

Data: 8 February 2013

**TECHNICAL SHEET**  
**TRANSMISSION OILS**  
**LUKOIL TRANSMISSION TM-5**

- "LUKOIL TRANSMISSION TM-5" gear oils are obtained, as appropriate, from refined mineral base oils (Group I) or/and iso-paraffinic oils with very high viscosity index (Group III) and specific additives, which provide the API GL-5 additivation level.
- They are used for the lubrication of gear transmissions of transport vehicles (gear box, steering mechanism, etc), of tractors and other mechanical transmission systems which operate under normal and severe conditions, at high speed and low torque, as well as at low speed and high torque, for which a lubricant resisting to extreme pressures is required.
- Performance level: API GL-5
- Approvals: AVTOVAZ (75W-90, 80W-90, 85W-90); ZF TE-ML 16B, 17B, 19B, 21A (80W-90, 85W-90); GAZ (85W-90)
- Meet the following requirements: ZF TE-ML 07A, 08, 16B/C/D, 17B, 19B and MAN 342 M2 (75W-90); MAN 342 M-1 (80W-90, 85W-90); MIL-L 2105D (80W-90)
- Quality conditions for LUKOIL TRANSMISSION TM-5 oils, extracted from ST-10/2008, are the following:

Item No.	CHARACTERISTICS	ADMISSIBILITY CONDITIONS			TEST METHOD	
		LUKOIL TRANS.TM-5 SAE 75W-90, API GL-5 Semi-Synthetic	LUKOIL TRANS.TM-5 SAE 80W-90, API GL-5 Mineral	LUKOIL TRANS.TM-5 SAE 85W-90, API GL-5 Mineral		
1	Kinematic viscosity at 100°C, mm <sup>2</sup> s <sup>-1</sup> (cSt), min.	15	15	16.5	SR EN ISO 3104/AC ASTM D 445 ASTM D 7042	
2	Viscosity index, min.	130	90		SR ISO 2909 ASTM D 2270 ASTM D 7042	
3	*Brookfield viscosity, cP (mPa.s), max. - at the temperature of -40°C - at the temperature of -26°C - at the temperature of -12°C	150 000 - -	- 150 000 -	- - 150 000	ASTM D2983	
4	Flash point, Cleveland open cup, °C, min.	165	185		SR EN ISO 2592 ASTM D92	
5	Pour point, °C, max.	-43	-30	-25	SR 13552 ASTM D 97	
6	Water content, %	nil			SR 13484 ASTM D 95	
7	Substances insoluble in organic solvents,%	nil			STAS 33	
8	Copper strip corrosion at 120°C, 3h , max.	2c			SR EN ISO 2160 ASTM D130	
9	Tribological characteristics on the four ball machine, at the temp. of ( 20 ± 5°C): - Seize index (I <sub>g</sub> ), N (kgf), min. - Weld load (R <sub>s</sub> ) N ( kgf), min - Wear index (D <sub>1</sub> ) at an axle load of 392 N (40kgf) , during 1h , mm , max.	568,4 (58 ) 3000 (306 ) To be reported	568,4 (58 ) 3687 (376 ) To be reported		STAS 8618 ASTM D 2783	
10	* Thermo-oxidative stability on the pinion machine at 155°C, during 50h %, max. - viscosity increase at 50°C - insoluble in petroleum ether - sediment in gasoline	-			100 3.0 2.0	GOST 23652 Pct 5.4.1
11	*foaming properties, ml (tendency – stability), max. - at 24 °C - at 93.5 °C - at 24°C, after determination at 93.5°C	50-0 50-0 50-0			SR ISO 6247+C1 ASTM D 892	
12	Sulphur content, %	To be reported			SR EN ISO 8754 ASTM D4294	
13	Phosphorus content, %	To be reported			STAS 7330	
14	*Compatibility with rubber seals (volume change), for UIM-1 %, max.	-			8	ASTM D4289
15	Density at 15 °C, g /cm <sup>3</sup>	To be reported			SR EN ISO 3675/C91 ASTM D 1298 ASTM D 7042	

\* This characteristic is warranted by means of the manufacturing technology / is determined in accordance with the technical standard in force

- Accuracy evaluation of the test methods from this technical sheet should meet the requirements of Standard SR EN ISO 4259:2007 "Petroleum products – determining and applying the accuracy values regarding the test methods".
- Samples shall be taken in accordance with SR EN ISO 3170:2004/C91:2005 "Liquid petroleum products. Manual sampling".
- Packaging, marking, storage, transport and handling are performed according to the regulations in force (decisions, regulations, etc. specified in the product safety data sheet) and to LUKOIL LUBRICANTS EAST EUROPE S.R.L.'s instructions/internal procedures. For details, see the Safety Data Sheet (SDS).
- Storage life is of 5 years from the manufacture date.