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Testing method for detection of sulfur bacteria in industrial water

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from Japan Industrial Water Association (JIWA)/Japanese Standards Association (JSA), with a draft of Industrial Standard based on the provision of Article 12 Clause 1 of the Industrial Standardization Law. Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

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In the event of any doubts arising as to the contents,
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Testing method for detection of sulfur bacteria in industrial water

1 Scope This Japanese Industrial Standard specifies the testing method for the qualitative judgement of the existence of sulfur bacteria in industrial water by microscope.

2 Normative references The standards listed in attached table 1 contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) shall be applied.

3 Definitions For the purposes of this Standard, the definitions given in **JIS K 0101**, **JIS K 0102**, **JIS K 0211**, **JIS K 0550** and the following definition apply.

3.1 sulfur bacteria the generic term of the chemically synthetic autotrophy bacteria obtaining energy by oxidizing sulfur or sulfur compound and the bacteria group capable of oxidizing mainly hydrogen disulfide to make sulfur and capable of oxidizing further to sulfuric acid

Remarks : The sulfur bacteria are called sulfur-oxidizing bacteria and roughly divided into colourless sulfur bacteria and coloured sulfur bacteria by the existence of pigment.

There are *Beggiatoa*, *Thiothrix*, *Thioploca*, etc. as aerobic bacteria to form filamentous form, for colourless sulfur bacteria, and the genus of *Thiobacillus*, *Achromatium* are known as bacteria to show bacillary form. There are the genus such as anaerobic, crimson coloured bacillary *Chromatium*, *Thiocapsa* and green, bacillary *Chlorobium*, for coloured sulfur bacteria. The coloured sulfur bacteria are also called photosynthetic bacteria because of containing photosynthetic pigment (bacterio chlorophyl) and photosynthesizing.

The bacteria causing obstacle in industrial water is mainly the kind of form filamentous form of which the representative is *Beggiatoa* genes. The size of *Beggiatoa* cell is 1 μm to 7 μm in width and 1.5 μm to 20 μm in length, many cells stand in a row and form long filamentous form without branching, and move slowly just like sliding. A large number of filamentous forms gather and constitute a light grey, thin membranous (cobweb like) colony. *Oscillatoria* [blue-green algae] resembles filamentous form, however, filamentous form is almost colourless because of having no photosynthetic pigment, and many particles of sulfur are found in filamentous form, therefore they can be distinguished.

The genus of *Thiothrix* resembling *Beggiatoa* is often found. The cells of *Thiothrix* are 0.5 μm to 2.5 μm in width and 1.5 μm to 15 μm in length and stand in a row to form a long filamentous form without branching. The filamentous form does not move, adheres to others