Exhaust Fluid Analytical ISO-22241


Client ID: 32.5% DEF Batch# 301092020L Train# UTLX647975

Test Parameter/Method	Units	Test Method (ISO) ¹	Acceptable Limit ²	Results	Chemist	Analysis Date	Pass/Fail
Urea Content	wt%	22241-2 Annex C	31.8-33.4	31.8	SPT	1/16/2020	Pass
Refractive Index @ 20degC	N _D ²⁰	22241-2 Annex C	1.3814-1.3843	1.3818	SPT	1/16/2020	Pass
Alkalinity as NH ₃	%	22241-2 Annex D	<0.2	<0.01	CLB	1/16/2020	Pass
Biuret	%	22241-2 Annex E	<0.3	0.16	BDK	1/16/2020	Pass
Aldehyde	mg/kg	22241-2 Annex F	<5.0	1.2	BDK	1/15/2020	Pass
Insolubles	mg/kg	22241-2 Annex G	<20	<2.0	CLB	1/15/2020	Pass
Phosphate	mg/kg	22241-2 Annex H	<0.5	<0.25	BDK	1/15/2020	Pass
Calcium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/15/2020	Pass
Iron by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/15/2020	Pass
Copper by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/15/2020	Pass
Zinc by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/15/2020	Pass
Chromium by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/15/2020	Pass
Nickel by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/15/2020	Pass
Aluminum by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/15/2020	Pass
Magnesium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/15/2020	Pass
Sodium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/15/2020	Pass
Potassium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/15/2020	Pass
Miscellaneous Secondary Unregulated Quality Standards							
Identify by FTIR (attached)	Spectra	22241-2 Annex J	Control Match	Match	BDK	1/13/2020	---
Density @ 20degC	g/cm ³	3675	Not Applicable	1.0895	CLB	1/14/2020	---

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

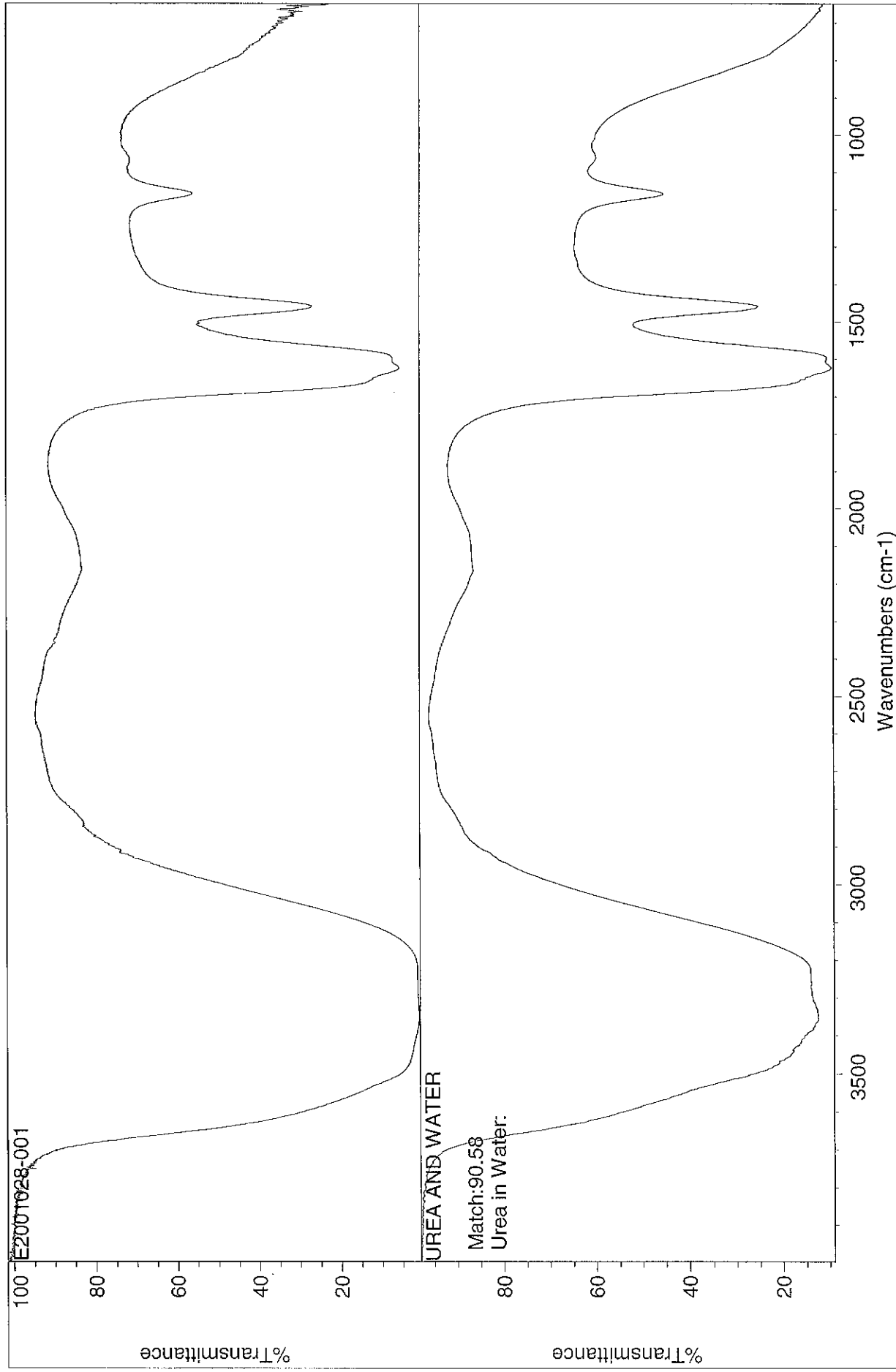
Note 2: The acceptable values are based on the standard 32.5% unless otherwise stated, and are less than or equal to the values shown.

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

Certification Approval 
Laboratory Director: Anthony J Scala

Date: 1/16/2020

Search results for: E2001028-001
Date: Mon Jan 13 15:08:33 2020 (GMT-05:00)
Search algorithm: Search Expert
Regions searched: 2600.00-450.00



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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: DEF Products, LLC

Project #/ Project Name: ISO 22241 DEF Testing

Client Contact: Sharon Stegmuller

Phone #: (760) 355-7997

Date: 1/9/2020

Sample ID: UTLX647975

Batch #: 301092020L

Train #: UTLX647975

PERCENT DEF 32.5%

Lab Internal Use Only E2001028

Location (City/State): 422 E. Barioni Blvd., Imperial CA

Grab or Comp: Comp

Matrix: Liquid

Time: N/A

Number of Containers: 2

Remarks: Product Testing Certificate of Analysis

1 2 3 4 5 6 7 8 9 10

2 X X X X X X X X X X

Sample bottle: Type Size

2 HDPE 500 ml

Preservative: None

Sampled by (Print): Client

Company: DEF Products, LLC

Relinquished by: (sign) Lois Telles

Date: 1/19/20

Time: 4:44 PM

Name of Courier: FedEx Express

8145 8339 3931

Received by: (sign)

Received by: (sign)

Time: 10:52 AM

Date: 1/13/20

Relinquished by: (sign)

Rec'd for Lab by: MICHAEL D. FABIO ENALYTIC, LLC

Parameter and Method

1 Urea Content

2 Refractive Index @ 20degC

3 Density @ 20degC

4 Alkalinity (as NH3)

5 Biuret

6 Aldehydes

7 Insolubles

8 Phosphate

9 Total Metals: Al, Ca, Cr, Cu, Fe, K, Mg, Ni, Na, Zn.

10 FTIR

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

Enalytic ID	E1912024-001
Batch Number	301092020M
Train Number	GATX2200486
Sample ID	DEF 32.5%
Date Sampled	1/9/2020
Date Received	1/10/2020
Report Date	1/15/2020

Certificate of Analysis

Diesel Exhaust Fluid Analytical ISO-22241


Client ID: **32.5% DEF** Batch# **301092020M** Train# **GATX220486**

Test Parameter/Method	Units	Test Method (ISO) ¹	Acceptable Limit ²	Results	Chemist	Analysis Date	Pass/Fail
Urea Content	wt%	22241-2 Annex C	31.8-33.4	31.8	SPT	1/13/2020	Pass
Refractive Index @ 20degC	N _D ²⁰	22241-2 Annex C	1.3814-1.3843	1.3819	BDK	1/10/2020	Pass
Alkalinity as NH ₃	%	22241-2 Annex D	<0.2	<0.01	BDK	1/10/2020	Pass
Biuret	%	22241-2 Annex E	<0.3	0.25	BDK	1/13/2020	Pass
Aldehyde	mg/kg	22241-2 Annex F	<5.0	1.1	BDK	1/15/2020	Pass
Insolubles	mg/kg	22241-2 Annex G	<20	<2.0	BDK	1/13/2020	Pass
Phosphate	mg/kg	22241-2 Annex H	<0.5	<0.25	BDK	1/13/2020	Pass
Calcium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/10/2020	Pass
Iron by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/10/2020	Pass
Copper by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/10/2020	Pass
Zinc by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/10/2020	Pass
Chromium by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/10/2020	Pass
Nickel by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/10/2020	Pass
Aluminum by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/10/2020	Pass
Magnesium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/10/2020	Pass
Sodium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/10/2020	Pass
Potassium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/10/2020	Pass
Miscellaneous Secondary Unregulated Quality Standards							
Identify by FTIR (attached)	Spectra	22241-2 Annex J	Control Match	Match	BDK	1/13/2020	---
Density @ 20degC	g/cm ³	3675	Not Applicable	1.0885	BDK	1/10/2020	---

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

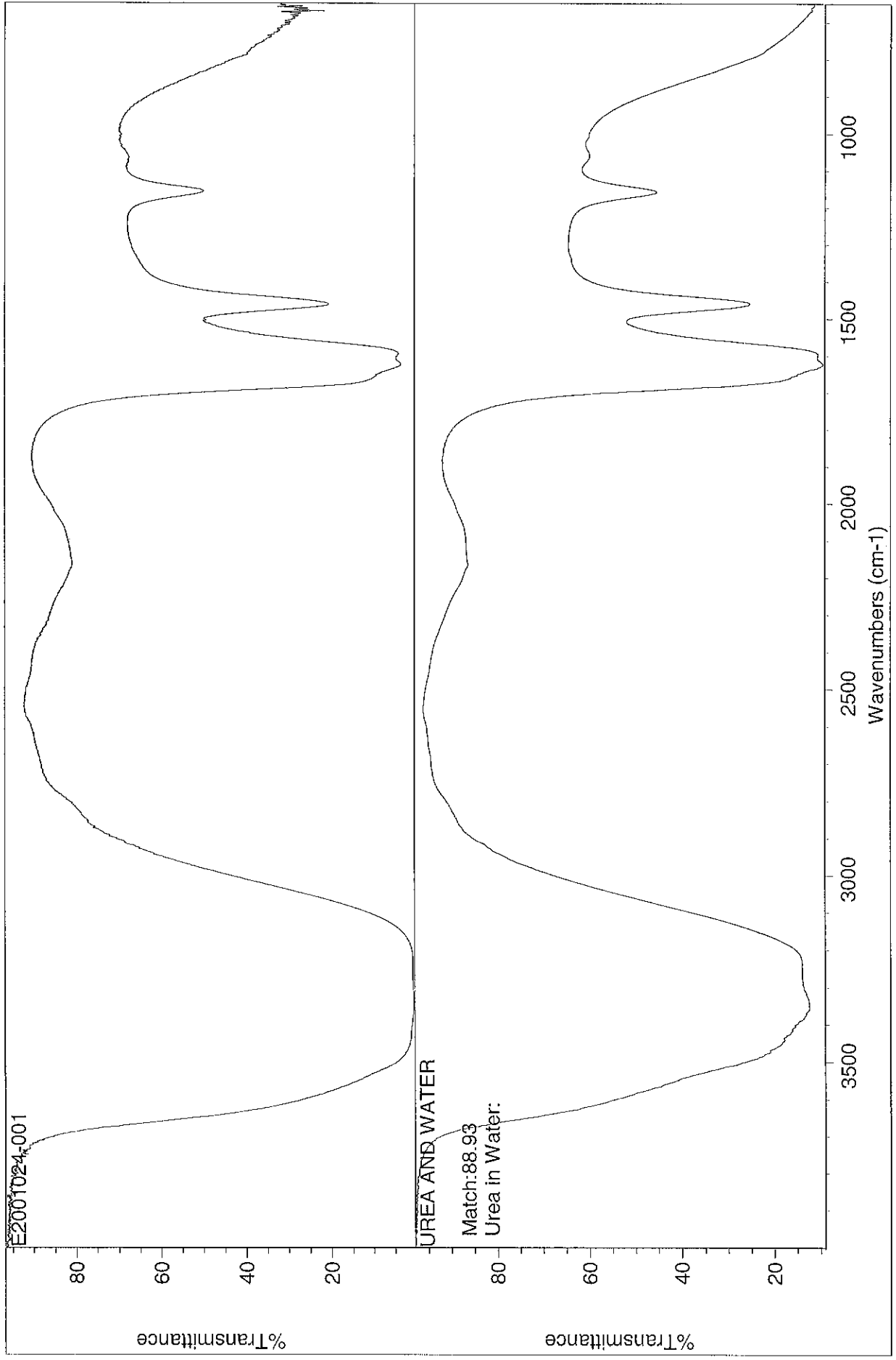
Note 2: The acceptable values are based on the standard 32.5% unless otherwise stated, and are less than or equal to the values shown.

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

Certification Approval 
Laboratory Director: Anthony J Scala

Date: 1/15/2020

Search results for: E2001024-001
Date: Mon Jan 13 14:58:41 2020 (GMT-05:00)
Search algorithm: Search Expert
Regions searched: 2600.00-450.00



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Analytical Testing Laboratories
 Client: DEF Products, LLC
 Phone: (760) 355-7997
 Project #/Project Name: ISO 22241 DEF Testing

Chain of Custody Record

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

Client Contact:	DEF Products, LLC		ISO 22241 DEF Testing		Number of Containers										Remarks		
	Phone #	Date	Time	Matrix	Grab or Comp	Lab Internal Use Only	1	2	3	4	5	6	7	8		9	10
Sharon Stegmuller	(760) 355-7997	1/9/2020	N/A	Liquid	Comp	E2001024	2	X	X	X	X	X	X	X	X	X	Product Testing Certificate of Analysis
Sample ID																	
Batch #	301092020M																
Train #	GATX220486																
PERCENT DEF	32.5%																
Parameter and Method	Sample bottle:	Type	Size	Preservative	Sampled by (Print)	Company:	Relinquished by:(sign)	Date	Time	Name of Courier							
1 Urea Content	HDPE	500 ml	None	DEF Products, LLC	DEF Products, LLC	DEF Products, LLC	DEF Products, LLC			FedEx Express							
2 Refractive Index @ 20degC										Received by: (sign)							
3 Density @ 20degC										Received by: (sign)							
4 Alkalinity (as NH3)										Received by: (sign)							
5 Biuret										Received by: (sign)							
6 Aldehydes										Received by: (sign)							
7 Insolubles										Received by: (sign)							
8 Phosphate										Received by: (sign)							
9 Total Metals: Al,Ca,Cr,Cu,Fe,K,Mg,Ni,Na,Zn.										Rec'd for Lab by:							
10 FTIR										1/10/2020	10:39 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	E2001068-001
Batch Number	301222020M
Train Number	TILX264913
Sample ID	DEF 32.5%
Date Sampled	1/22/2020
Date Received	1/29/2020
Report Date	2/4/2020

Certificate of Analysis

Diesel Exhaust Fluid Analytical ISO-22241


Client ID: 32.5% DEF Batch# 301222020M Train# TILX264913

Test Parameter/Method	Units	Test Method (ISO) ¹	Acceptable Limit ²	Results	Chemist	Analysis Date	Pass/Fail
Urea Content	wt%	22241-2 Annex C	31.8-33.4	32.4	SPT	2/5/2020	Pass
Refractive Index @ 20degC	N _D ²⁰	22241-2 Annex C	1.3814-1.3843	1.3828	ALB	2/3/2020	Pass
Alkalinity as NH ₃	%	22241-2 Annex D	<0.2	<0.01	ALB	1/30/2020	Pass
Biuret	%	22241-2 Annex E	<0.3	0.16	ALB	1/31/2020	Pass
Aldehyde	mg/kg	22241-2 Annex F	<5.0	<1.0	BDK	2/3/2020	Pass
Insolubles	mg/kg	22241-2 Annex G	<20	<2.0	ALB	2/3/2020	Pass
Phosphate	mg/kg	22241-2 Annex H	<0.5	<0.25	BDK	1/31/2020	Pass
Calcium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.07	CLB	1/31/2020	Pass
Iron by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/31/2020	Pass
Copper by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/31/2020	Pass
Zinc by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/31/2020	Pass
Chromium by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/31/2020	Pass
Nickel by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/31/2020	Pass
Aluminum by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/31/2020	Pass
Magnesium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/31/2020	Pass
Sodium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.08	CLB	1/31/2020	Pass
Potassium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.15	CLB	1/31/2020	Pass
Miscellaneous Secondary Unregulated Quality Standards							
Identify by FTIR (attached)	Spectra	22241-2 Annex J	Control Match	Match	ALB	1/31/2020	---
Density @ 20degC	g/cm ³	3675	Not Applicable	1.0905	BDK	1/30/2020	---

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

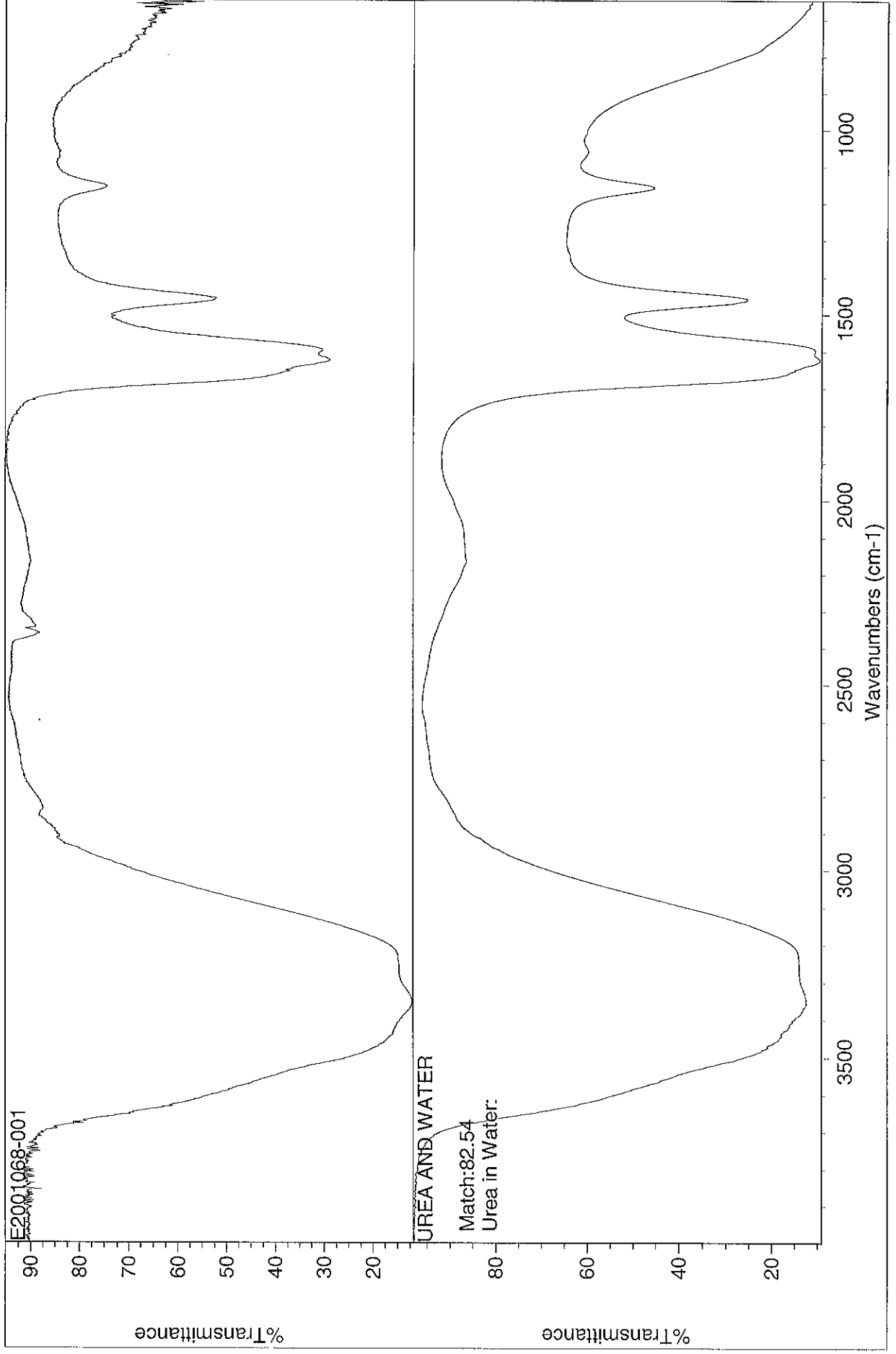
Note 2: The acceptable values are based on the standard 32.5% unless otherwise stated, and are less than or equal to the values shown.

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Certification Approval 
 Laboratory Director: Anthony J Scala

Date: 2/5/2020

Search results for: E2001068-001
Date: Fri Jan 31 09:00:23 2020 (GMT-05:00)
Search algorithm: Search Expert
Regions searched: 2600.00-450.00



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	E2001068-002
Batch Number	301282020M
Train Number	TILX264928
Sample ID	DEF 32.5%
Date Sampled	1/28/2020
Date Received	1/29/2020
Report Date	2/4/2020

Certificate of Analysis

Diesel Exhaust Fluid Analytical ISO-22241


Client ID: 32.5% DEF Batch# 301282020M Train# TILX264928

Test Parameter/Method	Units	Test Method (ISO) ¹	Acceptable Limit ²	Results	Chemist	Analysis Date	Pass/Fail
Urea Content	wt%	22241-2 Annex C	31.8-33.4	32.4	SPT	2/5/2020	Pass
Refractive Index @ 20degC	N _D ²⁰	22241-2 Annex C	1.3814-1.3843	1.3828	ALB	2/3/2020	Pass
Alkalinity as NH ₃	%	22241-2 Annex D	<0.2	<0.01	ALB	1/30/2020	Pass
Biuret	%	22241-2 Annex E	<0.3	0.16	ALB	1/31/2020	Pass
Aldehyde	mg/kg	22241-2 Annex F	<5.0	<1.0	BDK	2/3/2020	Pass
Insolubles	mg/kg	22241-2 Annex G	<20	4.9	ALB	2/3/2020	Pass
Phosphate	mg/kg	22241-2 Annex H	<0.5	<0.25	BDK	1/31/2020	Pass
Calcium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.11	CLB	1/31/2020	Pass
Iron by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/31/2020	Pass
Copper by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/31/2020	Pass
Zinc by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/31/2020	Pass
Chromium by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/31/2020	Pass
Nickel by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	CLB	1/31/2020	Pass
Aluminum by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/31/2020	Pass
Magnesium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/31/2020	Pass
Sodium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/31/2020	Pass
Potassium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	CLB	1/31/2020	Pass
Miscellaneous Secondary Unregulated Quality Standards							
Identify by FTIR (attached)	Spectra	22241-2 Annex J	Control Match	Match	ALB	1/31/2020	---
Density @ 20degC	g/cm ³	3675	Not Applicable	1.0905	BDK	1/30/2020	---

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: 2/5/2020

Search results for: E2001068-002
Date: Fri Jan 31 09:02:45 2020 (GMT-05:00)
Search algorithm: Search Expert
Regions searched: 2600.00-450.00

