



## NATIONAL STANDARD OF UKRAINE

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# NUT

## Specifications

### DSTU 6019:2008

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## PREFACE

1 DEVELOPED: Subsidiary of the State Joint-Stock Company "Bread of Ukraine" "Kyiv Institute of Bread Products", Luhansk Institute of Agro-industrial Production of the Ukrainian Academy of Sciences, Ukrainian Institute of Expertise of Plant Varieties

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2 ADOPTED AND GRANTED INTO EFFECT: order of the Derzhspozhyvstandard of Ukraine dated December 22, 2008.  
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Derzhspozhivstandard of Ukraine, 2010

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# NATIONAL STANDARD OF UKRAINE

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## NUT

### Technical conditions

of NUT

### Technical conditions

SNISK-REA

Specifications

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Valid from 2010-04-01

## 1 SCOPE OF APPLICATION

This standard applies to chickpea seeds intended for use in food and as needed and for export.

Mandatory requirements for chickpea seeds, which guarantee the safety of life and health of people, animals and environmental protection, are set out in 6.2 (condition, smell, color of grain, contamination by pests), 7.1 (toxic elements, mycotoxins, pesticides and radionuclides), 7.2 (safety and industrial sanitation requirements), 7.3 and 7.4 (environmental protection).

## 2 NORMATIVE REFERENCES

This standard contains references to the following normative documents: DSTU 2422-94 Grain procurement and supply. Terms and definitions  
 DSTU 2949-94 Seeds of agricultural crops. Terms and definitions  
 DSTU 3355-96 Agricultural plant products. Sampling methods in the process of quarantine inspection and examination  
 DSTU ISO 6639-1:2007 Cereals and legumes. Detection of hidden insect infestation. Part 1. Basic provisions (150 6639-1:1986, YuT)  
 DSTU ISO 6639-2:2007 Cereals and legumes. Detection of hidden insect infestation. Part 2. Sampling (ISO 6639-2:1986, ýý) DSTU ISO 6639-3:2007 Cereals and legumes. Detection of hidden insect infestation. Part 3. Control method (ISO 6639-3:1986, UT)  
 DSTU ISO 6639-4:2007 Cereals and legumes. Detection of hidden insect infestation. Part 4. Accelerated methods (ISO 6639-4: 1986, ýý)\* DSTU EN 12955-2001 Food products. Determination of aflatoxin 8 1 and the amount of aflatoxin 8 82, G1 and G2 in cereals, hard-skinned fruits and products derived from them. The method of high-performance liquid chromatography using post-column derivatization and purification on an immune column (EN 12955:1999, ýý)  
 GOST 17.2.3.02-78 Protected equipment,. Atmosphere. Rules for establishing permissible emissions of harmful substances by industrial enterprises (Protection of nature. Atmosphere. Rules for establishing permissible emissions of harmful substances by industrial enterprises)

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\* Under consideration.

GOST 10940-64 Grain. Method 1 of determining the typical composition (Grain. Methods of determining the typical composition) GOST 10967-90 Grain. Method 1 for determining smell and color (Grain. Methods for determining smell and color)

GOST 13496.4-93 Fodder, compound feed, compound feed grain. Method 1 for determining the content of nitrogen and crude protein (Feeds, compound feed, compound feed raw materials. Methods for determining the content of nitrogen and crude protein) GOST 13496.20-87 Compound feed, compound feed. Method for determining the final amounts of pesticides (Compound feed, compound feed raw materials. Method for determining the residual amount of pesticides) GOST 13586.3-83 Grain. Acceptance rules and sampling methods (Grain. Acceptance rules and sampling methods) GOST 13586.4-83 Grain. Method 1 for determining contamination and damage by pests (Zer-but. Methods of determining infection and damage by pests)

GOST 13586.5-93 Grain. Moisture determination method (Grain. Moisture determination method) GOST 26927-86 Grains and food products. Method for determining mercury (Raw materials and food products. Methods for determining mercury) GOST 26929-94 Raw materials and food products. Sample preparation. Mineralization for determining the content of toxic elements (Raw materials and food products. Preparation of samples. Mineralization for determining the content of toxic elements) GOST 26930-86 Foodstuffs and products. Method for determining arsenic (Raw materials and products food Arsenic determination method)

GOST 26931-86 Raw materials and food products. Copper determination method (Raw materials and food products. Copper determination methods)

GOST 26932-86 Food raw materials and products. Method 1 for determining lead (Raw materials and products food Lead determination methods)

GOST 26933-86 Foodstuffs and products. Method I of determining cadmium (Raw materials and products food Methods for determining cadmium)

GOST 26934-86 Foodstuffs and products. Method 1 of determining zinc (Raw materials and products of chevy Zinc determination methods)

GOST 28001-88 Fodder grain, products of its processing, compound feed. Method 1 for the determination of mycotoxins: T-2 toxin, zearalenone (F-2) and ochratoxin A (Grain for feed needs, products of its processing, compound feed. Methods for determining mycotoxins: T-2 toxin, zearalenone (F-2) and ochratoxin A (ratoxin A) GOST 28666.ÿ90 (ISO 6639-4-86)

Cereals and legumes. Determination of latent infection by insects. Part 4. Accelerated method I (Grains and legumes. Determination of hidden infestation by insects. Part 4. Accelerated methods) GOST 29143-91 (ISO 712-85) Grain and grain products I. Determination of humidity (working con-role 1st method) (Grain and grain products. Moisture determination (work control method)

GOST 29144-91 (ISO 711-85) Grain and grain products 1. Determination of humidity (basic 1st con-role method) (Grain and grain products. Moisture determination (basic control method)

GOST 30483--97 Grain. Method 1 of determining the total and fractional content of weed and grain impurities; content of small grains and coarseness; the content of wheat grains, their damage by clo-pom-turtle; the content of metallomagnetic impurity (Grain. Methods of determining the total and fractional content of garbage and grain impurities; the content of small grains and coarseness; the content of wheat grains damaged by the IO turtle bug; the content of metallomagnetic impurities).

## UNDERSTAND TERMS AND DEFINITIONS

This standard uses the terms and corresponding definitions of concepts according to DSTU 2422 and DSTU 2949.

### 4 COMPOSITION OF MAIN SEEDS, GRAIN AND TRASH IMPURSEMENTS 4.1 Main seeds

**include:** - whole and damaged chickpea seeds, which by the nature of damage are not classified as grain and garbage impurities.

**4.2 Grain admixture includes:** in the residue

on a sieve with meshes with a diameter of 2.0 mm, chickpea seeds: -

beaten and eaten, regardless of the degree of damage;

- underdeveloped (whole chickpea seeds that passed through a sieve with meshes with a diameter of 4.2 mm and left

it was sewn on a sieve with meshes with a diameter of

2.0 mm); - unripe (green);

- germinated; damaged;

- whole, healthy, as well as damaged seeds of peas, beans, lentils, chickpeas, vetch, soybeans and fodder

beans, attributed by the nature of damage to grain admixture in accordance with the requirements of the standards for these crops.

**4.3 Garbage impurities 1 include:** - the

entire passage through a sieve with meshes with a diameter of 2.0 mm;

- in the residue on a sieve with meshes with a diameter of 2.0

mm: - mineral admixture (pebbles, lumps of earth, etc.);

- organic admixture (parts of stems, beans, film, straw, etc.);

- a harmful admixture - hornwort, sago, fenugreek, creeping mustard, foxtail sophora, ter-

lanceolate mopsis, multi-colored knotweed, pubescent heliotrope, gray trichodesma;

- seeds of all wild plants and other cultivated plants, not classified as grain admixture;

- spoiled seeds of chickpeas, peas, beans, lentils, vetch, soybeans and fodder beans with cotyledons that are completely deformed and (or) completely discolored cotyledons.

**5 TYPES**

5.1 Depending on the direction of use and color, chickpea seeds are divided into the types indicated in Table 1.

**Table 1** - Distribution of chickpeas into types

Type number and name	Seed color	The content of seeds of another type, %, not more than	List of varieties characterizing the type
And - food	From white to yellow-pink	5.0	Antaeus, Ornament, Memory, Slobozhansky, Triumph
11 - aft	From red-brown to black	Not limited	Alexandrite, Colorite, Luhanets, Stoyk

5.2 Chickpea seeds of type I, containing more than 5.0% of type 11 chickpea admixture, are defined as "mixture types" with an indication of the typical composition in percent.

**6 GENERAL TECHNICAL REQUIREMENTS**

6.1 Chickpeas supplied for food needs must be of type I and meet the requirements specified in table 2.

**Table 2**

Indicator	Norm
Moisture, %, not more than	14.0
Mass fraction of protein, in terms of dry matter, %, not less than	20.0
Grain admixture, %, not more than	2.0
Garbage admixture, %, not more than	1.0
in	
particular: mineral	0.1
admixture in the composition of	
mineral admixture: pebbles, slag, ore	Is not allowed
harmful admixture	0.2
in the composition of the harmful	
admixture: heliotrope pubescent and Trichodesma	Not allowed
siva Infestation by pests	Not allowed

6.2 Chickpea seeds supplied for food and fodder needs must be in a healthy state, without self-heating, have the normal color characteristic of healthy seeds, characteristic of this type, and smell (without musty, malty, moldy and other extraneous smells).

In chickpeas supplied for food, no more than 20% of chickpea seeds with partially or completely darkened or tarnished shell due to unfavorable harvesting or storage conditions, as well as with dark spots of different sizes on the shell, are allowed; in chickpeas supplied for fodder needs, the content of such seeds is allowed to be more than 20%, and it is defined as "darkened".

6.3 Chickpeas supplied for feed purposes can be of any type or a mixture of types and do not meet the requirements specified in table C.

**Table C**

Until: no	Norm
Moisture, %, not more than	15.0
Mass fraction of crude protein, in terms of dry matter,%, not less than Grain admixture,%, not more than Garbage admixture,%, not more than	19.0 15.0 3.0
in particular:	
pebble	
harmful admixture	1.0
Pest infestation	0.2 Not allowed, except for tick infestation not higher than II degree

6.4 With the consent of grain warehouses, other subjects of business activity are allowed to supply chickpea seeds with moisture content and the content of waste admixture above the limit norms, if it is possible to bring such seeds to the quality indicators specified in Tables 2 and 3.

6.5 Chickpea seeds formed for export must be in a healthy state, not infected with grain pests, have a normal smell and color. According to other indicators, chickpea seeds must meet the requirements established in the agreement (contract) between the supplier and the buyer.

## **7 SAFETY AND ENVIRONMENTAL PROTECTION REQUIREMENTS**

7.1 The content of toxic elements, mycotoxins and pesticides in chickpea seeds, used for food purposes, as well as for export, should not exceed the permissible levels established by the "Medical-biological requirements and sanitary norms of the quality of food products and food products" [1]. According to radiological indicators, chickpea seeds must meet the requirements of GN 6.6.1.1-1 ZO [2], for feed requirements, the permissible levels established by the order of the State Department of Veterinary Medicine of Ukraine dated November 3, 1998 [ÿ]. The maximum permissible content of harmful substances in chickpea seeds is given in Appendix A.

7.2 When working with chickpea seeds, it is necessary to comply with the requirements set forth in the "Rules of safety technology and production sanitation at enterprises for grain storage and processing in the bread products system" [4].

7.3 Control of compliance with the norms of emissions of harmful substances into the atmosphere must be carried out according to the requirements of GOST 17.2.3.02 and DSP 201 [5].

7.4 Protection of the runt from contamination by household and industrial waste is carried out accordingly to the requirements of SanPiN 42-128-4690 [6].

### **EXERCISED ACCEPTANCE**

8.1 Acceptance rules - according to GOST 13586.3. 8.2 In

each batch of chickpeas, determine the state of the grain, smell, color, typical composition, moisture, grain and garbage impurities, contamination by pests.

V.Z Chickpea seeds, in which the admixture of seeds and grains of other cultivated plants is more than 15% of the total mass of chickpea seeds, are accepted as a mixture of chickpeas with other crops and its composition is indicated in percentages.

8.4 Periodicity of monitoring of toxic elements, mycotoxins, pesticides and radionuclides in chickpea seeds, used for food needs and for export, is carried out in accordance with the methodical recommendations "Periodicity of monitoring of food raw materials and food products according to safety indicators" [7], and for feed needs - according to the methodological recommendations "Procedure and periodicity of control of compound feed and compound feed raw materials according to safety indicators" [8]

8.5 Each batch of chickpea seeds is accompanied by a certificate on the content of pesticides, toxic ceps mycotoxins, radionuclides and a certificate or certificate of quality.

## 9 CONTROL METHODS

**9.1** Take samples in accordance with GOST 13586.3 and DSTU 3355. **9.2**

Determine the typical composition in accordance with GOST 10940.

**9.3** Determine odor, color, and discoloration in accordance with GOST 10967.

9.4 Determine moisture in accordance with GOST 13586.5, GOST 29143 (ISO 712-85), GOST 29144 (ISO 711-85).

**9.5** Crude protein is determined according to GOST 13496.4.

9.6 Determine garbage, harmful and grain impurities in accordance with GOST 30483.

9.7 Determine pest infestation in accordance with GOST 13586.4, GOST 30483, DSTU ISO 6639-1, DSTU ISO 6639-2, DSTU ISO 6639-3, GOST 28666.4 (ISO 6639-4-86).

Note. ISO standards for quality control methods are used, if it is stipulated by the contract, for the export of chickpea seeds.

**9.8** Define toxic elements. Prepare

samples for analysis according to GOST 26929, determine mercury according to GOST 26927, arsenic - according to GOST 26930, copper - according to GOST 26931, lead - according to GOST 26932, cadmium - according to GOST 26933, zinc - according to GOST 26934.

**9.9** Pesticides are determined in edible chickpea seeds according to DSanPiN 8.8.1.2.3.4-000 [9], and in fodder seeds - according to GOST 13496.20.

**9.1** **o** Determine mycotoxins in edible chickpea seeds: aflatoxin 81 - according to MR No. 2273-80 [1 O] or from MU No. 4082-86 [11], DSTU EN 12955; zearalenone - according to MR No. 2964-84 [12]; T-2 toxin - according to MU No. 3184-84 [13]; Deoxynivalenol (vomitoxin) - according to MU No. 3940-85 [14] or MU No. 5177-90 [15]; in fodder chickpea seeds: zearalenone, T-2 toxin - according to GOST 28001; dezoc-synivalenol (vomitoxin) - according to MU No. 3940-85 [14] or MU No. 5177-90 [15]; aflatoxin 81, ralenone and T-2 toxin - according to the methods approved<sup>zea</sup> by the Ministry of Agriculture of Ukraine No. 15-14/23 [16].

**9.11** Define radionuclides: strontium-90 - according to MU No. 5778 [17] and cesium-137 - according to MU No. 5779 [18].

## 10 TRANSPORTATION AND STORAGE

**10.1** Chickpea seeds are transported in bulk by all types of transport in accordance with the rules of transportation loads valid for this type of transport.

**10.2** Vehicles must be clean, without extraneous odors. During loading, transportation and unloading of chickpea seeds must be protected from precipitation.

**10.3** Chickpea seeds are placed, transported and stored in bulk, each type separately, in clean, dry, odorless, pest-free vehicles and granaries in accordance with sanitary rules and storage conditions approved in accordance with the established procedure.



10.4 When placing, transporting and storing chickpea seeds, their condition, which is given in table 4, is taken into account.

Table 4 - Condition of chickpea seeds according to moisture and clogging

Seed condition	Vanity, %	Grain admixture,%	Garbage admixture,%
By humidity:			
dry	Not more than 14.0		
medium dryness	From 14.1 to 16.0 ))		
wet	16, 1 1 v.ø 1 V, 1		
raw	and more		
For laughter:			
clean		Not more than 2.0	Not more than 1.0
medium purity garbage		From 2.1 to 4.0 4.1 and more	From 1.1 to 3.0 3.1 and more

## 11 WARRANTIES OF THE SUPPLIER

The supplier company guarantees compliance of chickpea seeds with the requirements of this standard in the event compliance with the conditions of transportation and storage.

### APPENDIX A (mandatory)

#### MAXIMUM ALLOWABLE CONTENT OF HARMFUL SUBSTANCES IN CHEEPA SEEDS

Table A.1

Indicator	Standard for chickpea seeds used on	
	food needs and exports	feed needs
Toxic elements, mg/kg:		
lead	0.5	5.0
cadmium	0.1	0.2
arsenic	0.2	0.5
mercury	0.02	at 1
copper	10.0	20.0
zinc	50.0	50.0
Mycotoxins, mg/kg:		
aflatoxin 81	0.005	0.005
zearalenone	1.0	1.0
T-2 toxin	0.1	0.2
deoxynivalenol (vomitoxin)	0.5-1.0	1-2
Radionuclides, Bq/kg:		
strontium-90	20.0	100
cesium-137	50.0	600
Pesticides	The list of pesticides for which chickpea seeds are monitored depends on their use in a specific area and is coordinated with the services of the Ministry of Health and Veterinary Medicine of Ukraine	

## APPENDIX

## B (reference)

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hygienic standards "Permissible levels of radionuclides Cs-137 and Sr-90 in food and drinking water", approved by the Ministry of Health of Ukraine, order No. 256 dated 05.03.2006 3 Mandatory minimum list of studies of raw materials, products of animal and plant origin, compound feed raw materials, compound feeds, vitamin drugs, etc., which should be carried out in state laboratories of veterinary medicine, and based on the results of which a veterinary certificate (F-2) is issued, approved by the order of the State Department of Veterinary Medicine of Ukraine dated 03.11.98 No. 16 4 Rules of Safety and Industrial Sanitation on grain

storage and processing enterprises in the bakery system, authorized Ministry of Bakery Products of the USSR 18.04.88 No. 9ÿ8 (Rules of safety and industrial sanitation at grain storage and processing enterprises in the bakery products system, approved by the Ministry of Bakery Products of the USSR 18.04.88 No. 99-88)

5 DSP 201-97 State sanitary rules for the protection of atmospheric air in populated areas (against pollution by chemical and biological substances), approved. by the Ministry of Health of Ukraine dated 07.09.97 No. 201

6 SanPiN 42-128-4690-88 Sanitary regulations for the maintenance of populated areas, approved by the Ministry of Health of the USSR 08.05.88 No. 4690 (Sanitary rules for the maintenance of inhabited places, approved by the Ministry of Health of the USSR 08.05.88 No. 4690-88)

7 MR 4.4.4-108-2004 Methodological recommendations "Periodicity of control of food raw materials and food products according to safety indicators", approved by the Ministry of Health of Ukraine 07.02.2004 No. 329 8 Methodical

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9 DSanPiN 8.8.1.2.3.4-000-2001 Permissible doses, concentrations, quantities and content levels of pesticides in agricultural raw materials, food products, air of the working area, atmospheric air, water of reservoirs, (rules approved by the Ministry of Health of Ukraine on 20.09 . 2001 No. 137

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18 Methodological instructions No. 5779-91 "Determination of cesium-137 in food products", approved by the Ministry of Health of the USSR 04.01.91 (Methodical instructions No. 5779-91 "Determination of cesium-137 in food products", approved by the Ministry of Health of the USSR 04.01 .91).

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**Key words:** determination of quality, requirements, guarantees, chickpea seeds for food and fodder needs, acceptance, types, transportation.

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