



Fluid, Hydraulic Power Steering

1 Scope

1.1 Material Description. A fluid intended primarily for use for lubrication and hydraulic actuation purposes in power steering systems.

1.1.1 Fluid shall be free from water sediment, acid, particulates, or other substances detrimental to proper function and performance of the system in which it is used.

1.1.2 Fluid shall be free from Benzenamine, N-phenyl-, Styrene, 2,4,4-Trimethylpentene (BNST).

1.2 Symbols. Not applicable.

1.3 Applicability. This fluid is to be used in GM Power Steering and other specified applications.

2 References

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

2.1 External Standards/Specifications.

ASTM D92	ASTM D445	ASTM D892	ASTM D2983
ASTM D97	ASTM D611	ASTM D2270	ASTM D3945
ASTM D130	ASTM D665	ASTM D2272	ASTM D4951

2.2 GM Standards/Specifications.

GMW3059	GMW3359	GMW16853
GMW3221	GMW14444	

2.3 Additional References.

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

2.4 Approved Products.

 Imperial (IMP) – 7555

3 Requirements

3.1 Requirements on Test Specimens. Reference GMW3221.

3.2 Emissions Testing of Interior Materials and Parts. For all Code E designated parts per GMW14444, reference GMW16853 for emissions testing of interior materials and parts.

All materials supplied to this specification must comply with the requirements of GMW3059, **Restricted and Reportable Substances for Parts**.

3.3 Fluid Properties. See Table 1.

Table 1: Fluid Properties

Properties	Requirement	Test Methods
Flash Point	175 °C Minimum	ASTM D92
Fire Point	190 °C Minimum	ASTM D92
Brookfield Viscosity at -40 °C	40 000 cP Maximum	ASTM D2983
Kinematic Viscosity at +40 °C	50.0 cSt Maximum	ASTM D445
Kinematic Viscosity at +100 °C	7.0 cSt Minimum	ASTM D445

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Properties	Requirement	Test Methods
Shear Stability, Kinematic Viscosity at +100 °C	5.74 cSt Minimum	ASTM D3945 Procedure A (20 passes)
Viscosity Index	160 Minimum	ASTM D2270
Aniline Point	90.5 ° to 100 °C	ASTM D611
Pour Point	-42 °C Maximum	ASTM D97
Corrosion and Rust Preventing Characteristics	No Rust	ASTM D665 Procedure A (-24 h)
Foaming characteristics,	Sequence I: 50 mL/0 mL, Maximum Sequence II: 50 mL/0 mL, Maximum Sequence III: 50 mL/0 mL, Maximum	ASTM D892
Oxidation Stability	200 minutes minimum	ASTM D2272
Copper Strip Corrosion Resistance	3A rating maximum	ASTM D130 (1 h/150 °C)
Miscibility	No separation or color change	GMW3359
Zinc, Elemental	40 ppm to 60 ppm	ASTM D4951
Phosphorus, Elemental	200 ppm minimum	ASTM D4951

Note: Other procedures of equivalent scope and precision may be used provided correlation has been established.

ppm = Parts per Million.

3.4 Performance Requirements.

3.4.1 Any material approved against this specification must pass steering system and/or component performance and durability testing as specified by the Materials Engineering and Product Development Engineering.

3.4.2 Any material approved against this specification must pass steering system and/or component elastomer compatibility testing as specified by Materials Engineering.

4 Manufacturing Process

Not applicable.

5 Rules and Regulations

5.1 Legal Regulations. All materials must satisfy applicable laws, rules, regulations and recommendations valid in the country of usage.

5.2 Language. In the event of conflict between the English and domestic language, the English language shall take precedence.

5.3 Inspection and Rejection. All shipments of material or parts under contract or purchase order manufactured to this specification shall be equivalent in every respect to the initial samples approved by Engineering. There shall be no changes in either formulation or manufacturing processes permitted without prior notification and approval by Engineering. Lack of notification by the supplier constitutes grounds for rejection of any shipment. While samples may be taken from incoming shipments and checked for conformance to this specification, the supplier shall accept the responsibility for incoming shipments meeting this specification without dependence upon purchaser's inspection.