



ASTM INTERNATIONAL
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Committee F47 Commercial Spaceflight

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Image courtesy of NASA

Commercial Spaceflight

Formed in 2016, the ASTM International committee on commercial spaceflight develops standards and publications for the design, manufacturing, and operational use of vehicles used for spaceflight. Subcommittees focus on the development of test methods, practices, classifications, specifications, and guides for orbital and suborbital vehicles, launch and reentry vehicles, spaceports, and more.

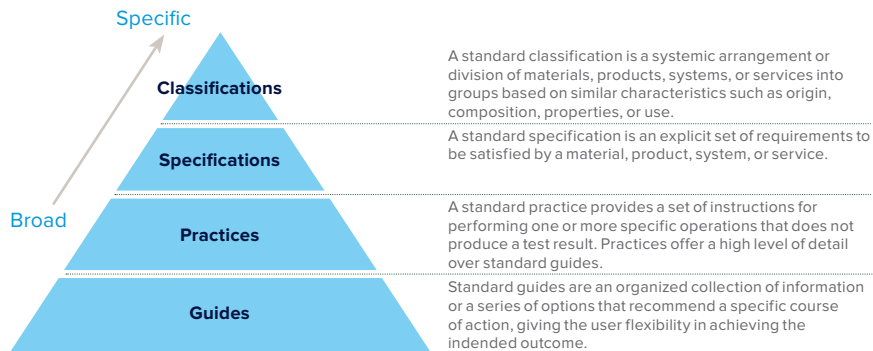
A diverse membership of more than 100 technical experts representing all areas: vehicle operators, designers and parts manufacturers, regulators, National Air Space (NAS) users, spaceport operators, medical professionals, crew and occupants safety, and even a few that operate crewed spacecraft. In addition to the individual experts that participate, there are many companies that have been engaged with the work of this committee including Blue Origin, Sierra Nevada Corporation, SpaceX, and Virgin Galactic.

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Image courtesy of Blue Origin

Four Primary Types of F47 Standards



Additional ASTM standards types within F47 include:

Terminology: a standard document composed of terms, definitions of terms, descriptions of terms, nomenclature, and explanations of abbreviations, acronyms, and symbols. Terminology standards allow F47 to set clear definitions related to commercial spaceflight that may be used and referenced across multiple standards.

Test Methods: codifies definitive procedures that produces test results, providing stricter guidelines beyond those found within standard practices and guides.

Shuttle image courtesy of Sierra Nevada Corporation

About F47

Subcommittees

- F47.01 Occupant Safety of Suborbital Vehicles
- F47.02 Occupant Safety of Orbital Vehicles
- F47.03 Unoccupied Launch and Reentry Vehicles
- F47.04 Spaceports
- F47.05 Cross-Cutting
- F47.91 Terminology
- F47.92 Standards Roadmapping
- F47.93 Liaison

Currently Published F47 Standards

- **F3344** – Guide for Storage, Use, and Handling of Liquid Rocket Propellants
- **F3377** – Standard Terminology Relating to Commercial Spaceflight
- **F3479** – Specification for Failure Tolerance for Occupant Safety of Suborbital Vehicles

Ongoing Standards Activities

- **WK61254** – Spacecraft vehicle types
- **WK64814** – Safety-Critical Personnel Training and Qualification
- **WK65152** – Reportable Safety Related Events
- **WK70413** – Space Data Exchange to Support the Integration of Space Operations in Air Traffic Management
- **WK74019** – Qualification for Safety-Critical Systems
- **WK74068** – Standard for Spaceport Standardization & Classification
- **WK74125** – Crew Rest in Commercial Space Flight

Future areas of standard activity

- Partial Pressure or Concentration of Oxygen
- Medical Certification for Crew and Passengers
- Medical standards for human orbital flight less than 30 days
- Launch Site Requirements guide
- Safety Events Reporting Guide

Purchase F47 Standards

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Industry Partnerships

The Commercial Spaceflight Federation

The Commercial Spaceflight Federation (CSF) is incorporated as an industry association for the purposes of establishing ever higher levels of safety for the commercial human spaceflight industry by sharing best practices, expertise, and promoting the growth of the industry worldwide.

Department of Commerce

The Office of Space Commerce (OSC) is the principal unit for space commerce policy activities within the Department of Commerce (DOC). Its mission is to foster the conditions for the economic growth and technological advancement of the U.S. commercial space industry. The vision of the Office is a robust and responsive U.S. industry that is the world leader in space commerce. Integral to U.S. leadership is the development of operational standards and best practices that support safe and responsible behavior in space. OSC personnel interface with the F47 committee sharing work performed in the implementation of U.S. Space Policy Directive 3, the national space traffic management policy, and drawing upon department-wide expertise such as that found in DOC's National Institute of Standards and Technology.

U.S. Federal Aviation Administration (FAA)

The FAA Office of Commercial Space Transportation (FAA/AST) is the governing regulatory body for spaceflight within the United States and U.S. persons abroad. The F47 committee works closely with FAA/AST. The two groups coordinate on standards intended for the industry.

Commercial Space Transportation Advisory Committee (COMSTAC)

COMSTAC was established in 1984 to provide information, advice, and recommendations to the FAA Administrator on critical matters concerning the U.S. commercial space transportation industry. The F47 committee monitors the work of this group and participates in open meetings when applicable.

By utilizing meetings to engage industry experts and federal regulators, we are enhancing the safety of commercial spaceflight operations.

The National Aeronautics and Space Administration (NASA)

NASA is an independent agency of the United States Federal Government responsible for the civilian space program, as well as aeronautics and space research. The F47 committee has participation from various NASA staff and seeks out their input and best practices for ongoing standards development. NASA also does a lot of collaborative work internationally with the Canadian Space Agency (CSA), the European Space Agency (ESA), the Japanese Space Agency (JAXA), and the Russian Space Agency (Roscosmos), and can provide valuable perspectives for considering internationally accepted best practices.

How You Can Contribute to Commercial Spaceflight Standardization?

Membership in Committee F47

The committee welcomes all users, technical experts or anyone with a general interest who has a desire to work toward further development of commercial spaceflight standardization. In-person meetings are held twice a year; however, standards development work continues all year long through electronic tools and virtual meetings.

Just a few of the benefits you will receive when you join ASTM:

- Network with other professionals worldwide
- Have direct input into the development of new and revised standards
- Participate in informational webinars
- Receive a free volume of the *Annual Book of ASTM Standards*
- Enjoy discounts on all ASTM publications
- Receive free subscription to *ASTM Standardization News* and *ASTM eNews*; and
- Benefit from reduced attendance

Helping Our World Work Better

Committed to serving global societal needs, ASTM International positively impacts public health and safety, consumer confidence, and overall quality of life. We integrate consensus standards – developed with our international membership of volunteer technical experts – and innovative services to improve lives... helping our world work better.



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