
Test enclosures of non-injection type for constant relative humidity

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**

[SIST HD 98 S1:2003](https://standards.iteh.ai/catalog/standards/sist/21729336-a214-4fef-a962-94624f4e8b2b/sist-hd-98-s1-2003)

<https://standards.iteh.ai/catalog/standards/sist/21729336-a214-4fef-a962-94624f4e8b2b/sist-hd-98-s1-2003>

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

SIST HD 98 S1:2003

<https://standards.iteh.ai/catalog/standards/sist/21729336-a214-4fef-a962-94624f4e8b2b/sist-hd-98-s1-2003>

=====

EUROPEAN COMMITTEE FOR ELECTROTECHNICAL STANDARDIZATION

CENELEC HARMONIZATION DOCUMENT

HD 98

IEC 260 (1968 - 1st edition)

Test enclosures of non-injection type for constant relative humidity

This Harmonization Document was adopted by CENELEC on 1974-05-07.

The National Electrotechnical Committees, members of CENELEC, in

A : Austria
 B : Belgium
 CH : Switzerland
 D : Germany
 DK : Denmark
 F : France
 I : Italy
 IRL : Ireland
 N : Norway
 NL : Netherlands
 P : Portugal
 S : Sweden
 SF : Finland
 UK : United Kingdom

Reference of the
 relevant
 National Harmonized
 Standards
 overleaf

are obliged, in accordance with the CENELEC Internal Regulations, to implement this Harmonization Document in their respective country by

- Issuing harmonized national standard(s) and/or
- Withdrawing conflicting national standard(s)

Latest date of implementation : 1976-01-01

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

SIST HD 98 S1:2003

<https://standards.iteh.ai/catalog/standards/sist/21729336-a214-4fef-a962-94624f4e8b2b/sist-hd-98-s1-2003>

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

(affiliée à l'Organisation Internationale de Normalisation — ISO)

RAPPORT DE LA CEI

INTERNATIONAL ELECTROTECHNICAL COMMISSION

(affiliated to the International Organization for Standardization — ISO)

IEC REPORT

Publication 260

Première édition — First edition

1968

**Enceintes d'épreuve à humidité relative constante fonctionnant
sans injection de vapeur**

iTeh STANDARD PREVIEW

(standards.iteh.ai)

Test enclosures of non-injection type for constant relative

humidity

<https://standards.iteh.ai/catalog/standards/sist/21729336-a214-4fef-a962-94624f4e8b2b/sist-hd-98-s1-2003>



Droits de reproduction réservés — Copyright - all rights reserved

Aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'éditeur.

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Bureau Central de la Commission Electrotechnique Internationale

1, rue de Varembé

Genève, Suisse

Prix Fr. s. 21.—
Price S. Fr.

CONTENTS

FOREWORD	5
PREFACE	5
Clause	Page
1. Scope	7
2. Explanation of terms	7
3. Methods to achieve the required relative humidity	7
3.1 Method A — Saturated salt solutions	7
3.2 Method B — Glycerine-water mixtures	11
3.3 Comparison of methods A and B	13
4. Precautions for using the enclosure	15
5. Constructional requirements	15
5.1 General	15
5.2 Avoidance of condensation	15
5.3 Air circulation	17
5.4 Salt tray	17
5.5 Temperature setting	17
6. Tests to be performed on the chamber	17
6.1 General	17
6.2 Temperature deviation	21
6.3 Temperature fluctuation	23
6.4 Long-term stability test	23
6.5 Test for reproducibility of enclosure conditions	25
6.6 Test for recovery time	25
6.7 Measurement of effect of moisture transfer on conditions in the enclosure	27
7. Information to be given by the supplier	29

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST HD 98 S1:2003

[https://standards.iteh.ai/catalog/standards/sist/21729336-a214-4fef-a962-](https://standards.iteh.ai/catalog/standards/sist/21729336-a214-4fef-a962-946244e8b2b/sist-hd-98-s1-2003)

[946244e8b2b/sist-hd-98-s1-2003](https://standards.iteh.ai/catalog/standards/sist/21729336-a214-4fef-a962-946244e8b2b/sist-hd-98-s1-2003)



INTERNATIONAL ELECTROTECHNICAL COMMISSION

TEST ENCLOSURES OF NON-INJECTION TYPE FOR CONSTANT
RELATIVE HUMIDITY

FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote this international unification, the IEC expresses the wish that all National Committees having as yet no national rules, when preparing such rules, should use the IEC recommendations as the fundamental basis for these rules in so far as national conditions will permit.
- 4) The desirability is recognized of extending international agreement on these matters through an endeavour to harmonize national standardization rules with these recommendations in so far as national conditions will permit. The National Committees pledge their influence towards that end.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

PREFACE

[SIST HD 98 SL 2003](https://standards.iteh.ai/catalog/standards/sist/91729336-a214-46ff-8067-9462461e8b25/sist-hd-98-sl-2003)

This Report has been prepared by Sub-Committee 50B, Climatic Tests, of IEC Technical Committee No. 50, Environmental Testing. It is intended for interim use until its contents are covered by an ISO Recommendation.

A first draft was discussed at the meeting held in Aix-les-Bains in 1964, as a result of which a new draft was submitted to the National Committees for approval under the Six Months' Rule in April 1965. The comments received were discussed at the meeting held in Tokyo in 1965, and the resulting amendments were submitted to the National Committees for approval under the Two Months' Procedure in May 1966.

The following countries voted explicitly in favour of publication:

Australia	Netherlands
Austria	Norway
Belgium	South Africa
Czechoslovakia	Sweden
Denmark	Switzerland
Finland	Turkey
Germany	Union of Soviet Socialist Republics
Italy	United Kingdom
Japan	United States of America

TEST ENCLOSURES OF NON-INJECTION TYPE FOR CONSTANT RELATIVE HUMIDITY

1. Scope

This Report specifies performance and constructional requirements for conditioning enclosures with forced air circulation which may be used to carry out humidity tests on components or equipments or similar articles. The relative humidity of the air in the enclosure is controlled by the use of saturated salt solutions or glycerine-water mixtures.

This Report covers enclosures operating at a nominally constant temperature within the temperature range from near ambient to $+ 60^{\circ}\text{C}$ and at a nominally constant relative humidity.

Note. — Enclosures designed to operate at temperatures below or just above ambient temperature will require some form of cooling.

2. Explanation of terms

2.1 Working space is that part of the chamber where the requirements for the specified conditions for the relevant test are met.

Note. — The working space does not include the space within 3 cm from the walls or roof.

2.2 Enclosure temperature is the temperature at the centre of the working space.

2.3 Temperature deviation is the difference at any moment between the enclosure temperature and the temperature at any point in the working space.

2.4 Temperature fluctuation is the short-term change in temperature at any point in the working space.

3. Methods for achieving the required relative humidity

3.1 Method A — Saturated salt solutions

Saturated salt solutions provide a large reserve for absorbing or giving up moisture, without affecting the relative humidity.

The atmosphere over a saturated salt solution at constant temperature is maintained at a specific relative humidity which is characteristic of the particular salt solution and the value of that temperature.

All solutions shall have an excess of solid salt to ensure saturation.

When using a saturated salt solution for testing, salts which may result in a corrosive atmosphere dangerous to the specimens shall not be used. Ammonium salts are, for example, unsuitable for testing specimens containing copper or its alloys.

Efflorescence or “creepage” of salt from the solution should be avoided.

A list of salts with the associated relative humidities is given in Table I below.

TABLE I

Relative humidity of air over various saturated solutions of salts

Saturated salt solution	Temperature in °C									
	5	10	15	20	25	30	35	40	50	60
	Relative humidity %									
1. Potassium sulphate K_2SO_4	98	98	97	97	97	96	96	96	96	96
2. Potassium dihydrogen phosphate KH_2PO_4	—	—	—	—	—	—	—	93	—	—
3. Potassium nitrate KNO_3	96	95	94	93	92	91	89	88	85	82
4. Potassium chloride KCl	88	88	87	86	85	85	84	82	81	80
5. Ammonium sulphate $(NH_4)_2SO_4$	82	82	81	81	80	80	80	79	79	78
6. Sodium chloride $NaCl$	76	76	76	76	75	75	75	75	75	75
7. Sodium nitrite * $NaNO_2$	—	—	—	65	65	63	62	62	59	59
8. Ammonium nitrate NH_4NO_3	—	73	69	65	62	59	55	53	47	42
9. Sodium dichromate $Na_2Cr_2O_7 \cdot 2H_2O$	59	58	56	55	54	52	51	50	47	—
10. Magnesium nitrate $Mg(NO_3)_2 \cdot 6H_2O$	58	57	56	55	53	52	50	49	46	—
11. Potassium carbonate $K_2CO_3 \cdot 2H_2O$	—	47	44	44	43	43	43	42	—	—
12. Magnesium chloride $MgCl_2 \cdot 6H_2O$	34	34	34	33	33	33	32	32	31	30
13. Potassium acetate CH_3COOK	—	21	21	22	22	22	21	20	—	—
14. Lithium chloride $LiCl \cdot xH_2O$	14	14	13	12	12	12	12	11	11	11

Note. — Some salts are unsuitable for certain specimens (see Sub-clause 3.1).

* The addition of 1% to 2% of sodium tetraborate retards discoloration of the solution but reduces the equilibrium r.h. by approximately 1% at 20 °C.