

RE: 324/2020

Date of Issue: Aug 13th,2020

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replaces
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Applicant/Contact: Logitec Assessoria em Logística Ltda / Wilson José Romão and Venâncio Alvarenga Gomes

Address: Av. das Américas, 2480, bl 02, sl 314, Barra da Tijuca, Rio de Janeiro, RJ.

Sample: Marine fuel oil **Entry Lab Date:** April 15th, 2020

Identif. Client: Sample with Green Plus additive. **Date of Collection/Samp.:** March 12th2020

NOTE: - **Date of service:** April 13th, 2020

Assay	Unit	Method	Result	Date of test	Specification, where applicable <i>Inform which was used:</i> RANP #52 of 2010 (CMO 120)	Uncertainty (U) or Limit of Indeterminacy (LI), if applicable <i>Inform which was used:</i> LI*** (F-221)
Aspect	-	ASTM D 4176-04 (2014)	Clear and free from impurities	April 29 th , 2020	-	-
Color	-	Visual-IT-LEC-00-11 rev. 14	Orange	April 29 th , 2020	-	-
Sulphur content	% m/m	ASTM D5453-19a	0,028	April 23 rd , 2020	max 3,5	±0,26
Specific mass at 20°C	kg/m ³	ASTM D 4052-18a	835,1	April 17 th , 2020	Max. 981.8	±0.3 kg/m3
Flash Point	°C	ASTM D 93-19	68,2	April 16 th , 2020	Min. 60°C	±1,6
Viscosity at 40°C	mm ² /s	ASTM D 445-19	2,791	April 27 th , 2020	Max. 120.0 (at 50°C)	±1,586
Carbon Micro Residue	% m/m	ASTM D4530-15	0,04	April 27 th , 2020	Max. 14	±0,47
Ramsbottom Carbon Residue	% m/m	ASTM D 524-15	0,09	May 05 th , 2020	-	-
Ash	% m/m	ASTM D 482-13	0,0010	April 30 th , 2020	max 0,07	±0,04
Copper Corrosivity at 50.6°C, 3h	-	ASTM D 130-19	1b	April 27 th , 2020	-	-
Acidity Index	mgKOH/g	ASTM D 664-18e2	0,07	April 30 th , 2020	-	-
T 10% of distillation	°C	ASTM D 86-18	207,2	April 23 rd , 2020	-	-
T 50% of distillation	°C	ASTM D 86-18	265,6	April 23 rd , 2020	-	-
T 85% of distillation	°C	ASTM D 86-18	320,7	April 23 rd , 2020	-	-
T 95% of distillation	°C	ASTM D 86-18	348,9	April 23 rd , 2020	-	-
Final Boiling Point	°C	ASTM D 86-18	362,7	April 23 rd , 2020	-	-
Distillation residue	mL	ASTM D 86-18	1,0	April 23 rd , 2020	-	-

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Sample: Marine fuel oil

Entry Lab Date: April 15th 2020

Client Identif.: Sample with Green Plus additive.

Date of Collection/Samp.: March 12th2020

NOTE: -

Date of service: April 13th 2020

Sampling or collection plan:

Sampling and/or collection carried out by the client. Sampler: CB - QI Nascimento. Procedure not reported. The results reported herein apply to the sample as received.

Procedural deviations:

NA

NOTE:

* Subcontracted testing.

Preparation:

The **GREEN PLUS** fuel + additive mixture was prepared in the concentration requested by the client of 30 mL to 100 L (300 microliters to 1 liter), using the following material:

- Class A volumetric flask, BVL 214, nominal capacity 1000 mL, calibrated by a laboratory belonging to RBC (Engecal) (Brazilian Labs Calibration Network - Certified by INMETRO) , CER58906/ 18, calibration validity 08/2028.

- Micropipette, adjustable volume, MCP 585, nominal capacity 0.1 to 1 mL, calibrated by a laboratory belonging to the RBC (Engecal), CER18795/19, calibration validity 05/2021.

The results presented in this report refer exclusively to the sample cited.

Report: Sample complies with ANP (National Petroleum Agency) specifications for the characteristics evaluated.

Decision rule of the report : ANP Resolution 52/2010 and ***ANP Indeterminacy Limits (0.59 x Repro norms - ISO4259).

Interpretation:

NA

NA or - : Not Applicable.



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CRQ (Chemistry Regional Council) NUMBER : 02101288

Final document.