



National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 746-5:2000

ICS 25.180.01

**INDUSTRIAL THERMOPROCESSING  
EQUIPMENT - PART 5: PARTICULAR SAFETY  
REQUIREMENTS FOR SALT BATH  
THERMOPROCESSING EQUIPMENT**

National Standards  
Authority of Ireland  
Dublin 9  
Ireland

Tel: (01) 807 3800  
Tel: (01) 807 3838

*This Irish Standard was  
published under the  
authority of the National  
Standards Authority of  
Ireland  
and comes into effect on  
November 10, 2000*

**NO COPYING WITHOUT NSAI  
PERMISSION EXCEPT AS  
PERMITTED BY COPYRIGHT  
LAW**

© NSAI 2000

**Price Code I**

Údarás um Chaighdeáin Náisiúnta na hÉireann



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 746-5**

September 2000

ICS 25.180.01

English version

**Industrial thermoprocessing equipment - Part 5: Particular safety requirements for salt bath thermoprocessing equipment**

Équipements thermiques industriels - Partie 5:  
Prescriptions particulières de sécurité pour les  
équipements thermiques à bain de sel

Industrielle Thermoprozeßanlagen - Teil 5: Besondere  
Sicherheitsanforderungen an Salzbad-  
Warmebehandlungseinrichtungen und -anlagen

This European Standard was approved by CEN on 22 November 1999

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member

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 Central Secretariat 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  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**Central Secretariat: rue de Stassart, 36 B-1050 Brussels**

## Contents

	<b>Page</b>
<b>FOREWORD</b>	<b>3</b>
<b>0 INTRODUCTION</b>	<b>4</b>
<b>1 SCOPE</b>	<b>4</b>
<b>2 NORMATIVE REFERENCES</b>	<b>4</b>
<b>3 DEFINITIONS</b>	<b>6</b>
3.1 Salt Bath Thermoprocessing Equipment	6
3.2 Components	6
<b>4 LIST OF HAZARDS</b>	<b>6</b>
<b>5 SAFETY REQUIREMENTS AND/OR MEASURES</b>	<b>9</b>
5.1 General	9
5.2 Liquids in the salt bath area	10
5.3 Leaking or Overflowing Salt	10
5.4 Slipping or falling of persons into the molten salt	11
5.5 Outlets from Cooling Systems	11
5.6 Salt Splashes	11
5.7 Overheating of the Bath	12
5.8 Fumes, Dusts and Gases	12
5.9 Breakage of fastening points	13
5.10 Breakage of protection tube of thermo-couple	13
5.11 Solidification and subsequent remelting of the salts in the bath	13
5.12 Workpiece supports	14
5.13 Ergonomic Requirements	14
<b>6 VERIFICATION OF SAFETY REQUIREMENTS AND/OR MEASURES</b>	<b>14</b>
6.1 General	14
6.2 Suggested test for safety device and automatic shut down	14
6.3 Suggested test for function of the agitator system	15
<b>7 INFORMATION FOR USE</b>	<b>15</b>
7.1 General	15
7.2 Specific information to be provided	16
<b>ANNEX A (INFORMATIVE) Examples of salt bath furnace set-ups</b>	<b>20</b>
<b>ANNEX ZA (INFORMATIVE) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives.</b>	<b>24</b>

## FOREWORD

This European Standard has been prepared by Technical Committee CEN/TC 186 "Industrial thermoprocessing - Safety", the secretariat of which is held by DIN.

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 March 2001, and conflicting national standards shall be withdrawn at the latest by March 2001.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

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.

The working group that drafted this Part of EN 746 comprised experts from the following countries: France, Germany, Italy, Sweden and United Kingdom.

This standard forms one part of a series safety standards covering Industrial Thermoprocessing Equipment.

The full list of parts of EN 746 is given below:

### EN 746 Industrial Thermoprocessing Equipment

- Part 1: Common Safety Requirements for Industrial Thermoprocessing Equipment
- Part 2: Safety Requirements for Combustion and Fuel Handling Systems
- Part 3: Safety Requirements for the Generation and Use of Atmosphere gases
- Part 4: Particular Safety Requirements for Hot Dip Galvanising Thermoprocessing Equipment
- Part 5: Particular Safety Requirements for Salt Bath Thermoprocessing Equipment
- Part 6: Particular Safety Requirements for Material Melting, Remelting and Liquid Phase Maintaining Thermoprocessing Equipment
- Part 7: Particular Safety Requirements for Vacuum Thermoprocessing Equipment
- Part 8: Particular Safety Requirements for Quenching Equipment

An assessment of the foreseeable risks arising from the use of the equipment was carried out when this standard was prepared.

The annexes A and ZA are informative.

## **0 INTRODUCTION**

The EN 746-1 General Safety Requirements contains the common safety provisions and devices for all types of industrial thermoprocessing equipment. This part of the standard details in addition those extra safety requirements which need special attention against the equipment listed in the scope.

This European Standard is a type C standard as defined in EN 292:1991.

The extent to which hazards are covered is indicated in the scope of this standard.

## **1 SCOPE**

This part of EN 746 gives the specific hazards and safety requirements for the melting and use of molten salt that shall be provided by the manufacturer for Salt Bath Industrial Thermoprocessing Equipment, whether it is used as an independent unit or an integrated part of a plant. The limits of the equipment will include any transportation equipment which is located wholly or partially in the bath.

This part of EN 746 does not cover the handling, storage, transport, disposal, transfer or regeneration of the salts and processed material outside the limits of the equipment.

This part of EN 746 applies not only to the normal operation of the equipment but also to the safety of personnel and property when foreseeable faults occur.

Examples of salt bath furnace set-ups are shown in Fig. 1, Fig. 2, Fig. 3 and Fig. 4.

NOTE: There are many variations in the design of salt bath equipment. Only three examples of the various types are given in this text.

## **2 NORMATIVE REFERENCES**

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 166	Personal eye-protection - Specifications
EN 292-1:1991	Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology
EN 292-2:1991	Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles and specifications

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-