



LUBRICANT, GEAR, FUEL ECONOMY, SYNTHETIC HYDROCARBON, FRICTION MODIFIER

WSS-M2C200-D3

1. SCOPE

The material defined by this specification is a manual transmission (MT82) lubricant using synthetic hydrocarbon (PAO) base fluids compounded with viscosity index improvers and extreme pressure additives.

This material includes addition of an extra dosage of friction modifier on top of WSS-M2C200-D2 product to address a synchronizer sticking issue. The MPNR (Master Parts Number Registry) for this material is WSS-M2C200-FM.

2. APPLICATION

This specification was released originally for material used to provide general lubrication for manual transaxles and transmissions over a wide temperature range. The material has a fuel economy effect and is for lifetime fill.

3. REQUIREMENTS

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 VISCOSITY

3.2.1	At 100 °C (ISO 3104, ASTM D 445)	6.20 mm ² /s min
3.2.2	At -26 °C (DIN 51398, ASTM D 2983)	2,000 mPa.s max
3.2.3	At -40 °C (DIN 51398, ASTM D 2983)	12,500 mPa.s max
3.2.4	Shear Stability (CEC L-45-A-99)	3.0% max
	Viscosity loss after 20h, 100 °C	3 % max
	Used bearing shear loss after run-in period with reference oil RL 181/6	9 – 13%
3.2.5	Viscosity Index (ISO 2909)	150 min

3.3 POUR POINT (ISO 3016)

-48 °C max

Date	Action	Revisions	Rev. 0
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3.4	FLASH POINT (ISO 2592)		220 °C min
3.5	COPPER CORROSION (ISO 2160)		
	3 h at room temperature		1 max
	3 h at 150 +/- 2 °C		1 max
3.6	ANTI FOAMING PROPERTIES (ASTM D 892/ASTM D 6082)	Foam Tendency at end of 5 min blowing period	Foam Stability at end of 20s settling period
	Sequence 1, max	10 mL	0 mL
	Sequence 2, max	20 mL	0 mL
	Sequence 3, max	10 mL	0 mL
	Sequence 4, max	200 mL	0 mL
	(For sequence 4 use ASTM D 6082, static foam, 150°C±3 °C, 200ml air/minute)		
3.7	FOAMING AFTER AGEING USING CEC-L48-A-00(B) (140 °C, 5 liters air/hour for 24hours) (ASTM D 892)	Foam Tendency at end of 5 min blowing period	Foam Stability at end of 20 sec settling period
	Sequence 1, max	20 mL	0 mL
	Sequence 2, max	60 mL	10 mL
	Sequence 3, max	20 mL	0 mL
3.8	MOISTURE (ASTM D 6304)		0.05% max
3.9	ODOR		
	Material manufactured to this specification shall produce no objectionable odor under any test performed herein, particularly the tests described in paragraph 3.5 (30 minute and 60 minute intervals during the 3-hour test) and paragraph 3.11.		
3.10	ELASTOMER COMPATIBILITY (ASTM D 471, para. 6.1, using aluminum block or any approved equivalent 168 hours at 150 +/- 3 °C)		
	Material 70 ACM 121433 (acrylic rubber)		
	Volume change from original		+3 +/- 3%
	Durometer hardness change from original		+1 +/- 4
	Material 75 FKM 595 (fluorocarbon)		
	Volume change from original		+0 +/- 3%
	Durometer hardness change from original		+3 +/- 3