5% ethanol unleaded gasoline blends– Specifications

Preface

Standard TCCS 06: 2015 / PLX replaces TCCS 06: 2014 / PETROLIMEX

Standard TCCS 06: 2015 / PLX is a document that specifies the technical requirements of the product E5 RON92 petrol has been approved and announced by the General Director of Vietnam National Petroleum Corporation (Petrolimex). Applied according to Decision No. 005 / PLX-QD-TGD dated January 5, 2015.

This basic standard can be considered, amended and supplemented to ensure the practicality of use and in accordance with current provisions of law.

STANDARD BASE

Non-leaded petrol 5% Ethanol - Technical requirements

5% unleaded gasoline blends -Specifications

1. Scope of application

This standard specifies quality standards for unleaded gasoline with a fuel ethanol ratio of 4 to 5% by volume (petrol E5 RON92), for use as fuel for ignition engines.

2. Terms, definitions and acronyms

- TCVN: Vietnam National Standard.
- ASTM: American Association for Testing Materials Standards.
- ISO: International Standard.
- max: the maximum allowable level of a norm.
- min: the lowest allowed level of a norm.
- Gasoline E5 RON92: The commodity name of E5 RON92 gasoline with research value of snail no less than 92 in accordance with emission standard II.

3. References

For invitations referring to the year of issue, the above applies. For invitations not listed in the year of issue, the latest version, including amendments, applies.

- Decision No. 1518 / QĐ-TĐC dated 17/10/2007 of the Directorate for Standards and Quality on the issuance of guidelines on methods of sampling gasoline.

- Decision No. 904 / QĐ-TDC dated 22/07/2008 of Directorate for Standards, Metrology and Quality on amendment, supplement of some contents guiding methods of sampling petrol and oil issued with Decision No. 1518 / QD-TDC dated 17/10/2007 of the Director General of Standards, Metrology and Quality.

- QCVN 1: 2005 / BKHCN National technical regulation on gasoline, diesel fuel and biofuel.

- TCVN 2694 (ASTM D130) Petroleum Products - Copper Plate Determination Method for Copper Plate Testing.

- TCVN 2698 (ASTM D86) Petroleum products - Determination of distillate composition at atmospheric pressure.

- TCVN 2703 (ASTM D2699) Determination of the experimental value for ignition engine fuel.

- Determination of benzene, toluene, ethylbenzene, p / m-xylene, o-xylene, aromatic C9 and heavier, and total aromatics - Gas chromatography.

- Petroleum and petroleum products - Determination of sulfur by fluorescence spectra dispersed in X-ray energy.

- TCVN 6022 (ISO 3171) Petroleum liquid - Automatic sampling in pipes.

- Liquid TCVN - Determination of plastic content by evaporation method.
Crude oil and liquid petroleum products - Determination of specific gravity, relative density, or API mass - Hydrogen ratio.

- TCVN 6701 (ASTM D2622) Petroleum products - Determination of sulfur by X-ray fluorescence spectroscopy.

- TCVN 6702 (ASTM D3244) Handling of test results to determine compliance with technical requirements.
Gasoline and automotive gasoline products - Determination of benzene and toluene by gas chromatography.

- TCVN 6704 (ASTM D5059) Gasoline - Determination of lead content by X-ray spectra.
Unleaded gasoline 5% ethanol-Technical requirements.

- TCVN 6777 (ASTM D4057) Petroleum and petroleum products - Manual sampling method.

- TCVN 6778 (ASTM D525) Gasoline - Determination of Oxidation Stability (Touch Cycle Method).
Gasoline and oxygenated gas mixture - Method of determining the vapor pressure (dry method).

- TCVN 7143 (ASTM D3237) Gasoline - Determination of lead content by atomic absorption spectrometry.

- TCVN 7330 (ASTM D1319) Liquid petroleum products - Determination of hydrocarbons by adsorption indicator fluorescence.

- TCVN 7331 (ASTM D3831) Gasoline - Determination of manganese content by atomic absorption spectra.

- Determination of MTBE, ETBE, TAME, DIPE, tert-amyl alcohol and C1 to C4 alcohols by gas chromatography - TCVN 7332 (ASTM D4815).

- Distillation fuels - Determination of free water and particulate matter (Method of visual observation).

- TCVN 7760 (ASTM D5453) Light hydrocarbon, ignition engine fuel, diesel engine oil and engine oil - Determination of total sulfur by ultraviolet fluorescence.

ASTM D2700 Standard test method for motor octane number of spark-ignition engine fuel (Method for determining the value of motor snail for ignition engine fuel).

- TCVN 8314 (ASTM D4052) Liquid petroleum products - Determination of density and specific gravity by digital density meter.

- ASTM D5191 Standard test method for vapor pressure of petroleum products (Mini method). [Method of Determining Vapor Pressure of Petroleum Products (Mini Method)].

- ASTM D6296 Standard test method for fortified olefins in spark-ignition engine fuels by multidimensional gas chromatography (Method for determining the total amount of olefins in engine ignition fuels by multi-dimensional gas chromatography).

- ASTM D6839 Standard test method for hydrocarbons types of oxygenated compounds and benzene in spark ignition engine fuels by gas chromatography. (Methods for identifying types of hydrocarbons, oxidizing compounds and benzene in engine fuel by gas chromatography.)

4 Technical Requirements

The quality criteria of RON92 E5 petrol are specified in Table 1.

Test	Units	Specification	Method
Research Octane Number	-	92 Min	ASTM D2699
Lead Content	g / L	0.013 Max	ASTM D3237
Initial Boiling Point	°C	Report	ASTM D86
10% Evaporated	°C	70 Max	ASTM D86
50% Evaporated	°C	120 Max	ASTM D86
90% Evaporated	°C	190 Max	ASTM D86
Final Boiling Point	°C	215 Max	ASTM D86
Residue	Vol %	2 Max	ASTM D86
Copper Corrosion @ 50 °C for 3 hrs	-	1 Max	ASTM D130
Existent Gum	mg / 100 ml	5 Max	ASTM D381
Induction Period	min	480 Min	ASTM D525
Sulphur	mg / kg	350 Max	ASTM D5453
Vapour Pressure @ 37.8°C	kPa	43 - 75	ASTM D5191
Benzene	Vol %	2.5 Max	ASTM D5580
Aromatics	Vol %	40 Max	ASTM D1319
Olefins	Vol %	38 Max	ASTM D1319
Oxygen Content	wt %	3.7 Max	ASTM D4815
Ethanol content	Vol %	4 – 5 Max	ASTMD4815
Density @ 15 °C	kg / L	Report	ASTM D4052
Total Metal (Fe+Mn)	mg / L	5 Max	ASTM D3831
Water/Appearance	-	Not detected/Clear, bright and no impurities	ASTM D4176

5. Additives

Gasoline E5 RON92 containing oxygenate compounds as additives, the content of oxygenate compounds are specified in table 2

Table 2- Oxygenated compounds

Test	Units	Specification	Method
Iso-propyl alcohol	Vol %	10 Max	ASTM D4815
Iso-butyl alcohol	Vol %	10 Max	ASTM D4815
Tert-butyl alcohol	Vol %	7 Max	ASTM D4815
Ete (C5 atom)Boiling temperature ≤ 210 °C.	Vol %	15 Max	ASTM D4815
MTBE only	Vol %	10 Max	ASTM D4815
Methanol	Vol %	Not detected	ASTM D4815
Ketone	Vol %	Not detected	ASTM D4815
Ester	Vol %	Not detected	ASTM D4815

Oxygenate compounds may be used in a single form or in a mixture with a volume within the specified limits and the total oxygen content in accordance with the provisions of the norm of No. 12 of Table 1.

6. Sampling

Sampling according to TCVN 6777 (ASTM D 4057) or TCVN 6022 (ISO 3171) and the current regulations of the Directorate for Standards and Quality