Fracture statistic of torsion and flexure in glass rectangular bars

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Fracture statistics in rectangular bars subjected to torsion and to three-point bending are studied and the cumulative probabilities of fracture using Weibull's functions for materials that exhibit volume brittleness are determined. Diagrams of the cumulative probability fracture for commercial glass samples are plotted. The parameters of Weibull's functions regarding torsion and bending are appraised by employing lineal regression and nomograms, respectively. For torsion, dispersion of the parameters is determined by resorting to Fisher's information matrix. The size effect experimentally determined becomes half of the same theoretically determined. The different forms of the statistical functions followed by the same material in the two tests, are due to form and size influences of the cracks originating at the fracture, as well as to the finish of the sample sides.