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DRAFT TANZANIA STANDARD

Guidelines for softening and desalination of industrial wastewater for reuse

TANZANIA BUREAU OF STANDARDS

National foreword

The Tanzania Bureau of Standards is the statutory national standards body for Tanzania, established under the Act.No.3 of 1975, amended by Act.No.2 of 2009.

This draft Tanzania standard is being prepared by Wastewater Technical Committee, under the supervision of the Environmental Management Divisional Standards Committee (EMDC)

This draft Tanzania Standard is identical to ISO 23044:2020-*Guidelines for softening and desalination of industrial wastewater for reuse*, published by the International Organization for Standardization (ISO).

Terminology and conventions

Some terminology and certain conventions in the ISO standards are not identical with those used in Tanzania Standards and attention is drawn to the following:

The comma (,) has been used as a decimal marker for metric dimensions. In Tanzania Standards, it is current practice to use a full point (.) on the base line as the decimal marker and

Wherever the words "International Standard" appear in this Tanzania Standard, they should be interpreted as "Tanzania Standard".

Scope

This document provides guidance on, the evaluation and comparison of wastewater softening and desalination processes for industrial wastewater reclamation and reuse with specific consideration for the following six: 1) chemical precipitation; 2) ion exchange; 3) nanofiltration (NF); 4) reverse osmosis (RO); 5) electrodialysis (ED) and 6) electrodeionization (EDI). This document provides guidance on the characterisation of both influent and effluent quality (e.g. hardness, alkalinity, etc.) and the effects of these processes on those constituents. The purpose of softening and desalination is only for the reuse usages that have requirements for hardness and salinity, such as cooling circulating water, boiler water, production process water, and cleaning water.

This document includes the following sub-processes of wastewater softening and desalination processes:

- a) wastewater softening processes based on chemical precipitation, ion exchange and NF, which aim to remove hardness ions, such as Mg^{2+} and Ca^{2+} ;
- b) desalination processes based on ion exchange, RO, ED, EDI and NF, which aim to remove the most of total dissolved solids (TDS).

This document is applicable to:

- a) industrial saline wastewater, which has been pre-treated to remove most of the organic matters if necessary;
- b) the selection or design of wastewater softening and desalination processes for reuse of wastewater from industries.