
**Krma - Določanje vsebnosti sečnine (prevzet standard ISO 6654:1991
z metodo platnice)**

Animal feeding stuffs - Determination of urea content

Aliments des animaux - Détermination de la teneur en urée

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST ISO 6654:1995](https://standards.iteh.ai/catalog/standards/sist/b53c784d-ba4b-4b40-b91b-4a442573e5f5/sist-iso-6654-1995)

<https://standards.iteh.ai/catalog/standards/sist/b53c784d-ba4b-4b40-b91b-4a442573e5f5/sist-iso-6654-1995>

Deskriptorji: kmetijski proizvodi, krmila, kemijska analiza, določanje vsebnosti, sečnina

ICS 65.120

Referenčna številka
SIST ISO 6654:1995 (en)

Nadaljevanje na straneh od II do III in 1 do 3

SIST ISO 6654 : 1995

UVOD

Standard SIST ISO 6654, Krma - Določanje vsebnosti sečnine, prva izdaja, 1995, ima status slovenskega standarda in je z metodo platnice prevzet mednarodni standard ISO 6654, Animal feeding stuffs - Determination of urea content, first edition, 1991-03-15.

PREDGOVOR

Mednarodni standard ISO 6654:1991 je pripravil tehnični odbor Mednarodne organizacije za standardizacijo ISO/TC 34 Kmetijski pridelki in živilski proizvodi.

Odločitev za prevzem tega standarda po metodi platnice je sprejela delovna skupina WG 10 Analitika krme v okviru tehničnega odbora USM/TC KŽP Kmetijski pridelki in živilski proizvodi.

Ta slovenski standard je dne 1995-05-08 odobril direktor USM.

ZVEZA S STANDARDI

S prevzemom tega mednarodnega standarda veljajo naslednje zveze:

- SIST ISO 6651:1995 (en) Krma - Določanje vsebnosti aflatoksina B₁
- SIST ISO 6866:1995 (en) Krma - Določanje vsebnosti prostega in skupnega gosipola
- SIST ISO 6870:1995 (en) Krma - Določanje vsebnosti zearalenona
- SIST ISO 5498:1995 (en) Kmetijski pridelki in živilski proizvodi - Določanje vsebnosti surove vlaknine - Splošna metoda
- SIST ISO 5983:1995 (en) Krma - Določanje vsebnosti dušika in izračun vsebnosti surovih beljakovin
- SIST ISO 5984:1995 (en) Krma - Določanje surovega pepela
- SIST ISO 5985:1995 (en) Krma - Določanje pepela, netopnega v klorovodikovi kislini
- SIST ISO 6490-1:1995 (en) Krma - Določanje vsebnosti kalcija - 1. del: Titrimetrična metoda
- SIST ISO 6490-2:1995 (en) Krma - Določanje vsebnosti kalcija - 2. del: Metoda atomske absorpcijske spektrometrije
- SIST ISO 6491:1995 (en) Krma - Določanje vsebnosti skupnega fosforja - Spektrofotometrična metoda
- SIST ISO 6495:1995 (en) Krma - Določanje vsebnosti v vodi topnih kloridov
- SIST ISO 6496:1995 (en) Krma - Določanje vsebnosti vlage
- SIST ISO 5506:1995 (en) Sojini proizvodi - Določanje ureazne aktivnosti
- SIST ISO 6541:1995 (en) Kmetijski pridelki in živilski proizvodi - Določanje vsebnosti surove vlaknine - Modificirana Scharrerjeva metoda

OSNOVA ZA IZDAJO STANDARDA

- Prevzem standarda ISO 6654:1991

OPOMBI

- Povsod, kjer se v besedilu standarda uporablja izraz mednarodni standard , to pomeni v SIST ISO 6654:1995 slovenski standard .
- Uvod in predgovor nista sestavni del standarda.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST ISO 6654:1995](https://standards.iteh.ai/catalog/standards/sist/b53c784d-ba4b-4b40-b91b-4a442573e5f5/sist-iso-6654-1995)

<https://standards.iteh.ai/catalog/standards/sist/b53c784d-ba4b-4b40-b91b-4a442573e5f5/sist-iso-6654-1995>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST ISO 6654:1995](#)

<https://standards.iteh.ai/catalog/standards/sist/b53c784d-ba4b-4b40-b91b-4a442573e5f5/sist-iso-6654-1995>

INTERNATIONAL STANDARD

ISO
6654

First edition
1991-03-15

Animal feeding stuffs — Determination of urea content

iTeh STANDARD PREVIEW
Aliments des animaux — Détermination de la teneur en urée
(standards.iteh.ai)

SIST ISO 6654:1995

<https://standards.iteh.ai/catalog/standards/sist/b53c784d-ba4b-4b40-b91b-4a442573e5f5/sist-iso-6654-1995>



Reference number
ISO 6654:1991(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75% of the member bodies casting a vote.

International Standard ISO 6654 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*.

[SIST ISO 6654:1995](https://standards.iteh.ai/catalog/standards/sist/b53c784d-ba4b-4b40-b91b-4a442573e5f5/sist-iso-6654-1995)

<https://standards.iteh.ai/catalog/standards/sist/b53c784d-ba4b-4b40-b91b-4a442573e5f5/sist-iso-6654-1995>

© ISO 1991

All rights reserved. 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.

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Animal feeding stuffs — Determination of urea content

1 Scope

This International Standard specifies a spectrometric method for the determination of the urea content of animal feeding stuffs.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 6498:1983, *Animal feeding stuffs — Preparation of test samples*.

3 Definition

For the purposes of this International Standard, the following definition applies.

urea content: The mass fraction of substances determined using the procedure specified in this International Standard.

It is expressed as a percentage by mass.

4 Principle

Suspension in water of the test portion in the presence of a decolorant. Stirring of the suspension, then filtration. Addition to the filtrate of 4-dimethyl-amino-benzaldehyde (4-DMAB) and spectrometric measurement at 420 nm of the absorbance of the solution thus obtained.

5 Reagents

All reagents shall be of recognized analytical grade. The water used shall be distilled water or water of at least equivalent purity.

5.1 Activated carbon, which does not adsorb urea.

5.2 4-dimethyl-amino-benzaldehyde (4-DMAB), solution prepared as follows.

Dissolve 1,6 g of 4-DMAB in 100 ml of 96 % (V/V) ethanol, add 10 ml of concentrated hydrochloric acid ($\rho_{20} = 1,19$ g/ml) and mix.

This solution may be stored for a maximum of 2 weeks.

5.3 Carrez I solution.

Dissolve in water 24 g of zinc acetate dihydrate [$\text{Zn}(\text{CH}_3\text{COO})_2 \cdot 2\text{H}_2\text{O}$] and 3 g of glacial acetic acid. Make up to 100 ml with water and mix.

5.4 Carrez II solution.

Dissolve in water 10,6 g of potassium hexacyanoferrate(II) trihydrate (potassium ferrocyanide trihydrate) $\{\text{K}_4[\text{Fe}(\text{CN})_6] \cdot 3\text{H}_2\text{O}\}$. Make up to 100 ml with water and mix.

5.5 Urea, standard solution corresponding to 1 g of urea per litre.

6 Apparatus

Usual laboratory apparatus and, in particular, the following.

6.1 Rotary shaker, capable of being operated at a rotational frequency of about 30 min^{-1} to 40 min^{-1} .

6.2 Spectrometer, suitable for measuring absorbance at a wavelength of 420 nm, and equipped with cells of thickness 10 mm.

ISO 6654:1991(E)

6.3 Test tubes, 160 mm × 16 mm, fitted with ground glass stoppers.

6.4 Volumetric flasks, of 100 ml and 500 ml capacity.

6.5 Water-bath, capable of being controlled at 20 °C.

7 Sampling

Sampling will be the subject of a future International Standard.

8 Preparation of the test sample

Prepare the test sample in accordance with ISO 6498.

9 Procedure**9.1 Test portion**

Weigh, to the nearest 1 mg, about 2 g of the test sample (clause 8).

For urea contents greater than 3 % (*m/m*), reduce the test portion to 1 g or dilute the test solution (see 9.2) so that it does not exceed a concentration of 50 mg of urea per 500 ml.

For low urea contents, the test portion may be increased provided that the filtrate remains clear and colourless.

9.2 Preparation of the test solution

9.2.1 Transfer the test portion (9.1) together with 1 g of the activated carbon (5.1) into a 500 ml volumetric flask (6.4). Add 400 ml of water, 5 ml of the Carrez I solution (5.3) and 5 ml of the Carrez II solution (5.4). Mix for 30 min using a rotary shaker (6.1). Make up to the mark with water, mix and filter on a dense, slow, qualitative filter paper.

9.2.2 If the filtrate is coloured, prepare a fresh test solution in accordance with 9.2.1 but increase the quantity of activated carbon added.

9.3 Colour development

Transfer, by means of a pipette, 5 ml of the clear colourless filtrate (9.2) into a test tube (6.3) and add, by means of a pipette, 5 ml of the 4-DMAB solution (5.2).

Mix and leave to stand for 15 min in a water-bath (6.5) controlled at 20 °C.

9.4 Blank test

Carry out a blank test in parallel with the determination using the same procedure and the same quantities of all reagents, but omitting the test portion.

9.5 Preparation of the calibration graph

9.5.1 Pipette into a series of five 100 ml volumetric flasks (6.4), 1 ml, 2 ml, 4 ml, 5 ml and 10 ml of the urea standard solution (5.5). Make each flask up to the mark with water. One millilitre of the standard solutions contains 10 µg, 20 µg, 40 µg, 50 µg and 100 µg of urea respectively.

9.5.2 Pipette into a series of five test tubes (6.3) 5 ml of each of these solutions (9.5.1) (one dilution per test tube). Add to each test tube, by means of a pipette, 5 ml of the 4-DMAB solution (5.2) and mix. Transfer the solutions to spectrometer cells and measure their absorbances at 420 nm, using the spectrometer (6.2), against a compensation solution containing 5 ml of 4-DMAB and 5 ml of water.

9.5.3 Plot the calibration graph, with the absorbance values on the ordinate and the corresponding concentrations of urea, in micrograms per millilitre, on the abscissa.

9.6 Spectrometric measurement

Transfer the solution obtained in 9.3 to a spectrometer cell and measure its absorbance at 420 nm, using the spectrometer (6.2), against the blank test (9.4).

NOTE 1 If the sample contains simple nitrogenous compounds, such as amino acids, carry out the measurement of absorbance at a wavelength of 435 nm.

9.7 Number of determinations

Carry out two determinations on test portions taken from the same test sample.

10 Expression of results

The urea content, expressed as a percentage by mass, of the sample is equal to

$$\frac{c}{20 \times m}$$

where

c is the urea content, in micrograms per millilitre, of the filtrate of the test solution, determined from the calibration graph (9.5.3);