GM ENGINEERING STANDARDS	Material Specification	9986404

Gasoline, Unleaded Premium, Chinese Factory Fill

1 Scope

1.1 Material Description. This specification covers unleaded premium grade gasoline for factory fill use. Factory fill gasoline is intended for use in vehicles which are stored for extended periods of time or in storage tanks where the rate of turnover is low.

1.2 Symbols. Not applicable.

1.3 Applicability. This fuel is intended as a factory fill fuel at vehicle assembly. This fuel can also be used for engine durability testing, vehicle durability testing and/or component durability testing.

1.4 Remarks. Nothing in this standard supercedes applicable laws and regulations unless specified exemption has been obtained.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

ASTM D86	ASTM D2699	ASTM D3831	ASTM D5453
ASTM D130	ASTM D2700	ASTM D4814	ASTM D5482
ASTM D381	ASTM D3116	ASTM D4815	ASTM D5500
ASTM D525	ASTM D3120	ASTM D4953	ASTM D5598
ASTM D665	ASTM D3231	ASTM D5059	DB 31/427-2013
ASTM D1319	ASTM D3237	ASTM D5190	DIN EN 228
ASTM D2622	ASTM D3703	ASTM D5191	GB 17930

2.2 GM Standards/Specifications.

GMW3059

2.3 Additional References.

TMC003 Material Safety Data Sheet guidance documents (available at www.gmsupplypower.com).

3 Requirements

3.1 General Requirements. In addition to the limits shown herein, the fuel must also meet applicable regulations of national, provincial and local governments. These regulations take precedence over requirements within this specification. The fuel shall also meet national and local standards, for example, ASTM D4814 and GB 17930, DB 31/427-2013, DIN EN 228, where properties not defined in this standard.

3.1.1 The test requirements given in this specification are minimum or maximum, as the case may be, Acceptance Limits for valid tests. No adjustments for test precision are to be applied as test variability was taken into account in the determination of the requirements.

3.1.2 All ASTM International specified tests or equivalent shall be performed according to the latest published version unless otherwise required by this specification.

3.2 Requirements on Delivery. The specification applies to samples taken directly from the tank car or tank wagon and to samples taken directly from the source of fuel supply. The fuel supplier shall be responsible for meeting the requirements of local standards. In addition, the properties listed in Table 1 shall be met.

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3.3 Requirements.

3.3.1 Lead. Lead content shall not exceed 5 mg/L as measured by ASTM D3237, ASTM D3116 or ASTM D5059. No intentional addition.

3.3.2 Silicon. Silicon content shall not exceed 4 mg/L as measured by Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP/AES) or X-ray fluorescence. No intentional addition.

3.3.3 Phosphorus. Phosphorus content shall not exceed 1.3 mg/L as measured by ASTM D3231. No intentional addition.

3.3.4 Sulfur. Sulfur content shall not exceed 10 ppm (0.001% by mass) as measured by ASTM D2622, ASTM D3120 or ASTM D5453.

3.3.5 Manganese. Manganese content shall not exceed 2.0 mg/L as measured by ASTM D3831. No intentional addition.

3.3.6 Gum. Existent gum shall not exceed 5 mg/100 mL. Unwashed gum shall not exceed 30 mg/100 mL. Test method is ASTM D381.

3.3.7 Olefins. Olefins shall not exceed 15% by volume as measured by ASTM D1319.

3.3.8 Aromatics. Aromatics shall not exceed 35% by volume as measured by ASTM D1319.

3.3.9 Peroxides. Peroxides shall not exceed 5 ppm as measured by ASTM D3703.

3.3.10 Detergent Additives. The fuel shall contain a deposit control additive to minimize deposits in fuel injectors and on intake valves, while causing no deleterious effects in the fuel system, engine and exhaust treatment systems.

3.3.11 Deposits. The fuel shall limit intake valve deposits to an average of less than 100 mg per valve when tested according to ASTM D5500.

3.3.12 Injector. The fuel shall limit port fuel injector fouling to less than 10% flow restriction for any injector in 16 093.44 km (10 000 mi) of operation when tested according to ASTM D5598.

3.3.13. Other Additives. Certain additives may also be used to meet requirements for copper and ferrous corrosion and for oxidation stability. Type and quantity of these additives shall be agreed upon by the purchaser and seller.

3.3.14 Oxygenates. The use of Methyl Tertiary-Butyl Ether (MTBE) is allowed at concentrations of up to 15% by volume. Report oxygenate content as measured by ASTM D4815.

3.3.15 Volatility. Vapor pressure and distillation characteristics shall conform to the limits shown in Table 1. Vapor pressure as measured by ASTM D4953, ASTM D5190, ASTM D5191, ASTM D5482. Distillation characteristics as measured by ASTM D86.

3.3.16 Volatility Classes. The schedule of seasonal and geographical volatility classes shall be as shown in Table 1.

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