

Australian Standard<sup>®</sup>

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**SEA-WATER TEMPERATURES  
FOR COOLING OF SHIPS  
MACHINERY**

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This Australian standard was prepared by Committee MS/22, Shipbuilding. It was approved on behalf of the Council of the Standards Association of Australia on 22 February 1983 and published on 6 June 1983.

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American Bureau of Shipping  
Australian Chamber of Shipping  
Australian Shipbuilders Association  
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| First published . . . . . | 1976 |
| Second edition . . . . .  | 1983 |

PUBLISHED BY STANDARDS AUSTRALIA  
(STANDARDS ASSOCIATION OF AUSTRALIA)  
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 2946 6

## PREFACE

This edition of this standard was prepared by the Association's Committee on Shipbuilding, to supersede AS 1806—1976. There have been no technical changes to the standard, but some minor corrections and updating of references to Australian standards have been incorporated.

This standard was prepared initially from information supplied by the organizations shown in the Annex.

Sea-water temperatures are affected by the prevailing ocean currents. On the east coast of Australia, these currents are fairly well defined. The East Australian Current which results from the South Equatorial Current flows southwards over most of the coast except during the winter months when it partly diverges north from about latitude 20°S. On the southern coast the prevailing current is the West Wind Drift which converges with the East Australian Current. On the west coast the current system is not well defined, particularly in the north west area.

The maximum temperatures are obtained in February/March, and the minimum in July/August. Under normal surface conditions, the temperature is reasonably constant down to a depth of approximately 17 m, after which it decreases more markedly.

As there is a marked variability in sea-water surface temperatures, there were differences in the figures reported by contributors. It has therefore been necessary to effect some correlation between these figures. However, where the differences in temperatures reported have been equally well substantiated, the higher value has been taken. The temperatures quoted may therefore be expected to be the highest which will be regularly obtained under normal conditions. Occasionally under abnormal conditions some higher figures may be obtained. For example, there have been some reports of temperatures up to 35°C in the Arafura Sea and on the north west coast. The maximum and minimum global sea water temperatures are reputed to be 35.5°C in the Persian Gulf, and -2° in the polar seas.

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## STANDARDS ASSOCIATION OF AUSTRALIA

**Australian Standard**

for

**SEA-WATER TEMPERATURES FOR COOLING OF SHIPS MACHINERY**

**1 SCOPE.** This standard gives the mean and maximum sea-water temperatures on the Australian coast, at sea and in the principal ports, and also the mean and maximum global sea-water temperatures.

The purpose of the standard is to provide data for specifications involving the cooling of ships machinery.

The standard makes recommendations on the sea-water temperatures which should be specified in regard to the cooling of various types of ships machinery.

**2 REFERENCED DOCUMENT.** The following standard is referred to in this standard:

AS 1921 Air Conditioning and Ventilation in Ships—Cabins and Living Spaces of Merchant Ships

**3 MEAN AND MAXIMUM SEA-WATER TEMPERATURES ON THE AUSTRALIAN COAST AT SEA.** The mean and maximum sea-water temperatures at designated positions on the Australian coast at sea are given in Table 1.

The mean and maximum sea-water temperatures over the whole Australian coast are 21°C and 32°C respectively, to the nearest °C.

**4 MEAN AND MAXIMUM SEA-WATER TEMPERATURES IN PORTS AND AT PARTICULAR LOCATIONS.** The mean and maximum sea-water temperatures in ports and at particular locations are given in Table 2.

**5 MEAN AND MAXIMUM SEA-WATER TEMPERATURES—GLOBAL.** The global mean and maximum sea-water temperatures may be taken as 24°C and 32°C respectively.

**6 APPLICATION.**

**6.1 Mean Temperatures.** Mean sea-water temperatures should be specified in respect of cooling for the following, subject to the specified temperature not exceeding the global mean sea-water temperature, and being suited to the requirements of the particular machine:

- (a) Condenser for main steam turbine.
- (b) Condenser for auxiliary steam turbine.

The mean sea-water temperature at the latitude or location at which the ship will usually be operating should be taken. If the ship is to operate globally, the global mean temperature should be taken.

**6.2 Maximum Temperatures.** Maximum sea-water temperatures should be specified in respect of cooling for the following:

- (a) Main internal combustion engine.
- (b) Auxiliary internal combustion engine.
- (c) Main air compressor.
- (d) Desalination equipment.
- (e) Oil cooler for main steam turbine.
- (f) Oil cooler for auxiliary steam turbine.

The maximum sea-water temperature likely to be encountered during the intended operation of the ship should be specified.

**6.3 Temperatures for Airconditioning and Refrigeration Equipment.** The temperatures specified for the cooling of airconditioning and refrigeration equipment should be in accordance with AS 1921.

**6.4 Temperatures for Other Equipment.** For equipment other than that referred to above, the maximum sea-water temperature minus 2°C should be specified.