

4.7.6 Total Flaw Depth versus Visible Flaw Depth

Empirical data from glass polishing and handling experience show that an invisible crack tail extends past the visible flaw into the glass to an approximate distance of twice the visible crack depth, making the total effective crack depth three times the visible flaw depth.

- a. The total flaw depth shall be assumed to be three times the measured visible flaw depth.
- b. All life analyses shall be based on the total flaw depth.

4.7.7 Initial Design Flaw Depth

- a. Vehicle/element windowpanes shall be designed by first choosing the limiting flaw depth, i.e., maximum initial design flaw depth.
- b. The initial design flaw depth shall be used for the initial fracture and life analysis of all glass or ceramic structural components.
- c. The initial design flaw depth shall be limited on the lower bound to 0.0457-mm (0.0018-in) total flaw depth to provide reasonable damage discovery since the windowpanes receive damage during use.

4.7.8 Flaw Shape

Long flaws with respect to the depth (length/depth ≥ 20) and flaw shape factor $Q = 1$ shall be assumed for the glass structure life predictions.

4.7.9 Flaw Growth Environment: 100 Percent Moisture

Flaw growth properties assuming 100 percent moisture shall be used for all windowpane life predictions.

4.7.10 Glass or Ceramic Structural Component Stress Distribution

- a. The stress distribution in any glass or ceramic structural component shall be determined.
- b. The applied stress distribution in the component shall be determined in a manner that considers the actual boundary conditions of the actual pressurized vehicle and includes all significant (>10 percent of total predicted stress) sources of stress in the component.
- c. The applied stress distribution shall determine the point of maximum stress on the surface of the component for the maximum combined load case.