

Attention of : Mr. J.R. Wandurraga Rojas

Analysis Report

Report number	: 15300/00009311.2/L/20	Submitted date	: 2020-02-27
Main Object	: Petromil / Análisis Laboratorio	Sample submitted at	: Petroleos Del Milenio S.A.S
Report Date	: 2020-02-27	Date received	: 2020-02-27
Date of issue	: 2020-02-27	Date completed	: 2020-02-27
Sample object	: 22	Sample number	: 9546132
Sample type	: Submitted		
Sample submitted as	: VLSFO		
Marked	: Shore tank 22		

NAME	METHOD	UNIT	SPECS		RESULT
			Min	Max	
API Gravity at 60 °C	ASTM D 1298	°API			19.5
Density at 15 °C	ASTM D 1298	kg/m ³		991.0	936.5
Kinematic Viscosity at 50 °C	ASTM D 445	mm ² /s		380.0	86.68
CCAI	ISO 8217 (Annex F)	-		870	771.6
Total Sulfur Content	ASTM D 4294	mass %		0.500	0.447
Flash Point (PM) - Procedure B	ASTM D 93	°C	60.0		87.0
Total Acid Number - Procedure A	ASTM D 664	mg KOH/g		2.500	0.513
Accelerated Total Sediment by Hot Filtration -	ASTM D 4870	mass %		0.10	0.01
Conradson Carbon Residue	ASTM D 189	mass %		18.00	6.94
Pour Point	ASTM D 97	°C		30	12
Water by Distillation	ASTM D 95	vol %		0.50	0.15
Ash Content	ASTM D 482	mass %		0.100	0.004
Vanadium (V) - Procedure B	ASTM D 5863	mg/kg		350	37
Sodium (Na) - Procedure B	ASTM D 5863	mg/kg		100	1.4
Aluminum (Al) - Method B	ASTM D 5184	mg/kg			<5
Silicon (Si) - Method B	ASTM D 5184	mg/kg			<10
Aluminum plus Silicon	ASTM D 5184	mg/kg		60	10
Calcium (Ca)	IP 470	mg/kg		30	6
Zinc (Zn)	IP 470	mg/kg		15	1
Phosphorus (P)	IP 500	mg/kg		15	1.5

All results in this report refer to the sample(s) tested as taken or submitted like specified in this Analysis report. Uncertainties, available on request, apply in the evaluation of the test results. All tests are conducted according to the latest version of the methods, unless another version is specifically indicated. Where available and for convenience purposes, the tested sample has been checked for compliance with supplied specifications, without accepting any liability. In case of dispute or concern, we refer to the interpretation of test results as defined in ASTM D3244, IP 367, ISO 4259 or GOST 33701. This report shall not be partially copied and reproduced without the written permission of the laboratory.

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Sector Cospique
CARTAGENA
Colombia



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NAME	METHOD	UNIT	SPECS		RESULT
			Min	Max	
Compatibility	ASTM D 4740	-			1

Test comments:

Total Sulfur Content (ASTM D 4294): Statutory Requirements

Calcium (Ca) (IP 470): Shall be considered to contain ULO if Ca>30 and Zn>15 or Ca>30 and P>15

Zinc (Zn) (IP 470): Shall be considered to contain ULO if Ca>30 and Zn>15 or Ca>30 and P>15

Phosphorus (P) (IP 500): Shall be considered to contain ULO if Ca>30 and Zn>15 or Ca>30 and P>15

Compatibility (ASTM D 4740): 1 = Homogeneous spot (no inner ring)

Lab comments:

- SPECS AS PER ISO 8217:2017.

Signed by: Ronald Vargas Barrios - Laboratory Supervisor I
Issued by: Saybolt de Colombia SAS
Place and date of issue: Cartagena - 2020-02-27

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