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Mechanical vibration and shock — Evaluation of human exposure to whole- body vibration —

Part 4:

Guidelines for the evaluation of the effects of vibration and rotational motion on passenger and crew comfort in fixed- guideway transport systems

*Vibrations et chocs mécaniques — Évaluation de l'exposition des individus
à des vibrations globales du corps —*

*Partie 4: Lignes directrices pour l'évaluation des effets des vibrations et du
mouvement de rotation sur le confort des passagers et du personnel dans
les systèmes de transport guidé*



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Foreword

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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.

Attention is drawn to the possibility that some of the elements of this part of ISO 2631 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 2631-4 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration and shock*, Subcommittee SC 4, *Human exposure to mechanical vibration and shock*.

ISO 2631 consists of the following parts, under the general title *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration*:

- *Part 1: General requirements*
- *Part 2: Vibration in buildings (1 Hz to 80 Hz)*
- *Part 4: Guidelines for the evaluation of the effects of vibration and rotational motion on passenger and crew comfort in fixed-guideway transport systems*

Annex A forms a normative part of this part of ISO 2631.

Introduction

The purpose of this part of ISO 2631 is to help in the design and evaluation of fixed-guideway passenger systems, with regard to the impact of vibration and repetitive motions on passenger comfort. This information is required because of the following.

Fixed-guideway vehicles provide a predictable but complex multi-axis motion environment that is a function of the guideway, vehicle and seat or berth. Passengers evaluate ride comfort not only based on motion but also on their expectations with regard to the class of service that they have purchased. The duration of the trip has not been demonstrated to be a direct factor in predicting comfort (with the possible exception of kinetosis), but the anticipated duration of the trip is related to the types of activities passengers expect to accomplish while on board. Passengers on trips of more than a few minutes may expect to read, write, eat and drink; on trips of longer duration they will expect to sleep. To the extent that ride-induced vibration interferes with these activities, passengers may rate differently the comfort of vehicles with the same motion environment but different expected levels of service or different trip durations. Passengers are likely to judge comfort based on the interaction of vibration with factors such as acoustic noise, temperature, humidity, air quality and seat design.