

Client:	DEF Products, LLC
Contact	Joe Servin, General Manager
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Analytic ID	E1806066-001
Batch Number	306262018-1
Train Number	UTLX647646
Sample ID	DEF 32.6
Date Sampled	6/26/2018
Date Received	6/27/2018
Report Date	7/2/2018

## Certificate of Analysis

Diesel Exhaust Fluid Analytical ISO-22241

Client ID: 32.6% DEF Batch# 306262018-1 Train# UTLX647646

Test Parameter/Method	Units	Test Method (ISO)	Acceptable Limit	Results	Chemist	Analysis Date	Pass/Fail
Urea Content	wt%	22241-2 Annex C	31.8-33.2	32.6	SPT	7/2/2018	Pass
Density @ 20degC	g/cm <sup>3</sup>	3675	1.0870-1.0930	1.0900	CND	6/28/2018	Pass
Refractive Index @ 20degC	N <sub>D</sub> <sup>20</sup>	22241-2 Annex C	1.3814-1.3843	1.3829	CND	6/28/2018	Pass
Alkalinity as NH <sub>3</sub>	%	22241-2 Annex D	<0.2	0.04	CLB	6/29/2019	Pass
Biuret	%	22241-2 Annex E	<0.3	0.17	CLB	6/29/2018	Pass
Aldehyde	mg/kg	22241-2 Annex F	<5	<1.0	CLB	6/28/2019	Pass
Insolubles	mg/kg	22241-2 Annex G	<20	6.0	CND	6/29/2018	Pass
Phosphate	mg/kg	22241-2 Annex H	<0.5	<0.25	CLB	7/2/2018	Pass
Calcium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.18	BDK	6/27/2018	Pass
Iron by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	BDK	6/27/2018	Pass
Copper by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	BDK	6/27/2018	Pass
Zinc by ICP-OES	mg/kg	22241-2 Annex I	<0.2	0.07	BDK	6/27/2018	Pass
Chromium by ICP-OES	mg/kg	22241-2 Annex I	<0.2	0.03	BDK	6/27/2018	Pass
Nickel by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	BDK	6/27/2018	Pass
Aluminum by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	BDK	6/27/2018	Pass
Magnesium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.06	BDK	6/27/2018	Pass
Sodium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.11	BDK	6/27/2018	Pass
Potassium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.07	BDK	6/27/2018	Pass
Identity by FTIR (attached)	Spectra	22241-2 Annex J	Match	Reference Match	BDK	6/29/2018	Pass

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.

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



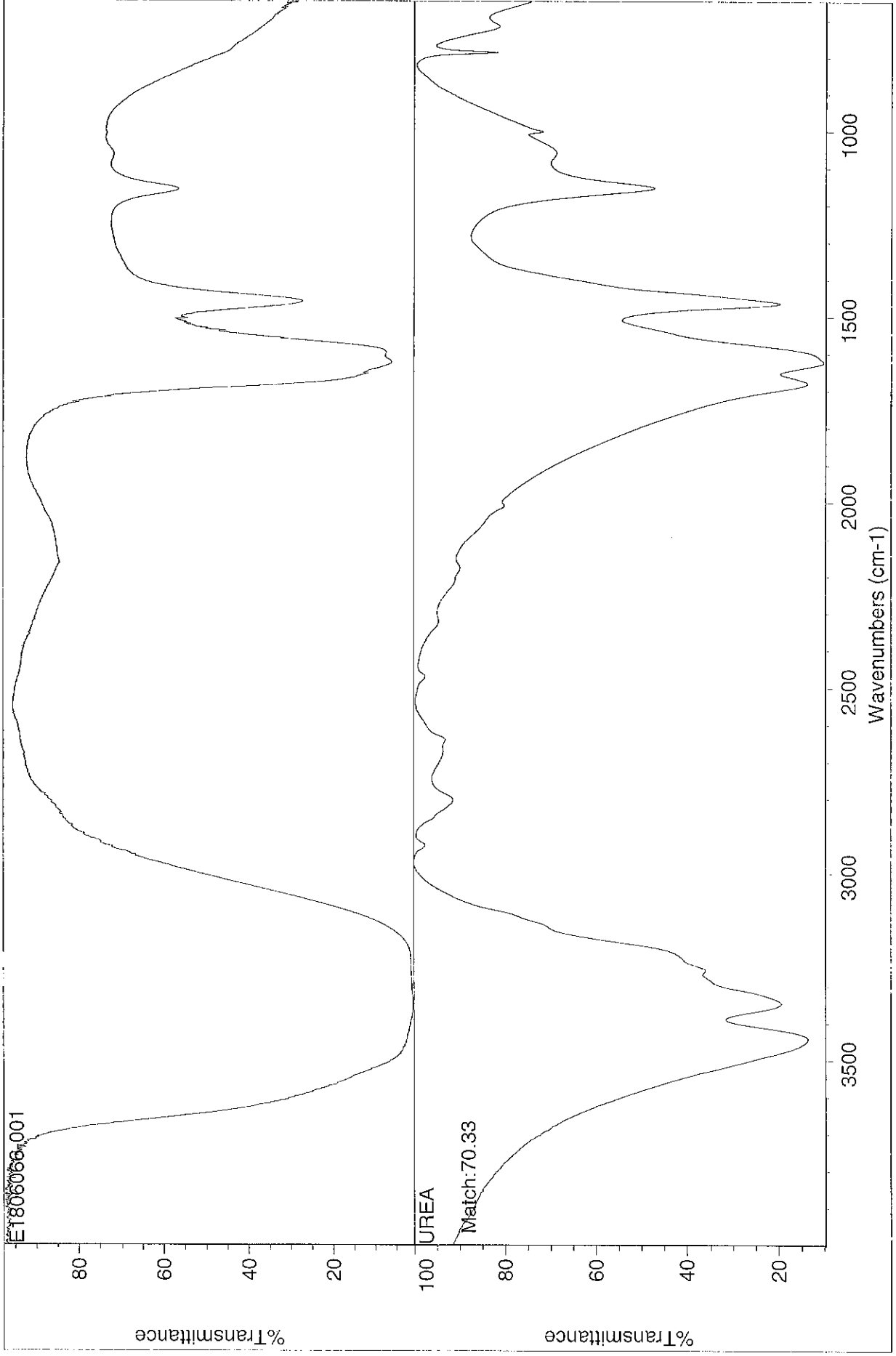
Certification Approval \_\_\_\_\_

Laboratory Director: Anthony J Scala

Analytic FDA Reg. Number: 02-636-0096

Date: 7/2/2018

Search results for: E1806066-001  
Date: Fri Jun 29 15:20:44 2018 (GMT-04:00)  
Search algorithm: Search Expert  
Regions searched: 2600.00-450.00





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Address	422 East Barioni Blvd Imperial, CA 02251
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Phone	760 355 7997

Analytic ID	E1806066-002
Batch Number	306262018-2
Train Number	GATX224289
Sample ID	DEF 32.6
Date Sampled	6/26/2018
Date Received	6/27/2018
Report Date	7/2/2018

## Certificate of Analysis

Diesel Exhaust Fluid Analytical ISO-22241

Client ID: 32.6% DEF Batch# 306262018-2 Train# GATX224289

Test Parameter/Method	Units	Test Method (ISO)	Acceptable Limit	Results	Chemist	Analysis Date	Pass/Fail
Urea Content	wt%	22241-2 Annex C	31.8-33.2	32.6	SPT	7/2/2018	Pass
Density @ 20degC	g/cm <sup>3</sup>	3675	1.0870-1.0930	1.0920	CND	6/28/2018	Pass
Refractive Index @ 20degC	N <sub>D</sub> <sup>20</sup>	22241-2 Annex C	1.3814-1.3843	1.3830	CND	6/28/2018	Pass
Alkalinity as NH <sub>3</sub>	%	22241-2 Annex D	<0.2	0.04	CLB	6/29/2019	Pass
Biuret	%	22241-2 Annex E	<0.3	0.17	CLB	6/29/2018	Pass
Aldehyde	mg/kg	22241-2 Annex F	<5	<1.0	CLB	6/28/2019	Pass
Insolubles	mg/kg	22241-2 Annex G	<20	7.0	CND	6/29/2018	Pass
Phosphate	mg/kg	22241-2 Annex H	<0.5	<0.25	CLB	7/2/2018	Pass
Calcium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.47	BDK	6/27/2018	Pass
Iron by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	BDK	6/27/2018	Pass
Copper by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	BDK	6/27/2018	Pass
Zinc by ICP-OES	mg/kg	22241-2 Annex I	<0.2	0.15	BDK	6/27/2018	Pass
Chromium by ICP-OES	mg/kg	22241-2 Annex I	<0.2	0.02	BDK	6/27/2018	Pass
Nickel by ICP-OES	mg/kg	22241-2 Annex I	<0.2	<0.02	BDK	6/27/2018	Pass
Aluminum by ICP-OES	mg/kg	22241-2 Annex I	<0.5	<0.05	BDK	6/27/2018	Pass
Magnesium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.06	BDK	6/27/2018	Pass
Sodium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.15	BDK	6/27/2018	Pass
Potassium by ICP-OES	mg/kg	22241-2 Annex I	<0.5	0.12	BDK	6/27/2018	Pass
Identity by FTIR (attached)	Spectra	22241-2 Annex J	Match	Reference Match	BDK	6/29/2018	Pass

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.

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



Certification Approval \_\_\_\_\_

Laboratory Director: Anthony J Scala

Analytic FDA Reg. Number: 02-636-0096

Date: 7/2/2018

Search results for: E1806066-002  
Date: Fri Jun 29 15:22:30 2018 (GMT-04:00)  
Search algorithm: Search Expert  
Regions searched: 2600.00-450.00

