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Keeping Aircraft Safe

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Keeping Aircraft Safe

Helping ensure aircraft are safe in the sky and on the ground, addressing some of the smallest parts of a private plane to the largest concerns of international airlines, a number of ASTM International committees develop standards critical to aircraft construction, parts manufacturing, maintenance and aviation fuel.



ASTM committees and subcommittees involved in aviation standards include international members who develop standards that are used around the world. They include representatives from government offices, major airplane manufacturers and smaller firms, academia and vendors dealing with products related to all areas of flight.

As aviation-related committees and subcommittees continue to evolve, their standards address virtually every concern related to the field, from bearings to renewable fuels, from wiring to pavements.

ASTM standards provide guidance for aircraft manufacturers as they design and build aircraft and for the manufacturers' vendors as they develop the components necessary for a broad range of aircraft. Other ASTM standards cover various types of fuels, pavements and many more topics.

Those standards and test methods also address the directives of U.S. government organizations such as the Federal Aviation Administration (FAA) for the more than 19,000 airports, heliports and other landing facilities in the United States, and for other governing bodies and administrations around the globe.

THE FOLLOWING PAGES BRIEFLY PROFILE MAJOR ASTM INTERNATIONAL COMMITTEES AND SUBCOMMITTEES THAT HAVE BEEN INSTRUMENTAL IN ENSURING SAFETY IN ALL REALMS OF AVIATION – AND THEREFORE SAFE FLIGHTS AND SAFE PASSENGERS – FOR MORE THAN 70 YEARS.

Building the Aircraft

B07 Aluminum and Light Metals

Committee B07 on Light Metals and Alloys develops standards related to aluminum and magnesium and their alloys in cast and wrought mill product form as well as fabricated culvert materials, their structural design and installation.

B07's collection of standards mainly includes test methods that are used throughout the aerospace industry for both quality assurance and design purposes. Properties measured in accordance with these test methods are used to determine design allowable limits that are published in "Metallic Materials Properties Development and Standardization," which is used by the aerospace industry to satisfy design requirements from FAA, the U.S. Department of Defense and NASA.

B07 subcommittees have jurisdiction over 80+ standards that address the effective industrialization of light metals and their alloys, primarily with respect to aluminum and magnesium. Those standards cover topics such as aluminum for use in iron and steel manufacture; aluminum and aluminum-alloy sheet and plate; and aluminum-alloy extruded bars, rod, tube, pipe, structural profiles and profiles for electrical purposes.

Technical subcommittees in Committee B07 include:

- B07.01 on Aluminum Alloy Ingots and Castings,
- B07.03 on Aluminum Alloy Wrought Products,
- B07.04 on Magnesium Alloy Cast and Wrought Products,
- B07.05 on Testing,
- B07.08 on Corrugated Aluminum Pipe and Corrugated Aluminum Structural Plate, and
- B07.09 on US TAG National Committee for ISO/TC 79 on Light Metals and Alloys.

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1928
Year B07
Established

160+
Members

13
Countries
Represented

Important B07 Standards

- Specification for aluminum and aluminum-alloy extruded bars, rods, wire, profiles and tubes (B221), which covers extruded bars, rods, wires, profiles and tubes made from aluminum and aluminum alloys;
- Specification for aluminum and aluminum-alloy sheet and plate (B209), which covers aluminum and aluminum-alloy flat sheet, coiled sheet and plate in particular alloys and tempers;
- Test methods for tension testing wrought and cast aluminum- and magnesium-alloy products (B557), which cover the tension testing of wrought and cast aluminum- and magnesium-alloy products, excepting aluminum foil;
- Practice for linear-elastic plane-strain fracture toughness testing of aluminum alloys (B645), applicable to the fracture toughness testing of all aluminum alloys, tempers and products, especially in cases where the tests are being made to establish whether or not individual lots meet the requirements of specifications and should be released to customers;
- Practice for fracture toughness testing of aluminum alloys (B646), which provides uniform test procedures for the industry, pointing out which current standards are utilized in specific cases and providing guidelines where no standards exist;
- Test method for tear testing of aluminum alloy products (B871), which covers the static tear test of aluminum alloy products using specimens that are 0.040 inch (1 mm) to 0.250 inch (6.35 mm) thick and is applicable to aluminum alloy products having a minimum thickness of 0.040 inch (1 mm); and
- Test method for shear testing of aluminum alloys (B769), which covers double-shear testing of wrought and cast aluminum products to determine shear ultimate strengths.

Building the Aircraft

F34.06 Bearings

Subcommittee F34.06 on Aerospace oversees standards for small parts of important equipment, including high precision bearings used in aerospace and defense applications such as military and civilian satellites (including weather and communications equipment) and guidance systems and control-surface mechanics for defense applications (such as smart bombs). The subcommittee addresses bearings used

in every subsystem in an aircraft, from control surfaces to airframe flex to the landing gear of an F18 landing in a “controlled crash” on an aircraft carrier.

The subcommittee’s mission? Develop the standards, promote the knowledge and stimulate the research for power takeoff, instrument and airframe bearings that help ensure everything works properly the first time and eliminate the possibility of “space junk.”

Representatives of internationally recognized companies – aircraft manufacturers and their suppliers included – work with the U.S. Department of Defense and private defense and space engineers to ensure the highest level of precision, performance and durability to meet the needs of private industry and government.

F34.06 is one of several subcommittees in Committee F34 on Rolling Element Bearings, formed under another name in 1973 to develop standards for military applications.

The history of this group is in high precision instrumentation for satellites and military aircraft.

40
Members

2000
Year F34
Established

F34.06 has two active standards:

- Specification for annular ball bearings for instruments and precision rotating components (F2332), which covers annular ball bearings intended primarily for use in instrument and precision rotating components; and
- Specification for phenolic raw materials for their use in bearing cages (F2953), which covers basic characteristics required for porous laminated phenolic materials intended for use as instrument and thin-section ball-bearing retainers (cages) and the methods of determining these characteristics.

Building the Aircraft

D30.09 Composites

There are sandwich structures – configurations that include outer face sheets or skins and a lightweight inner core – throughout aircraft, on control surfaces, fairing panels, nose radomes, interior panels, floor panels, engine nacelles and more.

Subcommittee D30.09 on Sandwich Construction is charged with developing test method standards for determining material and structural properties for sandwich constructions.

The subcommittee is one of 11 under Committee D30 on Composite Materials, which focuses on composite materials, primarily those with fibrous reinforcement.

Members are from airlines, material suppliers, government organizations, test laboratories and academia. The subcommittee oversees 22 standards on topics ranging from the density of core materials to the flatwise tensile strength of sandwich constructions.

55
Members

8
Countries
Represented

The most significant standards from D30.09 on Sandwich Construction are:

- A test method for shear properties of sandwich core materials (C273), which provides information on the force-deflection behavior of sandwich constructions or cores when loaded in shear parallel to the plane of the facings;
- A test method for core shear properties of sandwich constructions by beam flexure (C393), which is used to obtain core shear strength and stiffness; and
- A test method for facing properties of sandwich constructions by long beam flexure (D7249), which is used to obtain the strength and stiffness of the sandwich panel facings and to collect load-deflection data for use in calculating sandwich beam flexural and shear stiffness.

Building the Aircraft

F07 Hydrogen Embrittlement

Testing for hydrogen embrittlement is one aspect of the critical mission for Committee F07 on Aerospace and Aircraft. The tests developed by the committee help to ensure the safety of the aircraft, its crew and passengers. The committee promotes industry materials test methods and techniques and provides standards for use in aerospace, aircraft and allied industries, particularly as related to large commercial aircraft as well as military aircraft.

The committee includes representatives from major aircraft manufacturers, government agencies, testing laboratories and academia, who have developed 47 standards.

Committee F07's work is focused in three technical subcommittees — F07.04 on Hydrogen Embrittlement, F07.07 on Qualification Testing of Aircraft Cleaning Materials and F07.08 on Transparent Enclosures and Materials. The groups are responsible for standards that address topics that include the impact of hydrogen on the metal plating process, the effect of chemicals on composite materials and the preparation of aircraft cleaning compounds and test methods for physical, mechanical, environmental and optical characteristics of transparent enclosure materials and assemblies used in vision systems for both fixed-wing and rotary-wing aircraft.

Both Subcommittees F07.04 and F07.08 on Transparent Enclosures and Materials host full-day workshops after their annual meetings. The F07.04 workshop, the only such annual program for the aerospace industry, covers all areas of hydrogen embrittlement technology, including failure mechanisms and prevention. The F07.08 workshop covers testing results on transparent enclosures and materials, and typical presentations address passenger window testing and studies on bird-strike damage and results. The workshops are designed to promote standards work and provide the ideal setting for exchanging ideas and obtaining technical feedback from both the manufacturing and testing communities.

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Among the F07 committee's significant aerospace and aircraft standards are:

- Test method for mechanical hydrogen embrittlement evaluation of plating/coating processes and service environments (F519), which describes mechanical test methods and defines acceptance criteria for coating and plating processes that can cause hydrogen embrittlement in steels. Subsequent exposure to chemicals encountered in service environments, such as fluids, cleaning treatments or maintenance chemicals that come in contact with the plated and coated surface of the steel, also can be evaluated.
- Test method for measurement of hydrogen embrittlement threshold in steel by the incremental step loading technique (F1624), which quantitatively measures stress parameters that are used in a design or failure analysis that takes into account the effects of environmental exposure, including that which occurs during processing, such as plating. This test can be used to rapidly determine the effects of residual hydrogen in part caused by processing or quantify the relative susceptibility of a material under a fixed set of hydrogen-charging conditions.
- Test method for stress-corrosion of titanium alloys by aircraft engine cleaning materials (F945), which is used to determine the propensity of aircraft turbine engine cleaning and maintenance materials for causing stress corrosion cracking of titanium alloy parts.
- Test method for abrasion resistance of transparent plastics and coatings (F735), which addresses the resistance of transparent plastics and transparent coatings utilized in windows or viewing ports to surface abrasion using oscillating sand.

1969
Year F07
Established

93
Members

9
Countries
Represented

Building the Aircraft

E07 Nondestructive Testing

Think of it as the last line of defense. Committee E07 on Nondestructive Testing (NDT) is just that when it comes to materials used to produce airplanes.

Charged with developing standards related to traditional and emerging NDT methodologies, the committee helps vendors, manufacturers and others ensure that component materials are up to the job: strong enough to take the stress of flight, free of defects, safe for the smallest to the largest aircraft.

The committee — with NDT experts from various industries, including aviation, automotive and shipbuilding — also addresses requirements for NDT laboratory or agency quality systems, excluding standards for the certification of personnel performing NDT.

E07 has jurisdiction over 200+ standards that focus on topics such as the quality of radiological examination, the storage of radiographs, standardizing equipment for electromagnetic testing, acoustic emission monitoring and thermoelectric sorting of electrically conductive materials.

Committee E07 has 17 subcommittees, including:

- E07.01 on Radiology [X and Gamma] Method;
- E07.02 on Reference Radiological Images;
- E07.03 on Liquid Penetrant and Magnetic Particle Methods;
- E07.04 on Acoustic Emission Method;
- E07.05 on Radiology [Neutron] Method;
- E07.06 on Ultrasonic Method;
- E07.07 on Electromagnetic Method;
- E07.08 on Leak Testing Method;
- E07.09 on Nondestructive Testing Agencies;
- E07.10 on Specialized NDT Methods; and
- E07.11 on Digital Imaging and Communication in Nondestructive Evaluation (DICONDE).

1938
Year E07
Established

41
Countries
Participate
Globally

Among Committee E07's key standards are:

- Reference radiographs for inspection of aluminum and magnesium castings (E155), which reference NDT standards that are universally accepted because of their high reliability in accept-reject actions;
- Terminology for nondestructive examinations (E1316), focusing on standard terminology for all NDT initiatives;
- Practice for liquid penetrant testing (E1417), which establishes the minimum requirements for conducting liquid penetrant examination of nonporous metal and nonmetal components;
- Practice for magnetic particle testing (E1444), which establishes minimum requirements for magnetic particle examination used for the detection of surface or slightly subsurface discontinuities in ferromagnetic material; and
- Practice for radiographic examination (E1742), developed to address the minimum requirements for radiographic examination for metallic and nonmetallic materials.

500+
Members

In addition to attending two committee meetings a year, several E07 members travel to an X-ray laboratory in Hartford, Connecticut, twice a year to review reference radiographs, ensuring that they meet ASTM quality guidelines and can serve as a reference against which metals can be evaluated.

Building the Aircraft

F39 Wiring

The angle-of-attack indicator (AOA) for aircraft is a small device with a powerful purpose: it tells pilots the angle at which they can position an aircraft to prevent it from stalling and crashing.

Committee F39 on Aircraft Systems develops standards related to avionic products, aircraft electrical and wiring systems, balancing government policies and trade issues. Their purpose: to establish a portfolio of international standards to be used by industry and the FAA to ensure safe aircraft designs for both pre-certification and the continued airworthiness of mature products. The committee's scope includes developing standards related to the design, certification, production, installation and maintenance of aircraft systems.

Members of the committee come from the fields of avionics, aircraft manufacturing and academia.

Currently, Committee F39 has five standards under its jurisdiction, addressing aircraft electrical load and power source capacity analysis; design, alteration and certification of airplane electrical wiring systems; inspection of aircraft electrical wiring systems; maintenance of aircraft electrical wiring systems; and performance of angle of attack system.

Committee F39 on Aircraft Systems subcommittees include the following:

- F39.01 on Design, Alteration and Certification of Electrical Systems;
- F39.02 on Inspection, Maintenance and Repair;
- F39.03 on Design of Avionics Systems;
- F39.04 on Aircraft Systems; and
- F39.05 on Design, Alteration and Certification of Electric Propulsion Systems.

2004
Year F39
Established

10
Countries
Represented

80
Members

The F39 committee's most significant aircraft systems standards include:

- Guide for aircraft electrical load and power source capacity analysis (F2490), which covers how to prepare an electrical load analysis to meet FAA requirements;
- Practice for design, alteration and certification of airplane electrical wiring systems (F2639), which defines acceptable practices and processes for the design, alteration and certification of electric systems and installations in general aviation aircraft for air carriers, air operators and others; and
- Specification for performance of angle systems (F3011), which establishes functional operation and minimum performance requirements for simple systems that provide AOA information to a pilot, aircraft or other systems.

Standards have helped lower the costs of safety devices, which has increased their installation and provided pilots with safer aircraft.

All Types of Aircraft Addressed in ASTM International

F44 General Aviation Aircraft

General aviation — which includes all flying except military and scheduled airline operations — long has been an integral part of the U.S. economy — and other economies as well. It also has been on the decline in recent years.

In 2012, an ASTM committee was organized on the topic: F44 on General Aviation. The relatively new group is responsible for developing the standards that keep pilots and passengers safe and two- to 19-seat aircraft flight ready, with an eye to facilitating changes that help transform the way smaller aircraft are manufactured and certified around the world.

During a period when the FAA and international organizations are rewriting regulations, the committee serves a critical function as it addresses issues related to design and construction, systems and performance, quality acceptance tests and safety monitoring for general aviation aircraft (also known as Part 23) that

weigh less than 19,000 pounds (8,600 kg). While safety always will be a primary concern, so too is facilitating new approaches necessary to control rising manufacturing and ownership costs, streamline lengthy certification processes and reverse declines in the active pilot population.

Formed at the request of aviation industry organizations in support of the efforts of the FAA's Part 23 Aviation Rulemaking Committee related to the manufacture and airworthiness of aircraft of that size range, Committee F44 brings together global stakeholders — manufacturers, suppliers, trade associations, pilots, aircraft owners and civil aviation authorities — to work on standards to help transform the way smaller aircraft are manufactured and certified worldwide. The standards will reduce the regulatory burden on the industry and impact aircraft manufacturing costs and certification processes, which have contributed to an overall decline in general aviation flying.


The committee plays a critical role in supporting the overhaul of Part 23 regulations into what the FAA and the European Aviation Safety Agency envision as more of a performance-based document and in developing industry-driven standards to better align aircraft certification requirements with the type of operation the aircraft will experience. Members are at work on 16 draft standards that cover topics such as the application of general aviation design standards, specification for crew interface for small airplanes and icing protection for small airplanes.

Committee F44 has nine subcommittees, which include:

- F44.10 on General;
- F44.20 on Flight;
- F44.30 on Structures;
- F44.40 on Powerplant; and
- F44.50 on Systems and Equipment.

NCATT Standards and Certification Program

The ASTM National Center for Aerospace & Transportation Technologies, or NCATT, offers several personnel certification programs to advance aviation industry technical education. The programs promote safety, integrity and professionalism in the aerospace workforce and address several areas in the field of aircraft electronics (avionics). The programs result from NCATT's work with industry leaders to respond to needs for additional knowledge, skills and certification. Aviation and aerospace technicians can choose among certification and endorsement programs for navigation systems, communication systems, assembly, maintenance and more.



F44 standards and those of other ASTM International committees will support the decisions of the U.S. Congress Small Airplane Revitalization Act of 2013, with regulations effective by Dec. 15, 2015, as well as European Aviation Safety Agency rulemaking efforts and those in countries around the world, including Brazil, Canada, China and New Zealand.

2012
Year F44
Established

250
Members

21
Countries
Represented

All Types of Aircraft Addressed in ASTM International F37 Light Sport Aircraft

The cost of constructing or retrofitting fixed-wing lighter-than-air private planes, gliders, gyroplanes and more, to the eye may seem to appear the same as it was 15 years ago. However, the safety of these aircraft has improved dramatically.

Committee F37 on Light Sport Aircraft, which develops standards for aircraft with two or fewer seats manned by pilots transporting a minimal number of people, if any, is partly responsible for that shift in safety.

The committee addresses issues that must meet minimum FAA guidelines and are related to design, performance, quality acceptance tests and safety monitoring for light sport aircraft that include the two categories of aircraft created by the Certification of Aircraft and Airmen for the Operation of Light Sport Aircraft Notice of Proposed Rulemaking: special light sport aircraft (used for personal flight and flight training)

and rental and experimental light sport kit aircraft (any level of kit from zero to 95-percent prebuilt). The work of the committee touches groups globally. EASA and many civil aviation authorities worldwide, including those in New Zealand, Brazil, Columbia and the Czech Republic, also have adopted its standards.

The group's 38 standards, which have enabled manufacturers to add safety features, range from a practice for continued airworthiness system for light sport gyroplane to a specification for airframe emergency parachutes. The standards address limits such as empty weight and center of gravity, performance specifications, controllability and maneuverability trim, stability, stall speed and handling characteristics, engine cooling and operating characteristics, propeller limits, systems functions and folding or removable lifting surfaces.

Representatives from light sport manufacturers, global regulators, industry associations, pilots and aircraft owners, among others, serve on the committee, which has nine subcommittees, including:

- F37.10 on Glider;
- F37.20 on Airplane;
- F37.30 on Power Parachute;
- F37.40 on Weight Shift;
- F37.50 on Gyroplane;
- F37.60 on Lighter than Air;
- F37.70 on Cross Cutting; and
- F37.80 on Air Sport Products.

Among the most important light sport aircraft standards are:

- Specification for design and performance of a light sport airplane (F2245), which covers airworthiness requirements for the design of powered fixed-wing light sport aircraft;
- Practice for quality assurance in the manufacture of fixed-wing light sport aircraft (F2279), which establishes the minimum requirements for the development of a quality assurance and production acceptance program, to be used for the manufacture of light sport aircraft or light sport aircraft kits; and
- Specification for pilot's operating handbook for light sport airplane (F2746), which provides the minimum requirements for a pilot's operating handbook for an aircraft designed, manufactured and operated as a light sport aircraft.

2002
Year F37
Established

200
Members

19
Countries
Represented

Training in ASTM Light Sport Aircraft Standards

Hands-on experience in the use and implementation of ASTM light sport aircraft industry standards — the only standards currently accepted for use in the United States — can be found through a two-day LSA training course from ASTM. The course covers requirements to obtain an LSA certificate; quality control and production procedure strategies to ensure compliance with ASTM standards; how to incorporate standards requirements in company processes; how to determine and show compliance with the standards; and connecting references from civil aviation authorities with the use of the standards and their requirements. Hands-on experience in sampling, inspection, records analysis and more are included.



All Types of Aircraft Addressed in ASTM International

D02 Fuel

Aviation turbine engines. Airport fuel equipment. Aircraft fuel systems.

Subcommittee D02.J0 on Aviation Fuels guides the standards striving to balance the safety of the flying public with the need of the aircraft industry to have a robust and diverse fuel supply chain.

The subcommittee does not have an easy task as it works to maintain safety at the highest level while developing greener, energy-independent fuel life cycles and processes for the aviation industry.

Members come from government offices, major fuel producers, and smaller biofuel and renewable fuel firms.

The subcommittee is one of many that are part of Committee D02 on Petroleum Products, Liquid Fuels and Lubricants, whose mission focuses on a broad

range of liquid fuels derived from petroleum or the liquefaction of coal, shale, oil sands or other naturally occurring materials; liquefied petroleum gas and other compressed liquefied fuels; liquid fuels derived from biological materials (biofuels); synthesized liquid fuels (also known as renewable or alternative fuels); and oxygenates as fuels or their components.

Together, D02.J0 members have produced more than 30 standards that address topics from ground-based octane rating procedures for turbocharged/ supercharged spark ignition aircraft engines to aviation turbine fuel containing synthesized hydrocarbons.

Subcommittee D02.J0 includes six sections:

- D02.J0.01 on Jet Fuel Specifications;
- D02.J0.02 on J2 Spark and Compression Ignition Aviation Engine Fuels;
- D02.J0.03 on Combustion and Thermal Properties;
- D02.J0.04 on Additives and Electrical Properties;
- D02.J0.05 on Fuel Cleanliness; and
- D02.J0.06 on Emerging Turbine Fuels.

1993
Year
D02.J0
Established

500
Members

Among D02.J0's most significant aviation fuel standards are:

- Specification for aviation turbine fuel containing synthesized hydrocarbons (D7566), which covers the manufacture of aviation turbine fuel consisting of conventional and synthetic blending components, applying only at the point of batch origination;
- Specification for aviation turbine fuels (D1655), which covers the use of purchasing agencies in formulating specifications for purchases of aviation turbine fuel under contract;
- Practice for qualification and approval of new aviation turbine fuels and fuel additives (D4054), which addresses procedures required to determine the compatibility of additives proposed for aviation turbine fuels with both standardized fuels and the materials commonly used in commercial aircraft fuel system construction; and
- Test method for thermal oxidation stability of aviation turbine fuels (D3241), which covers the procedure for rating the tendencies of gas turbine fuels to deposit decomposition products within the fuel system.

33
Countries
Represented

Aviation Fuel and Petroleum Lab Tech Training

Complementing Committee D02's work in standards are ASTM training courses in the fuels that power planes. A two-day Aviation Fuels class focuses on how specifications are used to control aviation fuel quality and why they affect product performance. The class emphasizes practical applications and ASTM's role in developing specifications and methods. Aviation fuel test methods, manufacture and transportation are explained, and the interaction of aviation fuels with aircraft engines and ground equipment is also stressed.

For petroleum lab technicians, ASTM has developed a series of self-guided online training modules designed to supplement existing internal lab quality assurance/quality control programs. Each of the numerous modules, available through the ASTM Online Learning Center, addresses a specific standard test method, many of which are referenced in ASTM's flagship specification for aviation turbine fuels (D1655). Relevant modules, which include video demonstrations, checklists, data sheets, glossaries and quizzes, cover tests for flash point, distillation, viscosity, hydrocarbons and sulfur, among others.



Proficiency Testing: Aviation Fuel

ASTM International Proficiency Testing Programs offer laboratories worldwide an essential measure for quality management through comparing one's results with those of other facilities running the same tests. Through the information available from the programs, participants gain an edge in internal monitoring and for accreditation. The Aviation Turbine Fuel - (Jet A) PTP, which involves more than 325 participants around the world, provides a statistical quality assurance tool through more than 30 tests covering the involved parameters. Three times each year, samples are distributed with testing instructions and report forms to program participants; following data submission, statistical summary reports are distributed to the participants. Another PTP covers military jet fuel with a twice yearly test program.

All Types of Aircraft Addressed in ASTM International

E17 Runways

Two of the most critical times during any flight are takeoff and landing. Airport pavements play an important role in both and have a direct impact on the safety of all types of aircraft heading into the air and touching back down on the ground.

Committee E17 on Vehicle - Pavement Systems' standards have played and continue to play a pre-eminent role in aspects important to pavement management technologies, vehicle pavement interactions and intelligent transportation systems.

The committee in part oversees standards related to roadway and tire friction, which are essential for the

aviation industry to ensure long-term stability and safety. Adequate levels of friction help airplanes to steer, control and stop before and after flights. The FAA requires airports to know their friction levels at all times so they are aware of all ground conditions at their facility.

Committee E17 includes representatives from state Departments of Transportation, academia, engineering and design firms, equipment engineering firms, research institutes, testing laboratories and roadway consulting firms, among other organizations.

Together, E17 subcommittees have prepared 68 standards that cover such areas as skid resistance, calculating the international runway friction index, computing the pathway roughness index and measurement of tire/pavement noise.

Key standards on vehicle-pavement systems include:

- Test method for airport pavement condition index surveys (D5340), which covers the determination of airport pavement conditions through visual surveys of asphalt-surfaced pavements;
- Test method for repetitive static plate load tests of soils and flexible pavement components, for use in evaluation and design of airport and highway pavements (D1195), developed to address a procedure for making repetitive static plate load tests on subgrade soils and compacted pavement components;
- Test method for nonrepetitive static plate load tests of soils and flexible pavement components, for use in evaluation and design of airport and highway pavements (D1196), which covers nonrepetitive static plate load tests on subgrade soils and pavement components; and
- Practice for correlations of values from continuous friction measurement equipment to determine maintenance levels for use at airports (E2666) using a tire that is specified in E1551, for use in performing airport summer maintenance evaluations.

Sixteen subcommittees comprise Committee E17; among them are:


- E17.21 on Field Methods for Measuring Tire Pavement Friction;
- E17.23 on Surface Characteristics Related to Tire Pavement Slip Resistance;
- E17.24 on Tire and Slider Characteristics;
- E17.31 on Methods for Measuring Profile and Roughness; and
- E17.41 on Pavement Testing, Evaluation and Management Methods.

1960
E17
Established

150+
Members



Adequate levels of friction help airplanes to steer, control and stop before and after flights. The FAA requires airports to know their friction levels at all times so they are aware of all ground conditions at their facility.



Technical committees and subcommittees highlighted in this piece include:

- B07 on Light Metals and Alloys
- D02 on Petroleum Products, Liquid Fuels and Lubricants
- D30.09 on Sandwich Constructions
- E07 on Nondestructive Testing
- E17 on Vehicle-Pavement Systems
- F07 on Aerospace and Aircraft
- F34.06 on Aerospace
- F37 on Light Sport Aircraft
- F39 on Aircraft Systems
- F44 on General Aviation Aircraft



ASTM INTERNATIONAL

Helping our world work better

Over 12,000 ASTM standards operate globally. Defined and set by us, they improve the lives of millions every day.

Combined with our innovative business services, they enhance performance and help everyone have confidence in the things they buy and use – from the toy in a child's hand to the aircraft overhead.

Working across borders, disciplines and industries we harness the expertise of over 30,000 members to create consensus and improve performance in manufacturing and materials, products and processes, systems and services.

Understanding commercial needs and consumer priorities, we touch every part of everyday life: helping our world work better.

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