WARTER fuels	TECHNICAL SPECIFICATION	WT-06/OBR PR/PD/66
Warter Fuels JSC	**Aviation Gasoline WA UL 91**	Edition IX

Developed by:

mgr inż. Beata Boguszewska
Chemicals and Technologies Management Specialist

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Arrangements:

mgr inż. Hanna Laskowska
Head of the Analysis Department

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inż. Konrad Bieńkowski
Head of Petroleum Products Department

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dr inż. Janusz Pilarczyk
Production and Research Director

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1. Scope of TS

The scope of TS is aviation gasoline WA UL 91, which is the mixture of hydrocarbons, obtained from conservative and secondary processes of the crude petroleum and suitable amounts antioxidant and antistatic additives
Requirements concerning TS subject were developed basing on the ASTM D 7547 and DEF STAN 91-90 norms.

2.Usage scope of TS subject

Aviation gasoline is used to power piston engines
The product meets the requirements of ASTM D 7547 and DEF STAN 91-90 norms.

3. Division and designation

Division – N/A
Designation – Aviation Gasoline WA UL 91

4. Requirements and research

4.1. General properties

The Producer is obliged to publish the name and quantity of the added additives in quality certificate. The aviation gasoline WA UL 91 shall be produced in accordance with the clearly established technology.

4.1.1. Antioxidant additives

Antioxidant additives prevent from the formation of resins and other products of oxidation The content of the additive based on the weight of the active ingredient, should not exceed 12.0 mg / l. As the antioxidant additive BHT (2,6-ditertbutyl-4-methylphenol) is used.

4.1.2. Antistatic additives

Antistatic additives prevent the formation of static electricity during refueling and handling. The antistatic additive Stadis 450 is used. The concentration of the additive in the gasoline should not exceed 3.0 mg / l.

4.1.3. Durability

The aviation gasoline WA UL 91 meets the requirements of TS within two years from the date of production under the condition of proper storage.

4.1.4. Packaging, storage and transportation

Aviation gasoline WA UL 91 is delivered in a special tank trucks, iso-tank containers and steel drums approved for transport of aviation gasoline . Make sure that the packaging in which gasoline will be transported is clean, dry and undamaged. Each package unit as well as truck's transport documents should clearly and permanently indicate:

- Name of the gasoline
- Amount of gasoline in packaging unit
- Production date and batch numer
- Warning of fire risk and safety instruction
- Commercial contract number (if required)

Always store gasoline in containers that protects it from air, moisture and mechanical impurities. Storage places should be protected from direct sunlight, heating (underground tanks with limited air exchange). This reservation is for the reduction of both the losses associated with the evaporation and loss of the lightest components, which will change two key parameters of gasoline: vapor pressure and fractional composition. Tanks should be marked with information boards with the identification numbers of ADR threats and material identifying number UN:

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1203

4.2. Specific properties
4.2.1. Research

For each batch of aviation gasoline (after the composing), the following analysis must be performed- in accordance with the requirements table:

- Appearance,
- Colour
- Fractional composition,
- Density at temp.15°C,
- Reid vapour pressure at temp. 37,8°C,
- Freezing point,
- Electrical conductivity at temp. 20°C,
- Motor Octane Number - MON,
- Research Octane Number - RON
- Oxidation stability at temp. 100°C, time 16h,
- Existent gum,
- Sulfur content,
- Lead content,
- Specific energy,
- Copper corrosion
- Water reaction

The standards and requirements for these designations refer to the table of specific properties

4.2.2. Appearance evaluation

The test product should be poured into a glass cylinder with a diameter of 40 mm to 50 mm, made of clear glass ,then it should be visually inspected in transmitting light. The test should be performed at a temperature of 20 ± 5°C. Gasoline meets the requirements, if the study is a clear liquid, without sediment, turbidity, and water.

4.2.3. Sampling

The sample must be taken from the tank, after the completion of mixing, in the amount of 5 l for full range of test with accordance to WT No. QI / 7.5 / 01 / IN / 51 "Manual sampling".

4.2.4. Specific properties of WA UL 91

No.	Properties	Unit	Limits	Test method
1	Appearance	–	Meets the requirements	ASTM D 4176 WT-06/OBR PR/PD/66 p. 4.2.2.
2	Colour	–	Clear, natural	Visual
3	Antiknock rating - Motor Octane Number - MON - Research Octane Number - RON		Min 91 Min 95	ASTM D 2700 ASTM D 2699
4	Fractional composition : - Initial boiling point	^{0}C	To be reported	ASTM D 86
	- 10 % (V/V)	^{0}C	Max 75	
	- 40% (V/V)	^{0}C	Min 75	
	- 50 % (V/V)	^{0}C	Max 105	
	- 90 % (V/V)	^{0}C	Max 135	
	- Final boiling point	^{0}C	Max 170	
	- Performance	% v/v	Min 97	
	- Residue	% v/v	Max 1,5	
	- Loss	% v/v	Max 1,5	
	Sum of 10% and +50% evaporated temperatures	^{0}C	Min 135	
5	Sulfur content	% m/m	Max 0,05	ASTM D 2622
6	Density at 15°C	kg/m^3	To be reported	ASTM D 4052 ASTM D 1298
7	Lead content	g/l	Max 0,013	ASTM D 3237 ASTM D 5059 met. C
8	Specific energy	MJ/kg	Min 43,5	ASTM D 4529 ASTM D 3338
9	Freezing point	^{0}C	Max (-58)	ASTM D 2386
10	Corrosion to copper strip-2h at	Corrosion	Max 1	ASTM D 130

	100^0C	rate		
11	Water reaction- volume change	ml	Max 2	ASTM D 1094
12	Electrical conductivity at 20°C	pS/m	50÷450	ASTM D 2624
13	Reid vapour pressure at 37,8 °C	kPa	38 ÷ 49	ASTM D 5191 ASTM D 323
14	Existent gum	mg/100 ml	Max 3	ASTM D 381
15	Oxidation stability at temp. 100°C, time 16h - Potential gum - Precipitate	 mg/100ml mg/100ml	 Max 6 Max 2	ASTM D 873

THE END
ADDITIONAL INFO

TECHNICAL SPECIFICATION ISSUED BY:
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