

SINGAPORE STANDARD
SS 497 : 2002
(ICS 53.020)

SPECIFICATION FOR
**Design, safe use and
maintenance of overhead
travelling cranes**

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Foreword

This Singapore Standard was prepared by the Technical Committee on Lifting and Hoisting Systems under the direction of the General Engineering and Safety Standards Committee.

This standard replaces SS 120 : 1975 which was only applicable to electric overhead travelling cranes. SS 120 was reviewed in 2002 to keep up with the technological developments in modern overhead travelling cranes (OTC). The new standard is aligned with current industrial practices on the safe use, maintenance and testing of OTC. The salient points are as follows:

- (a) The responsibilities of the relevant parties who are involved in the design, use, maintenance, testing and inspection of OTC are delineated.
- (b) The requirements under each clause are elaborated to provide a common understanding amongst the various interested parties.
- (c) The in-service wind speeds in Table 10 are based on the data obtained from the Singapore Meteorological Service for the period between 1983 and 1994.
- (d) Section Two covers the basic design considerations for the crane. Where the design and calculations are based on an overseas / established crane standard, there shall be no mix-and-match of the data quoted in this Singapore Standard and the aforesaid crane standard (e.g. the load factors, coefficients, etc).
- (e) The minimum drum-to-rope and sheave-to-rope ratios to be used on the crane depend on classification of the crane mechanism.
- (f) Anti-collision devices have been introduced as part of the crane mechanism when two or more cranes / trolleys operate on a common runway / bridge structure.
- (g) It is now compulsory to install an emergency stop button.
- (h) When tested with the SWL, the maximum deflection at the centre of the bridge shall not exceed 1/750 of the span.

In preparing this standard, reference was made to the following standards:

- | | | |
|-----|-----------|---|
| (a) | AS 1418 | Cranes (including hoists and winches)
Part 1 : 1994 General requirements
Part 3 : 1997 Bridge, gantry and portal cranes (including container cranes) |
| (b) | BS 2573 | Rules for the design of cranes
Part 1 : 1983 Classification, stress calculations and design criteria for structures
Part 2 : 1980 Classification, stress calculations and design criteria of mechanisms |
| (c) | DIN 10518 | Cranes – Steel structures
Part 1 : 1994 Verification and analyses |

(d)	IEC 60204	Safety of machinery – Electrical equipment of machines Part 32 : 1998 Requirements for hoisting machines
(e)	ISO 2408 : 1985	Steel wire ropes for general purposes - Characteristics
(f)	ISO 4301	Cranes – Classification Part 1 : 1986 – General Part 5 : 1991 – Overhead travelling and portal bridge cranes
(g)	ISO 4308	Cranes and lifting appliances – Selection of wire ropes Part 1 : 1986 – General
(h)	ISO 4310 : 1981	Cranes – Test code and procedures
(i)	ISO 8686	Cranes – Design principles for loads and load combinations Part 1 : 1989 General Part 5 : 1992 Overhead travelling and portal bridge cranes
(j)	ISO 9927	Cranes – Inspections Part 1 : 1994 General
(k)	ISO 10245	Cranes – Limiting and indicating devices Part 1 : 1994 General Part 5 : 1995 Overhead travelling and portal bridge cranes
(l)	ISO 10972	Cranes – Requirements for mechanisms Part 1 : 1998 General
(m)	ISO 11660	Cranes – Access, guards and restraints Part 5 : 2001 Bridge and gantry cranes

Acknowledgement is made for the use of information from the above standards.

NOTE

1. *Singapore Standards are subject to periodic review to keep abreast of technological changes and new technical developments. The revisions of Singapore Standards are announced through the issue of either amendment slips or revised editions.*
2. *Compliance with a Singapore Standard does not exempt users from legal obligations.*

Specification for design, safe use and maintenance of overhead travelling cranes

Section One – General

1 Scope

This standard applies to all types of overhead travelling cranes as defined in 2.18. It specifies the basic requirements of overhead travelling cranes (hereinafter called 'cranes') and lays down the responsibilities of the various parties involved.

This standard does not apply to jib cranes, gantry cranes and monorail hoists.

NOTE 1 – The titles of the publications referred to in this standard are listed at the end of the standard.

NOTE 2 – Annex D is informative and could be used as a reference when ordering an overhead travelling crane.