

Attention of : Mr. J. Martinez

Analysis Report

Report number : **15300/00011044.6/L/22** Submitted date : 2022-08-17
 Main Object : Odín Petroil / Análisis Laboratorio Sample submitted at : Saybolt Colombia - Cartagena
 Report Date : 2022-08-18 Date received : 2022-08-17
 Date of issue : 2022-08-18 Date completed : 2022-08-18
 Sample object : Muestra 17-08-2022 Sample number : 13585938
 Sample type : Submitted
 Sample submitted as : Petroil 100 FO 4 ISO 8217/2017 F RMA 10 mejorador de IFO
 Marked : Petroil 100 FO 4 ISO 8217/2017 F RMA 10 mejorador de IFO

NAME	METHOD	UNIT	SPECS		RESULT
			Min	Max	
API Gravity at 60 °F	ASTM D 1298-12b (2017)	°API			30.3
Density at 15 °C	ASTM D 1298-12b (2017)	kg/m ³		920.0	874.1
Kinematic Viscosity at 50 °C	ASTM D 445-21e1	mm ² /s		10.00	5.576
CCAI	ISO 8217 (Annex F):2017	-		850.0	806.2
Total Sulfur Content	ASTM D 4294-21	% m/m		0.500	<0.010
Flash Point (PM) - Procedure B	ASTM D 93-20	°C	60.0		98.0
Total Acid Number - Procedure A	ASTM D 664-18e2	mg KOH/g		2.500	<0.100
Accelerated Total Sediment by Hot Filtration - Proc. B	IP 390/11(2017)	% m/m		0.10	0.01
Micro Carbon Residue	ASTM D 4530-15 (2020)	% m/m		2.5	<0.1
Pour Point	ASTM D 97-17b	°C		0	-9
Water by Distillation	ASTM D 95-13(18)	% v/v		0.30	0.1
Ash Content	ASTM D 482-19	% m/m		0.040	<0.010
Vanadium (V) - Procedure B	ASTM D 5863-00a (2016)	mg/kg		50	6.5
Sodium (Na) - Procedure B	ASTM D 5863-00a (2016)	mg/kg		50	0.28
Aluminum (Al) - Method B	ASTM D 5184-12 (2017)	mg/kg			<5
Silicon (Si) - Method B	ASTM D 5184-12 (2017)	mg/kg			<10
Aluminum plus Silicon	ASTM D 5184-12 (2017)	mg/kg		25	3
Calcium (Ca)	IP 470/05	mg/kg		30	4
Zinc (Zn)	IP 470/05	mg/kg		15	2

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 for the supplied information. 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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NAME	METHOD	UNIT	SPECS		RESULT
			Min	Max	
Phosphorus (P)	IP 500/03	mg/kg		15	1.4

Test comments:

Total Sulfur Content (ASTM D 4294-21): Statutory Requirements

Calcium (Ca) (IP 470/05): Shall be considered to contain ULO if Ca>30 and Zn>15 or Ca>30 and P>15

Zinc (Zn) (IP 470/05): Shall be considered to contain ULO if Ca>30 and Zn>15 or Ca>30 and P>15

Phosphorus (P) (IP 500/03): Shall be considered to contain ULO if Ca>30 and Zn>15 or Ca>30 and P>15

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 - 2022-08-18