Section D02.B0.03 Status Report
to
Subcommittee D02.B0

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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	D 7038	To evaluate the rust and corrosion-inhibiting properties of a water-contaminated lubricant
L-37	D 6121	To evaluate the load-carrying, wear, and extreme pressure properties of a lubricant under low-speed, high-torque conditions
L-42	D 7452	To determine the anti-scoring properties of a lubricant subjected to high-speed and shock conditions
L-60-1	D 5704	To evaluate the thermal and oxidative stability of a lubricant
Cyclic Durability	D 5579	To evaluate the thermal stability of a lubricant in a cyclic durability test
Oil Seal Compatibility	D 5662	To determine the compatibility of a lubricant with specific polyacrylate, fluoroelastomer, and nitrile seal materials
Storage Solubility & Compatibility	D 7603	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 under the following performance categories:
  - ASTM D 7450
    - Lubricants for automotive axles
    - Update of API Category GL-5
  - ASTM D 5760
    - Lubricants for non-synchronized manual transmissions in buses and heavy-duty trucks
    - Also known as API Category MT-1
  - SAE J2360
    - Multipurpose gear-lubricating oils
    - Technical equivalent of the MIL-PRF-2105E Specification
      - Cancelled on February 16, 2005
  - Proposed Category PM-2
    - Lubricants for synchronized manual transmissions in commercial vehicles
    - Currently under development

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- Update on Test Procedures
  - All tests under the jurisdiction of the Section are available for use
  - Shortage of hardware for the L-37 test continues to be an issue
    - Industry obtained (very) severe results when evaluating new batches of both non-lubrited and lubrited hardware
    - Recently approved a new batch of non-lubrited hardware
      - Contact stress at pinion/ring interface was reduced to achieve desired level of test severity
    - Attempts to obtain an acceptable batch of lubrited hardware have, thus far, not been successful
      - Reducing contact stress was not effective
      - Manufacturer has been asked to make a new pilot batch of hardware with optimized geometry, case hardening, lapping, etc. for evaluation

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- Update on Test Procedures, continued
  - Continue to see a slight severity trend (severe) in the L-60-1 test
    - Affects both deposits and insolubles
    - Not of sufficient magnitude to inhibit use of this test
    - ASTM Test Monitoring Center will make lab visits to identify cause of problem(s)
      - Will inspect both the mechanical lab, as well as the analytical lab, at each facility
  - Work to improve consistency of Carbon/Varnish rating in the L-60-1 test has been encouraging
    - Use of a fixture to hold the gear at a specified angle and distance from the rating light appears to be beneficial
    - Additional evaluations are ongoing

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- Update on Test Procedures, continued
  - Several test procedures have been modified in order to improve efficiency
    - Take advantage of improved reliability/stability of current test equipment
    - Recent changes include:
      - Extended instrument calibration frequency for L-33-1 test
      - Extended in-service stand calibration frequency for L-37 test
      - Extended instrument calibration frequency and in-service stand calibration frequency for L-42 test
      - Reduced number of tests required to calibrate a new Cyclic Durability test stand

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- Update on Performance Categories
  - Work on the development of proposed Category PM-2 continues
    - New category for synchronized manual transmissions in commercial vehicles
    - Progress has been hampered by the lack of a standardized pitting test, lack of potential reference oils, and competition for limited industry resources
    - Task Force requested input on possible pitting test procedures and reference oils from ASTM, CEC, and JAMA members
      - Limited input was received
    - Task Force may ask that SAE Technical Committee 3 revalidate the industry's interest in and need for this new Category
      - Needs of industry may have changed since the time that this request was initiated

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- Other Activities
  - Section D02.B0.03 has assumed responsibility for updating ASTM D 4998
    - Standard Test Method for evaluating wear characteristics of tractor hydraulic fluids
    - Used to evaluate lubricants for gear wear
    - Working Group has been formed
      - First meeting will be held in July