ASTM Section D02.B0.03 Update
to
SAE Technical Committee 3

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Chairman, ASTM Section D02.B0.03

ASTM Section D02.B0.03

- Scope
  - This Section is responsible for the promotion of knowledge of, and specifications, test methods and terminology for automotive gear lubricants and fluids. This includes gear lubricants used in rear drive axles, power dividers, and fluids used in manual and automatic transmissions of wheeled or track laying vehicles such as passenger cars, recreation vehicles, taxicabs, trailers, trucks, buses, tractors, construction and farm vehicles.
- Objectives
  - Keep existing performance tests operational, at historic severity and precision levels.
  - Ensure that performance test parts and reference oils are available in adequate supply and of a consistent quality.
  - Develop and maintain performance tests for gear lubricant and transmission fluid categories.
  - Maintain surveillance of test procedures under Section jurisdiction.
  - Work to improve test precision and correlation with field service.
  - Maintain active liaison with related organizations (CEC, SAE, API, etc.)

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Test Procedures Under the Jurisdiction of Section D02.B0.03

Common Designation	ASTM Designation	Purpose of Test
L-33-1	D7038	To evaluate the rust and corrosion-inhibiting properties of a water-contaminated lubricant
L-37	D6121	To evaluate the load-carrying, wear, and extreme pressure properties of a lubricant under low-speed, high-torque conditions
L-42	D7452	To determine the anti-scoring properties of a lubricant subjected to high-speed and shock-loading conditions
L-60-1	D5704	To evaluate the thermal and oxidative stability of a lubricant
High Temperature Cyclic Durability	D5579	To evaluate the thermal stability of a lubricant in a high-temperature cyclic durability test
Oil Seal Compatibility	D5662	To determine the compatibility of a lubricant with specific polyacrylate, fluoroelastomer, and nitrile seal materials
Storage Stability & Compatibility	D7603	To insure that lubricants maintain their integrity during storage, and that they are compatible with other lubricants intended for use in similar applications

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- Tests under the jurisdiction of the Section are used to evaluate lubricants against the requirements of the following performance specifications:
  - ASTM D7450
    - "Standard Specification for Performance of Rear Axle Gear Lubricants Intended for API Category GL-5 Service"
    - Details tests and acceptance criteria for API Category GL-5
  - ASTM D5760
    - "Standard Specification for Performance of Manual Transmission Gear Lubricants"
    - Lubricants for non-synchronized manual transmissions in buses and heavy-duty trucks
    - Details tests and acceptance criteria for API Category MT-1
  - SAE J2360 Standard
    - "Automotive Gear Lubricants for Commercial and Military Use"
    - Details tests and acceptance criteria for hypoid gear lubricants which exceed the performance of API Category GL-5

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- Update on Test Procedures
  - All tests under the jurisdiction of the Section are available for use
  - L-33-1 Surveillance Panel starting process of developing replacement test
    - Concerned about continued availability of current axle
    - Want to move to newer axle which is more representative of current production
    - Introduction of replacement procedure will probably require 12 to 18 months to complete
  - Shortage of L-37 hardware has been addressed
    - Surveillance Panel approved new batches of non-lubrited and lubrited hardware in December, 2012
    - Hardware produced severe results on reference oils and commercial oils
      - Problem addressed via implementation of correction factors
      - Same process was used with previous batches of hardware

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- Update on Test Procedures, continued
  - Work on a replacement for the current L-37 test continues
    - Uses an electric motor as the power source
      - Replaces gasoline engine and transmission used in current test
    - Moved to an axle which is more representative of current production
      - In terms of metallurgy, manufacturing process, etc.
    - Development work using industry reference oils produced promising results
    - Subsequent testing on commercially-available oils yielded unexpected (severe) results
    - Working group investigating procedural changes intended to address this problem
  - Shortage of L-42 hardware has been addressed
    - Surveillance Panel recently approved new batch of hardware
    - Panel beginning discussion on development of a next-generation test
      - May move to electric motor-driven stand for improved precision
      - Will consider need to move to newer axle

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- Update on Test Procedures, continued
  - L-60-1 Surveillance Panel adopted the use of a new rating aid
    - Fixture to hold gears at specific angle and distance from overhead light during rating
    - Expected to improve consistency of deposits ratings
  - Manufacturer made minor change in design of several parts used in the High Temperature Cyclic Durability Test
    - Testing indicated that change in hardware did not affect test results
    - Surveillance Panel approved use of new hardware