

BS 8489-6:2016



BSI Standards Publication

Fixed fire protection systems – Industrial and commercial watermist systems

Part 6: Fire performance tests and requirements for watermist systems for the protection of industrial oil cookers

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Summary of pages

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Foreword

Publishing information

This part of BS 8489 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 May 2016. It was prepared by Subcommittee FSH/18/5, *Watermist systems*, under the authority of Technical Committee FSH/18, *Fixed fire fighting systems*. A list of organizations represented on these committees can be obtained on request to their secretary.

Supersession

This part of BS 8489 supersedes DD 8489-6:2011, which is withdrawn.

Relationship with other publications

BS 8489 is published in a series of parts:

- Part 1: *Code of practice for design and installation*;
- Part 4: *Tests and requirements for watermist systems for local applications involving flammable liquid fires*;
- Part 5: *Tests and requirements for watermist systems for the protection of combustion turbines and machinery spaces with volumes up to and including 80 m³*;
- Part 6: *Tests and requirements for watermist systems for the protection of industrial oil cookers*;
- Part 7: *Tests and requirements for watermist systems for the protection of low hazard occupancies*.

BS 8489-6 is intended to be read in conjunction with BS 8489-1.

Information about this document

This document converts DD 8489-6 into a full British Standard.

Third-party testing/certification. Users of this British Standard are advised to consider the desirability of third-party testing/certification of conformity with this British Standard.

Use of this document

This British Standard is intended for use by manufacturers, designers and installers of watermist systems, and for authorities having jurisdiction.

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its methods are expressed as a set of instructions, a description, or in sentences in which the principal auxiliary verb is "shall". Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. "organization" rather than "organisation").

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

0 Introduction

Industrial oil cookers are typically non-insulated conveyORIZED fryers, or occasional batch kettles, used in food processing plants for chicken, fish, potato products (e.g. fries/chips), doughnuts and many other food products. These cookers are extremely different in size, configuration and construction from standard kitchen or restaurant oil cookers or fryers, and require a different type of extinguishment system.

Industrial oil cookers normally have large cooking surfaces; from 4.6 square metres to several hundred square metres. They contain from a few hundred litres up to approximately 18 900 litres of cooking oil. Industrial oil cookers (except for some batch kettles) typically have moveable covers, or hoods, that can be hydraulically operated. The hood is generally in a closed position in a normal operation period; however, the hood might be open from time to time as part of a routine maintenance. There are also exhaust stacks connected on top of the hood.

The most severe fire incident involving industrial oil cookers is a fire caused by overheating the cooking oil until it reaches its auto-ignition temperature (AIT). Even though installing an interlocking system to prevent the oil from reaching its AIT is a normal practice in the industry, an AIT fire can happen as a result of a system malfunction or simple human error. Thus, all the performance tests proposed in this part of BS 8489 require extinguishment of an AIT fire. The AIT fire is particularly challenging because of its rapid spread of flame over the oil surface and its difficulty in extinguishment, as it requires flame extinction over the entire surface with simultaneous rapid cooling to prevent re-ignition. Exhaust air fans need to be interlocked to shut down automatically upon fire detection or operation of the watermist system.

Whilst this fire test protocol specifically relates to the oil cooker itself, the overall oil cooker watermist fire protection system is also expected to provide protection of the adjacent conveyors, fines boxes and exhaust air duct (see Figure 1).

1 Scope

This part of BS 8489 describes tests and specifies requirements for industrial and commercial watermist systems for the protection of industrial oil cookers.

This part of BS 8489 does not cover external conveyors, fines boxes, oil transfer equipment or supplementary exhaust duct protection.

The tests and requirements given in this part of BS 8489 apply only to the specific fire scenarios described, i.e. with no obstructions between the watermist nozzles and the oil surface when the hood is in either the raised or lowered position. Configurations with obstructions are not covered in this part of BS 8489.

This part of BS 8489 is applicable to the protection of the industrial oil cookers only, and does not include the protection of other equipment such as exhaust ducts, heaters, heat exchangers and food processing areas.