WARTER fuels	TECHNICAL SPECIFICATION	WT-19/OBR PR/PD/120
Warter Fuels S.A.	**Alkylate gasoline PRO FUEL 2**	ed. III

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I approve the application from: 20.02.2024

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1. Scope of TS

The scope of TS is alkylate gasoline PRO FUEL 2 which is a mixture of hydrocarbons, obtained from conservative and secondary crude oil processing and synthetic oil for two-stroke engines.
Technical Specification are based on EN 17867:2023.

2. Usage scope of TS

Alkylate gasoline PRO FUEL 2 is used for devices powered by two-stroke engines.

3. Division and designation

Division - N/A
Designation - Alkylate gasoline PRO FUEL 2

4. Requirements and research

4.1. General requirements

Alkylate gasoline PRO FUEL 2 should be produced according to a clearly established technology.

4.1.1. Synthetic oil

Alkylate gasoline PRO FUEL 2 is supplemented with synthetic oil for two-stroke engines which improve lubricity and service life of catalytic system. Maximum concentration of synthetic oil in alkylate gasoline PRO FUEL 2 is 2,0% (v/v).

4.1.2. Durability

Alkylate gasoline PRO FUEL 2 meets the requirements of TS within 2 years from the date of production under the condition of proper storage.

4.1.3. Packing, storage and transport

Alkylate gasoline PRO FUEL 2 is supplied in special steel drums, plastic and metal canisters approved for transport of gasoline and antistatic IBC containers.
Should be check the package in which the gasoline will be transported is clean, dry and undamaged. Each individual package should be permanently marked with the following information:

- Name
- Quantity in package unit
- Production date and batch number
- Warning of fire risk and safety instruction
- GHS hazard statements, UFI code

Alkylate gasoline PRO FUEL 2 should be stored in properly marked, closed IBC, steel drums, metal or plastic canisters in cool, well-ventilated places on a impermeable surface. Protect against air, moisture, mechanical contamination and heat. This reservation is intended to limit the loss of the lightest components, which may result in a change in the quality parameters of gasoline.

On tankers should be placed information boards with hazard identification numbers according to ADR and identifying UN material:

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1203

4.2.Detailed requirements

4.2.1. Research

For each batch of alkylate gasoline PRO FUEL 2 (after blending is completed) analyzes should be performed according to the requirements table (pkt. 4.2.4):

4.2.2. Evaluation of external appearance

The test product should be poured into a glass cylinder with a diameter of 40 mm to 50 mm, made of clear glass, and then visually assessed in the light passing the external appearance of the product. The test must be carried out at a temperature of 20 ± 5°C. Fuel meets the requirements if it is a clear liquid during the test, without sediments, turbidity and water.

4.2.3. Sampling

After mixing, the test sample should be taken from the tank in the amount of 5L for the full range of tests according to TS according to the instruction no. QI/IN/51 "Manual sampling".

4.2.4. Table of specific requirements for alkylate gasoline PRO FUEL 2

No.	Properties	Unit	Limits	Method
1	Density at 15°C	kg/m^3	Min. 680 – max. 720	ASTM D 4052 PN-EN ISO 12185
2	Antiknock properties: - Motor Octane Number, MON - Research Octane Number, RON	 - -	 Min. 90[1] Min. 93[1]	 EN ISO 5163 EN ISO 5164
3	Appearance	-	Clear, bright liquid without solid particles and undissolved water at ambient temperature	visual
4	Distillation: - to 70°C dist. - to 100°C dist. - to 150°C dist. - final boiling point - residue	 %(v/v) %(v/v) %(v/v) °C %(v/v)	 Min. 15 – max. 42[1] Min. 40 – max. 72[1] Min. 75[1] Max. 200[1] Max. 3	 PN-EN ISO 3405 ASTM D 86
5	Reid vapor pressure at 37,8°C	kPa	Min. 55 – max. 65	PN-EN 13016-1
6	Sulfur content	mg/kg	Max. 20	EN ISO 20846 EN ISO 20884

7	Lead content	mg/l	Max. 2	ASTM D 3237 EN 237
8	Benzene content	%(v/v)	Max. 0,08[1]	EN ISO 22854 PN-EN 238 OBR/BA/AC-22/97 EN 12177
9	Oxygen content	%(m/m)	max. 0,10	EN ISO 22854 EN 13132 OBR/BA/AC-22/97
10	Manganese content	mg/l	Max. 2	EN 16135 EN 16136
11	Olefin hydrocarbons content	%(v/v)	Max. 1,0[1]	EN 15553 EN ISO 22854 OBR/BA/AC-22/97
12	Aromatic hydrocarbons content	%(v/v)	Max. 1,0[1]	EN 15553 EN ISO 22854 OBR/BA/AC-22/97
13	Corrosion Cu (3h) at 50°C	class	1[1]	PN-EN ISO 2160
14	N-hexane content	%(v/v)	Max. 0,5[1]	ASTM D 5134 EN ISO 22854 OBR/BA/AC-22/97
15	Cyclohexane content	%(v/v)	Max. 2,0[1]	ASTM D 5134 EN ISO 22854 OBR/BA/AC-22/97
16	Oil content for two-stroke engines	%(v/v)	Min. 1,5 – max. 2,0	EN ISO 6246

[1]Before adding lubricating oil for two-stroke engines.
Alkylate gasoline PRO FUEL 2 does not contain oxygen compound.

THE END
ADDITIONAL INFORMATION

Institution developing the TS: WARTER FUELS S.A.