



Aeronautics

materials and equipment

TEST, VALIDATION AND APPROVAL

Trusted means *Tested.*

SGS



Testing, validating and approving all **your materials and equipment**



SGS is carrying out testing services for the major aeronautical manufacturers such as Airbus, Boeing, Dassault, Daher, Socata, Bombardier... as well as for all their equipment manufacturers.

Our laboratories are **audited and approved** regularly to get **Nadcap** and **Cofrac*** accreditations

* French accreditation body

These audits and qualifications are guaranteeing to industry players that test procedures are performed similarly to those carried out by manufacturers.

In addition to our testing services, SGS is offering to adapt or create test benches that will meet your specific needs and/or changes to standard requirements.

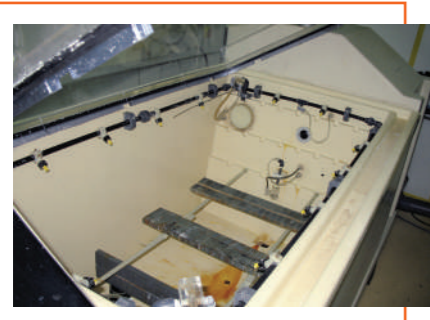
A WIDE RANGE OF TESTS

The multitude and complementary nature of the available equipment provide exceptional depth in all the test fields, helping to characterise, validate or approve all your materials and equipment :

- textiles
- materials
- composites
- metallics
- paint
- adhesive
- rubber
- electronic components such as sensors and wires

in accordance with standards/ test methods such as AIRBUS-AITM/ QTP, EADS-IGC, RTCA/DO-160, ADET, AECMA, MIL STD, GAM EG 13, NF EN2591, etc., or in accordance with your own specifications.

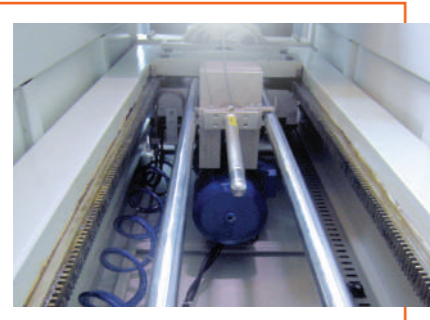
Our fields of intervention



SALT AND GASEOUS CORROSION

Over 40 pieces of apparatus reproduce an artificial and monitored corrosive environment for testing the resistance of materials and protective coatings and the robustness of mechanical or electrical components:

- Neutral salt spray (NSS) up to 10m3,
- Acetic acid salt spray (ASS),
- Acetic acid salt spray with copper chloride (CASS),
- Acid and gaseous environment: Cass-Test, Kesternich, H2S/SO2/NO2/Cl2,
- Alternated corrosion (salt spray+Heat+Moisture),
- Filiform corrosion.



HARDWARE MECHANICAL TEST

SGS carries out most tests in accordance with the standards in force in the following fields:

- Static properties of materials from -50°C to + 200°C,
- Traction / Compression / Creep / Bending, from 5 up to 250kN
- Fatigue (linear up to 100 kN and rotational up to 140 N.m),
- Shore and Persoz resistance, Charpy and Izod impact,
- Peeling (right angle or flat),
- Drop tower for instrumented impact (multi-axis impact)

UV PHOTOAGEING

More than 40 devices are able to apply the numerous standards or testing methods of contractors on an industrial scale:

- ISO 4892-2 tests : plastics
- ISO11341 : coating and varnish
- ISO 11507 method A type 1: coating and varnish
- MIL-STD-810G : military products



CLIMATIC TESTS

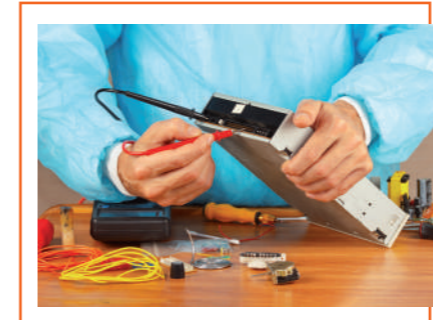
SGS has Europe's only capacity of over 120 climatic chambers:

- Hot up to 300°C
- Hot cold humid -70°C to 180°C
- Thermal shock -60°C to 190°C
- Rapid temperature variation chambers, up to 10°C/min, -70°C to 180°C
- Altitude simulation (50,000 feet - 15 km), in slow depression (-55°C to 40°C)
- Stabilised power supplies: 1 kW to 15 kW (600 V / 510 A),
- Electric control possible by a controller

DEGRADATION TESTS

Test equipment and methods designed to characterise the durability of the appearance of parts or materials subjected to wear phenomena according to their future use:

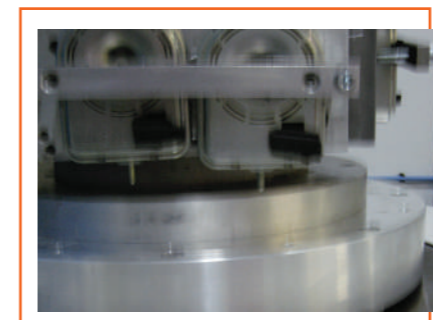
- Gravelling, Shot Blasting,
- Mass drop shock (IK)
- Occasional Fluid Contact, Staining
- Paint Resistance, Adhesion, Abrasion
- Scratch, Marking, Rubbing,



ELECTRICAL TESTS

SGS Sercovam carries out the following electrical tests:

- Surface / volume resistivity,
- Contact, isolation resistance, up to 1000 V DC
- Dielectric strength, up to 5kV AC or 6kV DC
- Voltage Proof Test,
- Electrostatic charge dissipation,
- Detection of power line disturbances (greater than or equal to 1 µs for a current of 100mA max),
- Splash Water Test (water sprinkling at 2°C on a part up to 140°C),
- IP tests (Water: index 1 to 9 / Dust : Arizona, Portland cement, talc, olivine/ quartz/feldspath).



VIBRATION TESTS

These tests determine vibration resistance of parts, systems and subsystems:

- 9 shakers from 10 to 89 kN,
- Coupling with climatic chambers (-70°C / +180 °C with HR) up to 10°C/ min,
- Detection of power line disturbances (1µs),
- Vibrating table: (1200 x 1200) mm,
- Signals up to 2500 Hz: sinus/noise, noise/noise, fixed ray/noise simulating gunfire, helicopter blades, etc.
- Accumulation of vibration, thermal and hydraulic stress,
- 2 impact-testing machines (for units up to 100 kg) up to 1500 G.



THERMAL ANALYZES

The tests make it possible to characterize the thermal behavior of materials (transitions, dilation, decomposition, etc.)

- DSC: Differential Scanning Calorimetry
- DMA: Dynamic Mechanical Analysis
- TMA: Thermomechanical Analysis
- TGA: Thermogravimetric Analysis
- HDT: Heat deflection temperature
- Vicat: Softening temperature
- MFI: Melt Flow Index



OTHER FIELDS OF INTERVENTION

Our laboratories are also able to offer other services like:

- Ozone aging
- Physico-chemical analyzes (IRTF, density, fiber content, etc...)
- Optical microscopy (observation of structure, defects, thickness measurement, etc...)
- Liquid/Liquid thermal shocks by circulation; Liquid Temp: -40°C / +160°C
- Fluid resistance (contacts by brushing in temperature, continuous immersion in fluids (glycol, oils) and temperature...)
- Sensory analyzes (Odors, Volatile Organic Compounds)
- Residual cleanliness

Our **qualifications** and **accreditations**

AIRBUS QUALIFIED METHODS:

- AITM 1-0019: single overlap shear traction
- EN 2561: traction on composites
- EN2562: bending on composites
- EN2563: interlaminar shear on composites
- ISO 14126-2: in-plan compression on composites
- EN 2564: carbon fiber, resin and porosity rate
- ISO1183-1 A: Density determination – immersion method
- ISO 4892-2: UV tests on plastics
- ISO11341: UV tests for paints and varnishes
- ISO 1518: scratch test for paints and varnishes

- ISO4628-2: Assessment of blistering for paints and varnishes

NADCAP ACCREDITED METHODS

- EN 2561 : traction on composite
- EN 2562 : bending on composites
- EN 2563 : interlaminar shear on composites
- EN 2564 : carbon fiber, resin and porosity rate
- ISO1183-1 A : density determination – immersion method
- DSC tests : ISO11357, AITM3-0002 and AITM 3-0008
- DMA tests determining the glass transition: AITM1-0003; DIN EN6032; ASTM D7028; ISO6721-11

COFRAC ACCREDITED METHODS

- EN 2561 : traction on composite
- ISO 4892-2 : UV tests on plastics

DASSAULT RECOGNIZED METHODS

- Salt spray
- Filliform corrosion
- Paint adhesion tests
- Thickness measurement



***COFRAC accredited test laboratory (ISO 17025)**
Accreditations N°1-6465 & 1-6468
Scope available at www.cofrac.fr



COFRAC is widely recognised via the ILAC agreements
(International Laboratory Accreditation Cooperation www.ilac.org)



Non Metallic materials testing Class A :
composite materials
(Cestas site only)

About SGS

OUR VALUE TO SOCIETY IS ENABLING A BETTER, SAFER AND MORE INTERCONNECTED WORLD.

We are SGS – the world’s leading testing, inspection and certification company. We are recognized as the global benchmark for quality and integrity. Our 96,000 employees operate a network of 2,600 offices and laboratories, working together to enable a better, safer and more interconnected world.



Trusted means *Tested.*

SGS France
Connectivity & Products
Laboratories of Cestas and Etupes (former Sercovam)
21 chemin de Marticot
33610 Cestas - France
Tél : + 33 (0)5 57 97 02 33
fr.commercial.testing@sgs.com

WWW.SGSGROUP.FR



WHEN YOU NEED TO BE SURE

SGS