

## To Whom It May Concern

This copy is being provided for courtesy purposes only, and does not give any person or company other than our named client a right to rely on these results.  
No warranties, express or implied, including the warranty of due diligence and care mentioned elsewhere, shall extend to any party other than such named client.



## Certificate of Quality

Report number : **10901/00013833.8/L/18** Date of sampling : 2018-12-30  
Main Object : VULCANELLO M Place of sampling : Enemed Installation  
Report Date : 2019-01-29 Date received : 2018-12-30  
Date of issue : 2018-12-31 Date completed : 2018-12-31  
Sample object : VULCANELLO M Sample number : 7582458  
Sample type : Sampled  
Sample submitted as : Unleaded Gasoline  
Marked : Vessel VULCANELLO M Multiple Tank Composite on Arrival

NAME	METHOD	UNIT	SPECS		RESULT
			Min	Max	
Appearance	Visual	-		Clear & Bright	CL & BR
Benzene Q	EN 238	vol %		1.0	0.9
Copper Strip Corrosion (3 hrs / 50 °C) Q	ASTM D 130	-		1	1A
Density at 15 °C Q	ASTM D 4052	kg/L	0.729	0.775	0.7391
Gum Existent	ASTM D 381	mg/100ml		5	2.0
Oxidation Stability	ASTM D 525	min	360		Above 360
Lead (Pb) Q	ASTM D 3237	g/l		0.005	Below 0.001
Motor Octane Number (MON)	ASTM D 2700	-	85.0		85.5
Distillation	ASTM D 86				
Initial boiling point		°C	Report		29.8
10% Recovered		°C	Report		47.2
50% Recovered		°C	Report		87.3
90% Recovered		°C	Report		155.1
Final boiling point		°C		210.0	183.8
Residue		vol %		2.0	1.3
Evaporated at 70 °C		vol %	20.0	48.0	37.9
Evaporated at 100 °C		vol %	46.0	71.0	59.0
Evaporated at 150 °C		vol %	75.0		89.0
R.V.P. at 100 deg. F - DVPE Q	ASTM D 5191	kPa	50	80	74.3
Research Octane Number (RON)	ASTM D 2699	-	95.0		95.2
Sulphur Q	ASTM D 2622	mg/kg		10	3
FIA (hydrocarbon types)	ASTM D 1319				
Aromatics		vol %		35.0	33.1
Olefins		vol %		18.0	5.8
Oxygenates	EN 13132				
Methanol		vol %		3	Below 0.1
Ethanol		vol %		5	Below 0.1
iso-Propanol		vol %	Report		Below 0.1
iso-Butanol		vol %	Report		Below 0.1
tert-Butanol		vol %	Report		Below 0.1
Ethers (C5 or more)		vol %	Report		4.5

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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NAME	METHOD	UNIT	SPECS		RESULT
			Min	Max	
Other oxygenates		vol %	Report		Below 0.1
Total organically bound oxygen		mass %		2.7	0.86
Manganese (Mn)	ASTM D 3831	mg/l		2	Below 0.25

### Lab comments:

The results are referred to the tested sample.

Q Analysis accredited by NAB-MALTA. Testing laboratory Reg No 007.

All tests are reported according to the latest method version available.

If required, estimated expanded uncertainty U with coverage factor=2 corresponding to level of probability of about 95%, can be provided.

Sampling performed according to ASTM D5842-14.

*~ Due to restrictions enforced by terminal/refinery/vessels management and/or local laws and regulations, samples of concerned object have been taken via a closed/restricted sampling system.*

*Due to operational limitations of closed/restricted sampling systems, when tested, the samples taken may not represent the actual cargo quality.*

Signed by: Clifton Friggieri - Laboratory Manager

Issued by: Saybolt Malta Ltd

Place and date of issue: Kalafrana - 2018-12-31

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