



FUEL, GASOHOL, UNLEADED, INITIAL FILL, BRAZIL

WSS-M4C113-C

1. SCOPE

The material defined by this specification is a well-refined unleaded gasoline containing ethanol according to market fuel regulations and normal commercial additives.

2. APPLICATION

This specification was released originally for material used as initial fill fuel for vehicles designed to operate on gasoline in Brazil. Additives are present to protect the fuel system.

This material is not specifically intended for use in certification testing. It may be used for engine hot test, mileage accumulation or general fueling.

3. REQUIREMENTS

This material must be produced using current refinery practices for market place fuels and must meet all pertinent legal gasoline requirements in the country in use.

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements for Production Materials (WSS-M99P1111-A).

3.2 ADDITIVES

Fuels shall contain normal commercial additives at concentrations representative of good commercial practice in the receiving locale (unless otherwise specified). Metallic additives, including lead, manganese, iron and phosphorus, are not allowed.

3.3 ODOR

The material shall have the usual characteristic odor of gasohol. There shall be no obvious foreign odors.

3.4 COLOR

(Visual)

Color can vary from colorless to yellow when no dye is used. The use of dye is permitted at a maximum concentration of 50 ppm, except blue, restricted for aviation.

3.5 APPEARANCE

(ABNT NBR 14954 or ASTM D4176)

Clean and free
of impurities

Date	Action	Revisions	Rev. 0
2014 07 02	Released		



Documents

L. Benvenuti, SA

**3.6 OCTANE NUMBERS**

3.6.1	Motor (ISO 5163 / ASTM D2700)	82.0 min
3.6.2	Research (ISO 5164 / ASTM D2699)	Report
3.6.3	AKI (Anti Knock Index) (ASTM D2699 / D2700)	87.0 min

3.7 TOTAL SULFUR

(ASTM D2622 / D3120 / D5453 / D6920 / D7039 / D7220) 50 mg/kg max

3.8 METAL CONTENT

3.8.1	Lead (ASTM D3237)	5.0 mg/L max
3.8.2	Phosphorus (ASTM D3231)	1.3 mg/L max

3.9 COMPOSITION

3.9.1	Hydrocarbons (ABNT NBR 14932 / ASTM D1319)	% volume
	Aromatics	35 max
	Olefins	25 max
	Saturates	Report
3.9.2	Benzene (ABNT NBR 15289 / 15441 / ASTM D3606 / D5443 / D6277)	1.0 %vol max
3.9.3	Gum Content (NBR 14525 / ASTM D381)	
	Washed	5 mg/100 mL max
	Unwashed	Report
3.9.4	Ethanol Content (anhydrous) (ABNT NBR 13992 / ASTM D5501)	Must follow valid national market fuel regulation

3.10 DISTILLATION RANGE

(ABNT NBR 9619 / ASTM D86)

Volume Evaporated	Temperature
Initial boiling point	Report
10%	65°C max
50%	80°C max
90%	190°C max
Final boiling point	215°C max
Residue,	2% volume max

