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

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J. L. Gropp

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 developing replacement for current test
    - Moving to newer axle which is more representative of current production
      - American Axle K2XX
    - Replacement test should be available in CY 2015
  - Shortage of L-37 hardware has been addressed
    - New batches of non-lubrited and lubrited hardware are available
    - Hardware produced severe results on reference oils and commercial oils
      - Problem addressed via implementation of correction factors
        - » LRI Gear Oil Review Committee uncomfortable with magnitude of some correction factors
        - » Proposal/ballot to limit size of correction factors for tests used to obtain SAE J2360 approvals will be discussed/resolved in May

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- Update on Test Procedures, continued
  - Work on a replacement for the current L-37 test continues
    - Primary approach based upon use of high-volume production axle
      - Initial testing looked promising
      - Subsequent testing on commercial oil(s) produced unexpected (severe) results
      - Efforts to resolve problem had limited success
    - Industry now pursuing alternate approach
      - Based upon use of custom-manufactured L-37-type hardware
      - Hardware should be available in June
      - Goal is to have procedure in place by end of CY 2014
    - L-42 test requires routine maintenance
      - Ordering new batch of hardware
      - Introducing replacement for current good-reference oil
        - » Used to calibrate stand and establish acceptance criteria

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- Update on Test Procedures, continued
  - L-60-1 Surveillance Panel working to improve test repeatability/reproducibility
    - Ongoing severity trend (severe) continues
    - Introduction of new batch of hardware may be having an effect
    - Size and direction of severity shift not consistent from one oil and/or one lab to another
    - Detailed investigation into cause underway
  - No problems to report with High Temperature Cyclic Durability Test
    - One calibrated stand continues to meet industry's needs
  - No problems to report with Oil Seal Compatibility Test or Storage Stability & Compatibility (SS&C) Test