



**LUBRICANT, REAR AXLE HYPOID, THERMALLY STABLE,
SAE 80W-90**

WSP-M2C197-A

1. SCOPE

The material defined by this specification is a solvent refined petroleum base lubricant blended with thermally stable sulfur/ phosphorus/nitrogen/boron extreme pressure additives. The oil has improved thermal and oxidation stability and functions at SAE J2360 / MIL -PRF-2105E performance level.

2. APPLICATION

This specification was released originally for use in rear axle assemblies with hypoid type drive gears.

Note: Use in limited slip type differentials requires addition of a friction modifier additive.

3. REQUIREMENTS

3.1 STANDARD REQUIRMENTS FOR PRODUCTION MATERIALS

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

3.2 METHOD OF SAMPLING (ASTM D 4057)

3.3 ACCEPTANCE REQUIREMENTS

The oil shall meet all the requirements of API service category GL-5 as defined in ASTM D7450-08 "Standard Specification for Performance of Rear Axle Gear Lubricants" and SAE J2360 / MIL PRF-2106E specification.

These tests must be conducted on each blend of material (tank car or truck):

3.3.1	API Gravity (ASTM D1298 / D4052)	Rate & Report
3.3.2	Total Sulfur (ASTM D4951 / D4927 / D1552)	1.6 - 2.8%
3.3.3	Total Phosphorus (ASTM D4927 / D4951)	0.10 - 0.15%
3.3.4	Moisture (ASTM D95 / D4928 / D7546)	0.10% max.

Date	Action	Revisions
2010 05 13	Revised	See Summary of Revisions C. Ved
2004 05 21	Revised	Para 3.0 inserted; para 3.1, 3.2, 3.3, 3.5.12, 3.7 & 4 deleted
1993 04 13	Released	ND0WI10255010000



3.3.5	Viscosity at 100 °C, (ASTM D445)	13.5 to 14.7 mm ² /s
3.3.6	Viscosity Index, (ASTM D 2270)	100 min.
3.3.7	Pour Point, (ASTM D97)	-27 °C max.
3.3.8	Flash Point, (ASTM D92)	200 °C min.
3.3.9	Copper Corrosion, (ASTM D130 – 3 hrs at 121 °C)	2b max.
3.3.10	Anti-Foaming Properties (ASTM D 892)	
	Volume of Foam (After sequences I, II and III)	25 mL max.
	Volume of Foam (After 5 minutes standing)	0 mL max.

3.4 QUALIFICATION TESTING

In addition to initial acceptance tests, these are to be conducted by all new suppliers prior to source approval.

3.4.1 Documentation

Supplier must furnish to the affected Materials Engineering activity a completed and certified copy of the attached Supplement A & B and test reports demonstrating full compliance with all the requirements of this specification.

3.4.2	Non-Channeling Temperature (FTM 791 C, Method 3456.2)	-34 °C max.
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3.4.3 Thermal Oxidation Stability (L-60-1, ASTM D5704)

•	Viscosity Increase, mm ² /s	50% max.
•	Normal Pentane Insolubles	1.5% max.
•	Toluene Insolubles	1.5% max.
•	Carbon / Varnish	7.5 min.
•	Sludge	9.4 min.