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Determination of imposed floor loads in production buildings and warehouses

Détermination des charges imposées aux planchers des usines et des entrepôts

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FOREWORD

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Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

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It has been approved by the Member Bodies of the following countries :

Austria	France	Romania
Belgium	Hungary	South Africa, Rep. of
Chile	India	Spain
Czechoslovakia	Ireland	Thailand
Denmark	Israel	Turkey
Egypt, Arab Rep. of	Poland	United Kingdom
Finland	Portugal	U.S.S.R.

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Australia
New Zealand
Norway
Sweden

Determination of imposed floor loads in production buildings and warehouses

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies methods of determining imposed floor loads to be adopted for certain functions of production buildings and warehouses, for design-calculation purposes.

2 DEFINITION

imposed floor load : The load, being a temporary action, assumed to be produced by the function and use of the building.

Imposed floor loads in production buildings and warehouses¹⁾ consist of :

- a) forces, including their dynamic effects, if any, due to manufacturing equipment :
 - 1) stationary plant and suspended manufacturing equipment;
 - 2) industrial pipelines;
- b) forces, including their dynamic effects, if any, due to handling equipment :
 - 1) fixed handling equipment (conveyors, elevators, rollers, etc.);
 - 2) mobile handling equipment (trucks, cars, overhead cranes, etc.);
- c) forces due to staircases, ramps and access gangways, including mobile building parts (for example partition walls);
- d) forces due to heating, ventilating and similar service equipment and associated equipment;
- e) forces due to materials and products, as well as waste products and loads due to animals that are production subjects;
- f) forces due to erection loads;
- g) forces due to seismic loads;
- h) forces due to wind loads;
- i) forces due to temperature changes and thermal movement;

j) loads due to people (operational staff, probable visitors);

k) forces of an unusual nature (for example forces resulting from the failure of hoppers or mechanical equipment).

3 GENERAL

3.1 The characteristic value of the imposed floor load is the least favourable load which has a probability, accepted from the outset, of not being exceeded during the service life of the structure. In the absence of the necessary statistical data, the characteristic value shall be chosen in accordance with the given (or expected) conditions of normal use of the building and its various floor zones (this characteristic value will be verified, if possible, during the use of the building or similar buildings).

3.2 When designing and calculating building structures, account shall be taken of possible simultaneous actions of floor loads. For certain loading conditions which are dependent on each other, the characteristic value shall be determined statistically for the least favourable combination of the loads. For floor loads whose floor position may alter, account shall be taken of the least favourable position relative to the structural members being calculated.

3.3 The influence of dynamic forces arising from operations with dynamically unbalanced equipment, from the shifting of heavy loads over the floor, or from falling or suddenly displaced goods in storage, shall be taken into consideration by calculating the structures dynamically, or by using dynamic coefficients given in special regulations.

4 ESTABLISHING OF IMPOSED FLOOR LOADS

4.1 Data concerning loads, for calculating load-bearing structures, shall include the values, directions and any application diagrams for floor loads (uniformly distributed and concentrated, static and dynamic), determined on the basis of information available concerning weight, overall dimensions, position, fixing of equipment to floors, as well

1) Garages, depending on the operational conditions, may be referred either to production buildings (garages-repair shops) or to warehouses (garages-parking areas).