भारतीय मानक
Indian Standard

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पानी की गुणवत्ता सहिष्णुता के लिए भंडारण बैटरी — विशिष्टि

(तीसरा पुनरीक्षण)

Quality Tolerances for Water for Storage Batteries — Specification

(Third Revision)

ICS 29.220.10

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Water Quality for Industrial Purposes Sectional Committee, CHD 13

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Water Quality for Industrial Purposes Sectional Committee had been approved by the Chemical Division Council.

Water for storage batteries could be obtained either through the process of distillation or by any other process by which the dissolved substances in it are removed, for example, by demineralization or with the help of ion-exchange, electro dialysis and reverse osmosis membrane.

This standard was first published in 1957 subsequently, revised in 1964 and 1993. In this revision, limits of chloride, heavy metals, iron and manganese oxidisable matter, total dissolved solid have been deleted.

The battery water for electrolyte dilution or topping up is now produced by deionization of water. In view of this, in present revision, the limit of specific electrical conductivity has been reduced. Also reference of the latest method of test has been given.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

QUALITY TOLERANCES FOR WATER FOR STORAGE BATTERIES — SPECIFICATION

(Third Revision)

1 SCOPE

This standard prescribes requirements and methods of sampling and test for water intended for use in storage batteries (lead-acid type).

2 REFERENCES

The standards listed below contain provisions which, through reference in this text, which constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

IS No.	*Title*
1070 : 1992	Reagent grade water (*third revision*)
3025	Methods of sampling and test (physical and chemical) for water and wastewater:
(Part 11) : 1983	*p*H value (*first revision*)
(Part 14) : 2013/ ISO 7888 : 1985	Specific conductance (wheatstone bridge, conductance cell) (*second revision*)

3 REQUIREMENTS

3.1 Description

The material shall be clear, odourless, tasteless, colourless and free from suspended impurities.

3.2 The material shall also comply with the requirements given in Table 1. Reference to the relevant method of tests of IS 3025 is given in col 4 of Table 1.

4 PACKING AND MARKING

4.1 The material shall be packed in stoneware jars or glass carboys or any other suitable containers as agreed to between the purchaser and the supplier.

4.2 The containers shall be securely closed and legibly marked with the following information:

a) Indication of source of manufacture;
b) Quantity of material in the container;
c) Recognized trade-mark, if any; and
d) Identification in code or otherwise to enable the date and lot to be traced back from records.

Table 1 Requirements for Water for Storage Batteries
(*Clauses* 3.2, 5.2 *and* 5.3)

Sl No.	Characteristic	Require-ment	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	*p*H	6.5–7.5	IS 3025 (Part 11)
ii)	Specific electrical conductivity at 25°C (microsiemens per cm), *Max*	0.5	IS 3025 (Part 14)

NOTE — Hardness, heavy metals, iron etc are not expected in water of conductivity 0.5 µs/cm.

4.3 BIS Certification Marking

The containers may also be marked with the Standard Mark. The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the license for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

5 SAMPLING

5.1 Preparation of Test Samples

Representative test samples of the material shall be prepared as prescribed in Annex A.

5.2 Number of Tests

Tests for all the characteristics given in **3.1**, **3.2** and Table 1 shall be carried out on the composite sample (*see* **A-3.2**).

5.3 Criteria for Conformity

The material shall be considered as conforming to this standard if the composite sample complies with all the requirements given in **3.1**, **3.2** and in Table 1.

ANNEX A

(*Clauses* 5.1 *and* 5.2)

SAMPLING OF WATER FOR STORAGE BATTERIES

A-1 GENERAL REQUIREMENTS OF SAMPLING

In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed.

A-1.1 Samples shall not be taken in an exposed place.

A-1.2 The sampling instruments shall be clean. Before use these shall also be washed several times with the material to be sampled.

A-1.3 Precautions shall be taken to protect the sample, the material being sampled, the sampling instruments and the containers for samples from adventitious contamination.

A-1.4 To draw a representative sample, the contents of each container selected for sampling shall be mixed as thoroughly as possible by suitable means.

A-1.5 The samples shall be placed in clean and air-tight glass or other suitable containers on which the material has no action and which have been previously washed several times with the material to be sampled.

A-1.6 The sample containers shall be of such a size that they are filled by the sample, leaving ullage of 10 percent.

A-1.7 Each sample container shall be sealed air-tight after filling, and marked with full details of sampling, the date of sampling and the year of manufacture of the material.

A-2 SCALE OF SAMPLING

A-2.1 Lot

A-2.1.1 All containers in a single consignment of the material drawn from a single batch of manufacture shall constitute a lot. If a consignment is declared or known to consist of different batches of manufacture, the batches shall be marked separately and the groups of containers in each batch shall constitute separate lots.

A-2.2 For ascertaining conformity of the material in a lot to the requirements of this specification, samples shall be tested for each lot separately. The number of containers (n) to be chosen from the lot shall depend on the size of lot (N) and shall be as specified in Table 2.

A-2.2.1 In order to ensure randomness of selection, the following procedure shall be adopted. Arrange all the containers in the lot in a systematic manner and starting from any one, count them as 1, 2, 3... up to r, where r is the integral part of N/n (N and n being the lot size and sample size respectively). Every rth container thus counted shall be withdrawn to constitute the test sample.

Table 2 Number of Containers to be Selected from Lots of Different Sizes

(*Clause* A-2.2)

Lot Size *N* (1)	Sample Size *n* (2)
3 to 15	3
16 to 40	4
41 to 65	5
66 to 110	7
111 and above	10

A-3 PREPARATION OF TEST SAMPLES

A-3.1 From each of the containers selected according to **A-2.2.1**, equal portions of the material shall be taken out so that the total quantity collected from all the containers is about 8 litres. This shall be the composite sample.

A-3.2 The composite sample shall be divided into 3 test samples not less than 2 litres each. These test samples shall be transferred immediately to thoroughly washed bottles which are sealed air-tight with glass stoppers and marked with the particulars of sampling as given in **A-1.7**. One test sample shall be sent to the purchaser and one to the supplier. The third test sample bearing the seals of the purchaser and the supplier shall constitute the referee sample, to be used in case of dispute.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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