

ECSS-Q-ST-70-04C: Thermal cycling test for the screening of space materials and processes

Purpose:

determine the ability of materials/items to withstand changes of ambient temperature under vacuum

Test conditions

Standard

100 cycles between -100 and +100 °C

Rate : 10 °C /min

Dwell time at extremes : 5 min

Vacuum better than 10^{-5} mbar

or customer of process defined

Cycling can also be performed under dry N₂

Acceptance criteria

The extend of the physical and mechanical properties to be examined before and after testing as well as the acceptance criteria are depending on the application and the customer requirements. Pass/Fail Criteria have to be defined before test.

They can include :

visual examinations, thermo-optical properties, adhesion, electrical tests, surface investigations such as SEM, AFM...

As a minimum there shall be no signs of cracking, fracture, overheating, or significant degradation of a relevant property during and upon completion of the test sequence