
**Mechanical vibration and shock —
Guidance on safety aspects of tests and
experiments with people —**

Part 1:

**Exposure to whole-body mechanical vibration
and repeated shock**

*Vibrations et chocs mécaniques — Lignes directrices concernant
les aspects de sécurité des essais et des expérimentations réalisés sur des
sujets humains —*

*Partie 1: Exposition de l'ensemble du corps aux vibrations mécaniques et
aux chocs répétés*



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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.

International Standard ISO 13090-1 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration and shock*, Subcommittee SC 4, *Human exposure to mechanical vibration and shock*.

ISO 13090 consists of the following parts, under the general title *Mechanical vibration and shock — Guidance on safety aspects of tests and experiments with people*:

- *Part 1: Exposure to whole-body mechanical vibration and repeated shock*
- *Part 2: Exposure to whole-body impact*

Annexes A to G of this part of ISO 13090 are for information only.

Introduction

People may be exposed to mechanical vibration and repeated shock intentionally in the course of experiments to determine their response to such environments and in the course of experiments or tests performed for other purposes. It is widely accepted that exposure to mechanical vibration and repeated shock of sufficient magnitude can cause injury or impair health.

In this part of ISO 13090, guidance is provided on the safety aspects of equipment or procedures which are particular to experiments involving mechanical vibration and repeated shock and which affect the safety of those involved.

The purpose of this part of ISO 13090 is to reduce the chance of the subjects, or those monitoring or conducting the experiments, being exposed to undue risk of injury or impaired health arising from such exposure, or of injury attributable to the malfunction or poor operation of the equipment used to generate the mechanical vibration and repeated shock. Guidance on the design of equipment is included in annex E.

In accordance with accepted practice for experiments in which human subjects are involved, the experimenter should obtain approval from an independent Ethical Committee, or "Human Use Committee", giving details of the planned experiment together with a written justification. Some guidelines are included in annex F.

This part of ISO 13090 represents the best international consensus at this time and may be subject to change in the light of future developments in scientific knowledge and experience.

Mechanical vibration and shock — Guidance on safety aspects of tests and experiments with people —

Part 1:

Exposure to whole-body mechanical vibration and repeated shock

1 Scope

This part of ISO 13090 provides guidance on the safety aspects of the design of equipment and the conduct of tests and experiments in the laboratory in which human subjects¹⁾ are exposed to mechanical vibration and repeated shock.

This part of ISO 13090 is concerned with tests and experiments in which subjects are exposed to whole-body mechanical vibration and repeated shock, as described in ISO 2631-1. Local vibration is not within the scope of this part of ISO 13090, but some of the general procedures may be applicable.

The experiments to which this part of ISO 13090 is applicable include those performed to determine the response of subjects to mechanical vibration and repeated shock stimuli. They also include those experiments in which mechanical vibration and repeated shock are part of the environment in which other investigations are performed, and to experiments or tests to compare the attributes of equipment intended to alleviate the effects of mechanical vibration and repeated shock on the user (e.g. testing of seat suspensions, seat cushions and other attenuating devices, including tests according to ISO 10326-1).

NOTE Measures in addition to those described in this part of ISO 13090 may be necessary in those countries which have relevant national requirements.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 13090. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 13090 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2041:1990, *Vibration and shock — Vocabulary*.

ISO 2631-1:1997, *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 1: General requirements*.

ISO 5805:1997, *Mechanical vibration and shock — Human exposure — Vocabulary*.

ISO 10326-1:1992, *Mechanical vibration — Laboratory method for evaluating vehicle seat vibration — Part 1: Basic requirements*.

1) Hereinafter referred to as "the subject" or "subjects".