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SINGAPORE STANDARD

Specification for different grades of industrial recycled water from refineries, and petrochemical, chemical and utility plants

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The Technical Committee on Water appointed by the Chemical Standards Committee and responsible for the preparation of this standard consists of representatives from the following organisations:

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Nanyang Environment and Water Research Institute
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Sembcorp Industries Ltd
Singapore Refining Company Pte Ltd
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Foreword

This Singapore Standard was prepared by the Working Group on Industrial Water Re-use appointed by the Technical Committee on Water under the direction of the Chemical Standards Committee.

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

China Standard GB/T 18920-2002	The reuse of urban recycling water – Water quality standard for urban miscellaneous water consumption
China Standard GB/T 19923-2005	The reuse of urban recycling water – Water quality standard for industrial uses

Guideline for quality standards for water reuse in Europe, 2006, AQUAREC

Guidelines for water reuse, 2012, USEPA

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

At the time of publication, this standard is expected to be used by refineries, petrochemical, chemical and utility plants, water technology providers, testing laboratories as well as related government agencies.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

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0 Introduction

The reuse of industrial wastewater plays an important part in reducing water demand in Singapore. The country has been reusing water for indirect, non-potable use since the introduction of NEWater in 2002. PUB, Singapore's national water agency, currently supplies non-potable water in the form of Industrial Water or NEWater to industries for cooling and process use on the main island as well as on Jurong Island. In addition, private utility providers such as Sembcorp Utilities, YTL Power Seraya and Tuas Power also provide high-grade industrial water to their customers on Jurong Island. This Singapore Standard provides guidance on how industries can adopt good practices relating to water reuse at their premises.

This Singapore Standard advocates that companies apply the concept of in-situ water management and conservation by first taking stock of their total water consumption in their installations. This information and data can be gathered through a water audit that will ascertain the baseline levels of their water needs. The companies can then explore opportunities to avoid, reduce and/or replace their water consumption by implementing water conservation measures, utilising alternate types of water (for example, seawater for cooling purposes), or using cleaner and more efficient production initiatives.

After implementing these initiatives, companies can consider recycling and reusing their wastewater. The opportunities for industrial wastewater recycling and reuse are tremendous. With the appropriate technology, all industrial wastewater can potentially be treated to a quality suitable for reuse in other applications. The practice of industrial wastewater recycling will reduce the need for fresh water and tilt the balance towards improved resource efficiency. Therefore, this Singapore Standard also provides guidance for the quality of water required by common industrial processes, and the technologies to recycle industrial wastewater.

While industrial wastewater recycling may be technically easy to implement, it is highly recommended that companies establish a corresponding management system to manage the risk of using industrial recycled water. This Singapore Standard concludes by considering these issues from the perspectives of risk management, water quality monitoring and incident management.

1 Scope

This Singapore Standard specifies the requirements for the different grades of industrial recycled water that has been treated from the process and non-process wastewater streams arising from refineries, and petrochemical, chemical and utility plants. It also covers the possible uses of industrial recycled water from these plants.

In addition, it also briefly covers the proper disposal and discharge of the residual waste generated from the wastewater treatment plants.

2 Normative references

There are no normative references cited in this standard.

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