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Mechanical vibration and shock — Analytical methods of assessing shock resistance of mechanical systems — Information exchange between suppliers and users of analyses

*Vibrations et chocs mécaniques — Méthodes analytiques de l'évaluation
de la résistance aux chocs des systèmes mécaniques — Échange
d'informations entre les fournisseurs et les utilisateurs d'analyses*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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Introduction

This International Standard specifies the elements of the essential technical dialogue that must be established between a customer (who needs an analytical assessment of shock resistance) and the supplier (the person carrying out the analysis). It is intended to be a guide on what information should be exchanged between a customer and a supplier of an assessment of the shock resistance of a mechanical system (a product or human subject) where the assessment is based on computational analysis.

Normally, and where practicable, the shock resistance of the equipment or structural components should be verified by shock tests. Test procedures and test performance are already covered in some fields by International Standards, such as

IEC 68-2-27:1987, *Environmental testing — Part 2. Tests — Test Ea and Guidance Shock*

ISO 8568:1989, *Mechanical shock — Testing machines — Characteristics and performance*

Through hands-on experience, a shock test can provide engineers with insight into the mechanical response of a machine, vehicle, structure or human subject to which an impact load has been applied. Such tests enable an engineer to determine the mechanical and functional reliability of a product and of a human subject more accurately than by computation. A product subjected to a physical test to assess its resistance to shock usually shows greater resistance than is indicated by an assessment of its resistance based on a mathematical analysis. However, there is an increasing reliance on assessments based on numerical results obtained using computational methods, primarily because of improvements in the methods by which computational analyses are accomplished and because their relationship with the real world is now understood better than before.

Analytical methods are preferred over shock tests when shock tests are not considered possible or practical, for example in cases where

- the structure or equipment for which an assessment is required is excessively large or expensive,
- an assessment of shock resistance is required as part of the design process and/or for the purpose of testing and improving the model used by the designer,
- the designer needs analytical support in deciding whether and how to test the product for which an assessment is required,
- the designer is seeking a basis for generalizing the results of shock tests performed on a product or class of products, or