



National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 13031-1:2002

ICS 65.040.30

National Standards
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**GREENHOUSES: DESIGN AND
CONSTRUCTION - PART 1: COMMERCIAL
PRODUCTION GREENHOUSES**

*This Irish Standard was
published under the
authority of the National
Standards Authority of
Ireland
and comes into effect on
March 1, 2002*

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Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13031-1

December 2001

ICS 65.040.30

English version

Greenhouses: Design and construction - Part 1: Commercial production greenhouses

Serres: Calcul et construction - Partie 1: Serres de production

Gewächshäuser: Bemessung und Konstruktion - Teil 1: Kulturgewächshäuser

This European Standard was approved by CEN on 7 April 2001.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 284 "Greenhouses", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2002, and conflicting national standards shall be withdrawn at the latest by June 2002.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

EN 13031-1:2001(E)

Introduction

Part 1 of this standard relates specifically to greenhouses used for the professional production of plants and crops where human occupancy is restricted to low levels of authorised personnel. Other parts of this European Standard are to be prepared that relate to greenhouses where general access by the public is permitted (such as those in garden centres or expositions), and to small domestic greenhouses.

This European Standard gives rules for structural design and construction of greenhouse structures for the professional production of plants and crops.

It is based on ENV 1991 "Eurocode 1: Basis of design and actions on structures" as regards the general principles and requirements for actions, mechanical resistance and stability, serviceability and durability considerations. For structural design considerations, it is similarly based on the relevant parts of ENV 1992 to ENV 1999 (Eurocodes 2 to 9).

Complementary information is provided to account for the particular requirements, functions and forms of commercial production greenhouses that distinguish them from ordinary buildings. Amongst the distinguishing functional requirements of greenhouses are the desire to optimise solar radiation transmission to create and maintain an optimal environment for the growth of plants and crops, and commonly, to support the weight of growing plants. These have implications on the form and structural design of commercial greenhouses. Greenhouse designs, based on this European Standard providing specific information about load distributions, deformation criteria and tolerances, adapting rules of Structural Eurocodes, ENV 1991 to ENV 1999, result in adequate structural safety. This is justified because in contrast to normal buildings, greenhouses have specific design working lives and human occupancy is restricted to low levels of authorised personnel.

As rules and requirements of this Standard may become adopted by other European Standards, for example the Structural Eurocodes or codes for Glass in Building - Design of glass panes, these will be replaced by a reference to the adopting European Standard.

Design criteria for the accessibility of the greenhouses, e.g. ascents, workways, walkways, or roof ladders may be part of national legislation.

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