

PARAMETER TITLE: Maximum Surface Bioburden for Category IV Missions to Mars (Except Lander Systems with Life Detection Experiments)

| VALUE | |
|------------|---|
| UPPER | |
| ACCEPTABLE | 300 bacterial spores/m ² 3.0 x 10 ⁵ bacterial spores/ vehicle |
| LOWER | |

| APPLICATION | |
|-------------|------------------------|
| MISSION | Lander, Probe, Orbiter |
| CATEGORY | IV |
| PLANET | Mars |

PARAMETER DEFINITION: This specification establishes a maximum limit on the exposed surface bioburden for all category IV missions to Mars except lander systems with life detection experiments.

APPLICABLE SOURCE: Exposed exterior and interior spacecraft surfaces.

CONSTRAINTS: The surface bioburden for each Category IV orbiter, probe, or lander system* shall be an average of 300 bacterial spores per square meter, and the total vehicle surface burden shall be 3.0 x 10⁵ bacterial spores, as measured by microbiological assay processes and techniques used for establishing the burden levels on the Viking landers and orbiters (Ref. 1), or other improved assay methods. It shall be incumbent on the project to demonstrate equivalence for techniques other than those used on Viking.

The burden levels specified apply to organisms on the orbiter, probe, or lander system at launch. No allowance shall be made for burden reduction factors that may be associated with inflight or surface conditions on Mars (vacuum, UV, temperature, etc.)

* A lander system is defined as all subsystems included in a single landing event.

REFERENCES: 1. Viking '75 Program Microbiological Assay and Monitoring Plan, Viking '75 Project, M75-148-0.

Planetary Protection Officer

Date