

Guide to

Choice of chemical disinfectants

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Chemicals Standards Policy Committee (CIC/-) to Technical Committee CIC/57, upon which the following bodies were represented:

- British Association for Chemical Specialities
- British Food Manufacturing Industries Research Association
- Campden Food and Drink Research Association
- Consumer Policy Committee of BSI
- Department of Health
- Department of Trade and Industry (Laboratory of the Government Chemist)
- Health and Safety Executive
- Institute of Trading Standards Administration
- Local Authority Organizations
- Ministry of Agriculture, Fisheries and Food
- Public Health Laboratory Service
- Society for Applied Bacteriology

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Association of Metropolitan Authorities
- Association of Public Analysts
- British Medical Association
- Medical Research Council
- Society of Chemical Industry

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Foreword

This British Standard has been prepared under the direction of the Chemicals Standards Policy Committee following requests from the British Association of Chemical Specialities, the Association of Local Government Purchasing Officers and the Institution of Environmental Health Officers.

It is intended to help local government purchasing officers, institutional purchasers and users of disinfectants, who do not have specialist knowledge, to make a reasoned decision when purchasing or using chemical disinfectants. Knowledge of the capabilities and properties of disinfectants is not widespread among purchasers and users and this guide is meant to aid them in the selection of chemical disinfectants for particular uses.

This guide is an aid to purchase and is not definitive. It can only represent the range of choices at the date of publication. New agents and preparations may become available with the advance of technology. Specific problems should be taken up with individual manufacturers or professional experts.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard provides guidance for prospective purchasers on the choice of chemical disinfectants for general use.

There is a wide variety of situations where chemical disinfection is needed and a wide range of products which can be employed. It has been thought more relevant, therefore, rather than giving detailed directions, to present the guidance as a series of questions and advice which the purchaser and user should address before reaching a decision about what to purchase and how to use it.

Specific terms used in this standard are defined in BS 5283.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 What is disinfection?

2.1 General

The first questions to determine are what is meant by disinfection, and is there a need to disinfect in the particular circumstances appertaining?

The preferred, most efficient disinfection is by physical methods, i.e. the application of heat either dry or as steam or by irradiation. Temperatures of 115 °C or higher, achieved by steam under pressure (autoclaving) or dry heat as in ovens, effect the complete killing of microorganisms and thus sterilization. However, there are many circumstances where the application of those methods is not practical, necessary or desirable. It is here where chemical disinfectants come into use, their choice being the subject of this guide.

BS 5283 defines disinfection as:

the destruction of microorganisms, but not usually bacterial spores: disinfection does not necessarily kill all microorganisms, but reduces them to a level acceptable for a defined purpose, for example, a level which is harmful neither to health nor to the quality of perishable goods.

A disinfectant is defined as:

a chemical agent which under defined conditions is capable of disinfection.

Disinfection is therefore different from cleaning and the removal of grease and dirt; it implies the specific destruction of microorganisms which cleaning and the use of detergents alone will not achieve. The first question to ask therefore is:

is disinfection necessary in these circumstances, or would cleaning suffice?

Disinfection may be considered to be necessary where failure to disinfect may lead to the risk of spreading disease. To some extent this is judgemental or comes from experience on the part of the user. If organisms which cause diseases such as typhoid fever, food poisoning, tuberculosis, hepatitis, AIDS or rabies are present or suspected, it is necessary to disinfect in accordance with official medical or veterinary advice or guidance. Where there is likely to be transfer of microorganisms as with clinical thermometers or surgical or dental instruments, disinfection is also necessary if the chosen method, i.e. steam sterilization, is not or cannot be used.

The situation is not quite so clear cut when environmental surfaces such as floors and walls are involved; disinfection may not be necessary, cleaning may suffice. If cleaning by dilution or removal reduces the numbers of organisms to insignificant levels, and does not allow the transfer of these organisms to sites where they can grow and give rise to a risk situation, it is sufficient by itself.

Disinfection is certainly necessary in the food and beverage industry to prevent both the growth of disease-causing organisms and those organisms which are likely to spoil the product.

2.2 The need for disinfection

Some of the circumstances that require disinfection are as follows.

a) Where there is the presence, or suspected presence, of organisms which cause disease (pathogens).

Organisms which act as pathogens are widely distributed in the environment, being found in human and animal body fluids, vomit and faeces and surfaces they contaminate. Pathogens can also be found in the soil. Raw food products such as raw meat and vegetables are frequently contaminated. It is essential to clean thoroughly equipment and surfaces which come into contact with such matter, and disinfection is often also necessary.

b) Where there is a danger of passing infection amongst numbers of people through the use of communal equipment or facilities, e.g. implements used in food preparation, implements used in hairdressing, skin piercing equipment, communal swimming pool waters and footbaths, and changing room floors.

c) Where a build up of microorganisms is likely to occur, e.g. on cleaning equipment such as brushes and floor mops.

d) Where a build up of microorganisms is producing odour and cleaning does not overcome the problem.