

Testing Facility



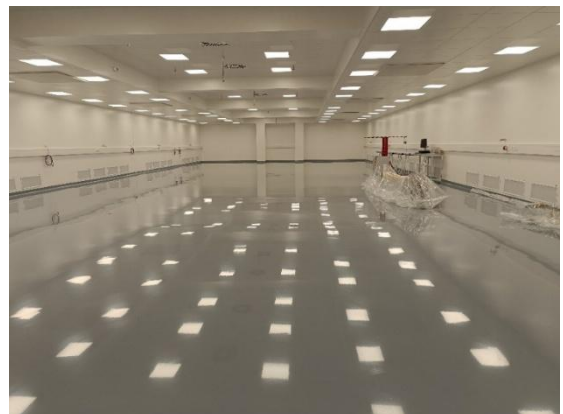
Testing Facility

List of equipment

- Universal testing machines, load cells up to 100 kN equipped with environmental chamber for temperature range from -180°C to +250°C
- Thermal cycling chamber (max. 800 x 800 x 950 mm) in temperature range from -70°C to +180°C
- Thermal vacuum cycling chamber (max. 1200 x 1200 x 750 mm) in temperature range from -70°C to +250°C and in the temperature range from -210°C to +210°C (max 500 x 500 x 500 mm)
- Thermal chamber with controlled humidity (10-95%)
- CTE measurement with vertical push-rod dilatometer DIL 822 (TA Instruments)
- Dynamic Mechanical Analyser DMA1 (Mettler-Toledo)
- Thermogravimetric Analyser TGA 2 (Mettler-Toledo)
- Differential Scanning Calorimeter DSC1 (Mettler-Toledo)
- CMM (maximum part dimensions 3000 x 1500 x 1200 mm)
- CNC atmospheric plasma treatment (600 x 850 mm)
- Thermal conductivity measurement Isomet 1214 (Applied Precision)
- Ultrasonic non-destructive testing Veo+ (Sonatest)
- Flash thermography for non-destructive testing ImageIR 8300 (Infratec)
- FTIR spectrometer Impact 380 (Nicolet)
- Portable 3D laser tracker AT960-MR (Leica)
- Vacuum mixer (5L and 15L vessels) Dispermill X-Proof FR220 (ATP Engineering)
- Lab hydraulic presses (400 x 400 mm)



Thermal vacuum cycling chambre



Clean room ISO 8 (500 m²)

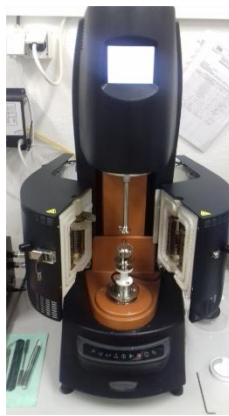
Accepted testing facility for design allowables by ESA

Test	Standard	RFA document	Project
Tensile properties	ASTM D3039	P20134-5M-D00-RFA-008	PLATO
Inter laminar shear strength	ASTM D2344	P20134-5M-D00-RFA-009	PLATO
Coefficient of thermal expansion	ASTM E228	P20134-5M-D00-RFA-010	PLATO
Dynamic mechanical analysis	ASTM D7028	P20134-5M-D00-RFA-011	PLATO
Differential scanning calorimetry	ASTM D3418	P20134-5M-D00-RFA-017	PLATO
In-plane shear strength	ASTM D3518	P20134-5M-D00-RFA-026	PLATO
Compressive properties	ASTM D3410 EN 2850	ROSE-RFA-5M-SC-006	ROSE-L
Flatwise tensile strength	ASTM C297	P20134-5M-D00-RFA-012	PLATO
Long beam flexure	ASTM D7249	P20134-5M-D00-RFA-015	PLATO
Core shear properties	ASTM C393	P20134-5M-D00-RFA-024	PLATO
Edgewise compressive strength	ASTM C364	P20134-5M-D00-RFA-027	PLATO
Pull out test	ECSS-E-HB-32-22A	P20134-5M-D00-RFA-020	PLATO
Shear test	ECSS-E-HB-32-22A ASTM F606	P20134-5M-D00-RFA-021	PLATO
Bending test	ECSS-E-HB-32-22A	P20134-5M-D00-RFA-030	PLATO
Adhesive single lap shear strength	ASTM D5868	P20134-5M-D00-RFA-025	PLATO
Peel strength of adhesive bonds	ASTM D903	P20134-5M-D00-RFA-031	PLATO
Cyclic thermal (vacuum) testing	ECSS-Q-ST-70-04C	P20134-5M-D00-RFA-028	PLATO
NDI – ultrasound (phased array)	Internal procedure ISO 9712	P20134-5M-D00-RFA-022	PLATO
NDI – thermography (flash)	Internal procedure ASTM E2582	P20134-5M-D00-RFA-023	PLATO

5M laboratories are certified according to ISO 9001 and AS 9100D.



Dilatometer



Rheometer



Tensile testing machine

Contact

5M s.r.o.
Na Záhonech 1177
686 04 Kunovice
Czech Republic

tel. +420 770 178 769
e-mail: 5M@5M.cz
www.5M.cz



References



Presentation



5M Space video

