1. (normative)  
   Source control drawing for coverglass  
   (SCD‑CVG) ‑ DRD
   1. DRD identification
      1. Requirement identification and source document

This DRD is called from ECSS-E-ST-20-08, requirement clause 8.3.1.2b.

* + 1. Purpose and objective

The source control drawing for coverglass (SCD-CVG) contains the specific project dependent requirements, and together with this Standard, which contains the general requirements, constitutes the whole set of requirements for the qualification and acceptance of coverglass.

The SCD-CVG can be produced as a standalone document or as part of a system-level specification document.

The information on traceability to high level requirements can be included in the SCD-CVG itself or in the requirements traceability in the design justification file (DJF, see ECSS-E-ST-10). In either case a cross-reference is made.

The SCD-CVG is a major input to the qualification plan.

* 1. Expected response
     1. Scope and content

Introduction

The SCD-CVG shall contain a description of the purpose, objective, content and the reason prompting its preparation.

Applicable and reference documents

The SCD-CVG shall list the applicable and reference documents to support the generation of the document.

Terms and definitions, abbreviated terms and symbols

The SCD-CVG shall include any additional definition, abbreviation or symbol used.

Deviations from ECSS-E-ST-20-08

In conformance with requirement 8.3.1.2c., the SCD-CVG shall include the justification for any deviation in the in-process, acceptance and qualification tests.

Materials

The SCD-CVG shall include the following coverglass materials characteristics:

Coverglass base material, including doping elements and percentage (%).

Front surface coatings (including conductive coatings).

Rear surface coatings.

Marking (coating orientation)

In conformance with clause 8.3.3, the SCD-CVG shall include a figure defining the coating orientation method for coverglass front surface coating identification.

1. This figure can be the same as the one mentioned in clause D.2.1<8.4>.

Acceptance tests

Sample size for acceptance

In conformance with requirement 8.5.1b, the SCD-CVG shall include the sample size for acceptance.

Transmission into air

The SCD-CVG shall include the same provisions as for the transmission into air for qualification tests (in conformance with clause D.2.1<8.3>).

Dimensions, weight and thickness

The SCD-CVG shall include the same provisions as for the mechanical properties for the qualification tests (in conformance with D.2.1<8.5> a1, 2 and 3).

Visual inspection

The SCD-CVG shall include the same provisions as for the visual inspection for qualification tests (in conformance with clause D.2.1<8.1>).

Humidity and temperature HT2

In conformance with clause 8.7.11.2, the SCD-CVG shall state the chemical contents (type and percentage (%) in the mist) of the humid environment when there are specific requirements on the contents of the environment.

Thermal cycling

The SCD-CVG shall include the same provisions as for the thermal cycling for qualification tests (in conformance with clause D.2.1<8>).

Qualification tests

Qualification test samples

In conformance with clause 8.6.2.2, the SCD-CVG shall include the number of the first production batches from which the coverglass qualification set is obtained.

Visual inspection

In conformance with clause 8.7.1.2, the SCD-CVG shall include:

The maximum dimensions, in mm, of scratches and digs.

The maximum number of corner chips per coverglass.

Transmission into air

Before the test the SCD-CVG shall include the transmission values shown in Table D-1.

After the test the SCD-CVG shall include the transmission values shown in Table D-2.

: Average transmission into air before test (%)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Discrete wavelength (nm) | | | | Wavelength range (nm) | | | | |
| 400 | 450 | 500 | 600 | 300-320 | 400 - 450 | 600 - 800 | 450 - 1 100 | 900 - 1 800 |
| [Insert value] | [Insert value] | [Insert value] | [Insert value] | [Insert value] | [Insert value] | [Insert value] | [Insert value] | [Insert value] |

: Maximum average deviation of transmission into air after test (%)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Discrete Wavelength (nm) | | | | Wavelength Range (nm) | | | | |
| Environmental | 400 | 450 | 500 | 600 | 300 - 320 | 400 - 450 | 600 - 800 | 450 - 1 100 | 900- 1 800 |
| Boiling water | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] |
| Humidity and temperature HT1 | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] |
| Thermal cycling | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] |
| UV exposure | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] |
| Electron irradiation | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] |
| Proton irradiation | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] | [insert value] |

Electro-optical properties

In conformance with clause 8.7.3, the SCD-CVG shall include a figure showing the nominal values and tolerances for the following electro-optical properties:

bulk resistivity and surface resistivity;

refractive index.

Mechanical properties

In conformance with clause 8.7.4, the SCD-CVG shall include a figure showing the nominal values and tolerances of the following mechanical properties:

dimensions (A: length, B: width);

weight (average per shipping lot);

density

thickness;

edge parallelism;

perpendicularity of sides.

1. This figure can be the same as in clause D.2.1<8.4>.

Reflectance properties

In conformance with clause 8.7.5, the SCD-CVG shall include a figure showing the nominal values and tolerances of the following reflectance properties:

reflectance (including wavelength);

reflectance cut-on;

reflectance cut-off;

reflectance bandwidth.

1. This figure can be the same as in clause D.2.1<8.4>.

Normal emittance

In conformance with clause 8.7.6, the SCD-CVG shall include the minimum value of the normal emittance, as a percentage (%) and the equipment used to measure the normal emittance.

Surface resistivity

In conformance with clause 8.7.7, the SCD-CVG shall include the minimum value of the surface resistivity, in Ω/cm2, and the equipment used to measure the resistivity.

Flatness or bow

In conformance with clause 8.7.8, the SCD-CVG shall include:

The minimum value of the flatness or bow, as a maximum deviation, in mm.

The maximum value of coverglass displacement, from an optically flat surface over a specified distance in mm, for localized flatness deformations, in mm.

Transmission into adhesive

In conformance with clause 8.7.9, the SCD-CVG shall include:

The values as shown in Table D-1.

The Fresnel’s equation used for the correction of the transmission for reflectance losses including all parameters.

HT1 humidity and temperature

In conformance with clause 8.7.11.1, the SCD-CVG shall state the chemical contents (type and percentage (%) in the mist) of the humid environment when there are specific requirements on the contents of the environment.

Electron irradiation

In conformance with clause 8.7.13.2, the SCD-CVG shall state the value of the nominal dose of the electron irradiation, in e- cm-2, and maximum rate, in e- cm-2 s-1.

Proton irradiation

In conformance with clause 8.7.14.2, the SCD-CVG shall state the value of the high and low energy dose of the proton irradiation in p+ cm-2 and maximum flux, in p+ cm-2 s-1.

Breaking strength

In conformance with clause 8.7.15, the SCD-CVG shall state the method to be used to test for the breaking strength and the limits of the breaking strength, in N.

Thermal cycling

In conformance with clause 8.7.16, the SCD-CVG shall state the number of thermal cycles to be performed before contact adhesion and their extreme temperatures.

* + 1. Special remarks

None.