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British Standard Recommendations for

Treatment of water for marine boilers

Recommandations relatives au traitement des eaux destinées aux chaudières marines

Empfehlungen für die Behandlung von Wasser für Kessel auf Schiffen

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Foreword

This British Standard, having been prepared under the direction of the Environment and Pollution Standards Committee, supersedes BS 1170 : 1968 which is withdrawn.

The first British Standard intended as an introduction to water treatment for marine boilers was published in December 1947. Since that time marine engineers have come to realize that the water in ships' boilers has to conform to recognized standards if efficiency is to be maintained. Since the publication of BS 1170 : 1968, boiler pressures and steam temperatures have again been increased in the never-ending search for more economic working. These increases in pressure and temperature have demanded a purer supply of water and more sophisticated treatment. This revised edition caters for boilers operating at pressures up to 130 bar* by adding a sixth range of pressure to the five previously dealt with. For boilers operating above 130 bar, the control of treatment and the requirements for the limits of impurities in the feed water would be even more stringent.

Other changes made for this edition include considerable expansion of the glossary of terms (appendix A), explanation of the concepts of pH value, acidity and alkalinity (appendix B), inclusion of a section on safe handling of chemicals (appendix C), new ship-board methods for determination of copper, iron, silica and suspended solids (appendix D), 16 additions to the list of reagents (appendix

E), and the inclusion of a brief outline on on-line instrumentation and automation (appendix F).

Each of the control tests in appendix D is preceded by a short introduction to the principles underlying the chemical reactions. No method of test for nitrate is available that can readily be carried out on board ship; to obtain an estimate of this contaminant, a sample is taken and sent ashore for analysis.

The standard should enable an engineer to control boiler water and feed water treatment under all normal working conditions. Detailed instructions for use when conditions are abnormal are beyond the scope of this standard and expert advice should be obtained from qualified advisers.

Basic methods of chemical treatment are described from which it should be possible to select a suitable treatment for most ships, bearing in mind the quality of make-up feed water, the boiler pressure and whether a deaerator is fitted or not. In all cases alkaline treatment chemicals are used, often with various oxygen scavengers. The use of neutralizing and filming amines for protection against corrosion of the steam and condensate systems, hydrazine for oxygen removal and anti-foams for preventing carry-over are included.

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

*1 bar = 10^5 N/m² = 100 kPa = approximately 14 lbf/in².