



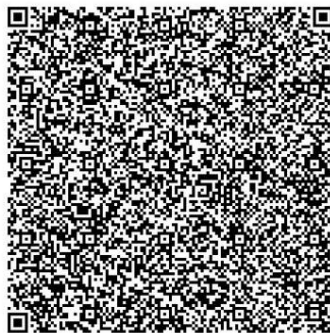
NATIONAL STANDARD OF UKRAINE

DSTU 4492:2017

SUNFLOWER OIL

Specifications

The publication is official



22672019-00025

Kyiv
SE "UkrNDNC"
2018

DSTU 4492:2017

PREFACE

- 1 DEVELOPED: Ukrainian Research Institute of Oils and Fats of the National Academy of Sciences (UkrNDIOZH of the National Academy of Sciences) and the association "Ukroliyaprom"
- 2 ADOPTED AND GRANTED INTO EFFECT: order of SE "UkrNDNC" dated June 27, 2017 No. 161 dated 2019-01-01
- 3 This standard was developed in accordance with the rules established in the national standardization of Ukraine
- 4 TO REPLACE DSTU 4492:2005

The ownership of this national standard belongs to the state. It is forbidden to fully or partially publish, reproduce for distribution and distribute as an official publication this national standard or its parts on any media without the permission of SE "UkrNDNC" or a person authorized by it

SE "UkrNDNC", 2018

CONTENT

Introduction	IV
1 Scope of application	1
2 Normative references	1
3 Terms and definitions of concepts	5
4 Classification	5
5 General technical requirements	6
6 Safety requirements	12
7 Requirements for the preservation of the natural environment	13 8
Marking	13 9
Packaging	14
10 Transportation and storage	15 11
Control methods	16 12 Rules of
admission	17
13 Guarantees of the market operator	18
Appendix A (mandatory) Determination of the taste of sunflower oil	18
Appendix B (mandatory) Safety indicators	19 Appendix B
(mandatory) Maximum level of polycyclic aromatic hydrocarbons (PAHs)	20 Appendix D
(mandatory) Maximum level of dioxins and PCBs	20
Appendix D (reference) Quality indicators of sunflower oil	21
Appendix E (reference) Fatty acid composition of sunflower oil	22
Appendix G (reference) Norm for "mass fraction mineral oils" and "residual content of technical hexane"	22
Appendix C (reference) Nutritive (food) and energy value (caloric value) of sunflower oil	23
Appendix ÿ (reference) Code of DCP	23
Appendix K (reference) Bibliography	23

DSTU 4492:2017

INTRODUCTION

This standard was developed to create a normative document in Ukraine regarding oil and fat products, which meets international and European standards and provides higher requirements for the quality of sunflower oil produced at enterprises of the oil and fat industry in Ukraine.

NATIONAL STANDARD OF UKRAINE

SUNFLOWER OIL

Specifications

SUNFLOWER OIL

Specifications

Effective from 2019-01-01

1 SCOPE OF APPLICATION

This standard applies to sunflower oil produced by pressing and/or extra-sunflower seeds.

Sunflower oil is sold through a retail network and used for food and food production and industrial processing. Product safety requirements are outlined in sections 5 and 6.

2 NORMATIVE REFERENCES

This standard contains references to the following normative documents: DSTU 2423–94 Vegetable oils. Production. Terms and definitions DSTU 2575–94 Vegetable oils. Raw materials and processed products. Quality indicators. Term definition

DSTU 3445–96 (GOST 10674–97) Tank cars of main railways gauge 1520 mm. General technical conditions

DSTU 3583:2015 Table salt. General technical conditions DSTU 3665–97 (GOST 30566–98) Perlite filter powder. Technical conditions DSTU 4349:2004 Oils. Sampling methods (ISO 5555:1991, NEQ) DSTU 4350:2004 Oils. Methods for determining the acid value (ISO 660:1996, NEQ) DSTU 4455:2005 Vegetable fats and oils. Flash point determination method DSTU 4518:2008 Food products. Labeling for consumers. General rules of DSTU 4568:2006 Oils. Methods of determining the color number DSTU 4569:2006 Animal and vegetable fats and oils. Methods for determining the iodine number DSTU 4570:2006 Animal and vegetable fats and oils. Method for determining the peroxide number DSTU 4602:2006 Oils. Methods for determining wax-like substances DSTU 4603:2006 Oils. Methods of determining the mass fraction of moisture and volatile substances DSTU 4633:2006 Oils. Density determination method DSTU 4689:2006 Food products. Methods for determining the mass fraction of benzo(a)pyrene DSTU 4694:2006 Sunflower. Oil raw materials. Technical conditions DSTU 5063:2008 Oils. Methods of determination of non-fat impurities and residue DSTU 6032:2008 Oils. Processing. Terms and definitions of concepts DSTU 6048:2008 Animal and vegetable fats and oils. Method for determining soap DSTU 6050:2008 Animal and vegetable fats and oils. Method for determination of non-soap substances DSTU 7082:2009 Oils. Methods for determining the mass fraction of phosphorus-containing substances DSTU 7357:2013 Milk and milk products. Methods of microbiological control DSTU 7670:2014 Raw materials and food products. Preparat

DSTU 4492:2017

DSTU GOST 12.1.012:2008 System of labor safety standards. Vibration safety.

General requirements (System of labor safety standards. Vibration safety. General requirements)

DSTU GOST 745–2004 Aluminum foil for packaging. Technical conditions (GOST 745–2003, IDT)

DSTU GOST 908:2006 Food citric acid monohydrate. Technical conditions (GOST 908–2004, IDT)

DSTU GOST 5717.2:2006 Glass jars for canned goods. Main parameters and dimensions

(GOST 5717.2:2003, IDT)

DSTU GOST 9293:2009 (ISO 2435–73) Gaseous and liquid nitrogen. Technical conditions (Gaseous and liquid nitrogen. Technical conditions) (GOST 9293–74 (ISO 2435–73), IDT)

DSTU GOST 10117.1–2003 Glass bottles for food liquids. General technical conditions

(GOST 10117.1–2001, IDT)

DSTU GOST 10117.2–2003 Glass bottles for food liquids. Types, parameters and basic dimensions (GOST 10117.2–2001, IDT)

DSTU GOST 15846–2003 Products supplied to regions of the Far North and localities equated to them.

Packaging, labeling, transportation and storage (GOST 15846–2002, IDT)

DSTU EN 1528-1–2002 Fatty food products. Determination of pesticides and polychlorinated biphenyls

(PCB). Part 1. General provisions (EN 1528-1:1996, IDT)

DSTU prEN 1672-1–2001 Equipment for the food industry. Safety and hygiene requirements. Substantive provisions. Part 1. Safety requirements (prEN 1672-1:1994, IDT)

DSTU EN 1672-2:2014 Equipment for the food industry. Substantive provisions. Part 2. Hygiene requirements (EN 1672-2:2005 + A1:2009, IDT)

DSTU EN 12821:2005 Food products. Determination of vitamin D content by high-performance liquid chromatography. Measurement of cholecalciferol (D3) and ergocalciferol (D2) (EN 12821:2000, IDT)

DSTU EN 12822:2005 Food products. Determination of the content of vitamin E by the method of high-resolution liquid chromatography for the measurement of "alpha", "beta", "gamma" and "delta" tocopherols (EN 12822:2000, IDT)

DSTU EN 12823-2:2006 Food products. Determination of vitamin A content by high-performance liquid chromatography. Part 2. Determination of β -carotene content (EN 12823-2:2000, IDT)

DSTU EN 12824:2004 Microbiology of food products and animal feed. Horizontal

Salmonella detection method (EN 12824:1997, IDT)

DSTU EN 12955–2001 Food products. Determination of aflatoxin B1 and the sum of aflatoxins B1, B2, G1 and G2 in cereals, hard-skinned fruits and products derived from them. Method for high-performance liquid chromatography using post-column derivatization and purification on an immune column (EN 12955:1999, IDT)

DSTU ISO 662:2004 Animal and vegetable fats and oils. Determination of moisture content and volatile substances (ISO 662:1998, IDT)

DSTU ISO 663–2003 Animal and vegetable fats and oils. Determination of the content of insoluble impurities (ISO 663:2000, IDT)

DSTU ISO 3596:2004 Animal and vegetable fats and oils. Determination of the content of non-soap substances. Method using diethyl ether extraction (ISO 3596:2000, IDT)

DSTU ISO 3657:2004 Animal and vegetable fats and oils. Determination of saponification number (ISO 3657:2002, IDT)

DSTU ISO 3960–2001 Animal and vegetable fats and oils. Determination of peroxide number (ISO 3960:1998, IDT)

DSTU ISO 3961:2004 Animal and vegetable fats and oils. Determination of iodine number (ISO 3961:1996, IDT)

DSTU ISO 5508–2001 Animal and vegetable fats and oils. Gas chromatography analysis of methyl esters of fatty acids (ISO 5508:1990, IDT)

DSTU ISO 5555–2003 Animal and vegetable fats and oils. Sampling (ISO 5555:1991, IDT)

DSTU ISO 5558:2004 Animal and vegetable fats and oils. Definition and identification of antioxidants Method of thin-layer chromatography (ISO 5558:1982, IDT)

DSTU ISO 6885–2002 Animal and vegetable fats and oils. Determination of anisidine number (ISO 6885:1998, IDT)

DSTU ISO 6886–2003 Animal and vegetable fats and oils. Determination of oxidation resistance (Accelerated oxidation test) (ISO 6886:1996, IDT)

DSTU ISO 6888-1-2003 Microbiology of food products and animal feed. Horizontal method of counting coagulase-positive staphylococci (*Staphylococcus aureus* and other species). Part 1. Method using Beard-Parker agar medium (ISO 6888-1:1999, IDT)

DSTU ISO 8294:2004 Animal and vegetable fats and oils. Determination of copper, iron and nickel content. Atomic absorption method using a graphite furnace (ISO 8294:1994, IDT)

DSTU ISO 8534:2004 Animal and vegetable fats and oils. Determination of water content by the Karl Fischer method (ISO 8534:1996, IDT)

DSTU ISO 9832:2004 Animal and vegetable fats and oils. Determination of the residual content of technical hexane (ISO 9832:2002, IDT)

DSTU ISO 9936:2004 Animal and vegetable fats and oils. Determination of the content of tocopherols and tocotrienols. Method of high performance liquid chromatography (ISO 9936:1997, IDT)

DSTU ISO 12193:2004 Animal and vegetable fats and oils. Determination of lead content by atomic absorption spectrometry using a graphite furnace (ISO 12193:2004, IDT)

DSTU ISO 15774:2009 Animal and vegetable fats and oils. Determination of cadmium content by atomic absorption spectrometry using a graphite furnace (ISO 15774:2000, IDT)

DSTU ISO/TS 21098:2009 Food products. Methods of detection of genetically modified organisms and products with their content. Additional procedures and information on nucleic acid-based analysis methods described in ISO 21569, ISO 21570, ISO 21571 (ISO/TS 21098:2005, IDT)

DSTU ISO 21569:2008 Food products. Methods of detection of genetically modified organisms and products with their contents. Qualitative methods based on nucleic acid analysis (ISO 21569:2005, IDT)

DSTU ISO 21570:2008 Food products. Methods of detection of genetically modified organisms and products with their content. Quantitative methods based on nucleic acid analysis (ISO 21570:2005, IDT)

DSTU ISO 21571:2008 Food products. Methods of analysis for the detection of genetically modified organisms and products with their content. Nucleic acid extraction (ISO 21571:2005, IDT)

DSTU ISO 24276:2008 Food products. Methods of detection of genetically modified organisms and products with their contents. Basic requirements, terms and definitions (ISO 24276:2006, IDT)

DSTU IDF 93A:2003 Milk and milk products. Definition of *Salmonella* (IDF 93A:1985, IDT)

DSTU OIML R 79:2012 Packaged goods. Labeling requirements (OIML R 79:1997, IDT)

DSTU OIML R 87:2012 Quantity of packaged goods in packages (OIML R 87:2004, IDT)

GOST 12.1.003-83 System of labor safety standards. Noise. General safety requirements (System of occupational safety standards. Noise. General safety requirements)

GOST 12.1.004-91 System of labor safety standards. Fire safety. General requirements (System of labor safety standards. Fire safety. General requirements)

GOST 12.1.005-88 System of labor safety standards. General sanitary and hygienic requirements for the air of the working area (System of labor safety standards. General sanitary and hygienic requirements for the air of the working area)

GOST 12.1.010-76 System of labor safety standards. Explosion protection. General requirements (System of labor safety standards. Explosion safety. General requirements)

GOST 12.2.003-91 System of labor safety standards. Production equipment. General safety requirements (System of occupational safety standards. Industrial equipment. General safety requirements)

GOST 12.2.007.0-75 System of labor safety standards. Electrotechnical products. General safety requirements (System of occupational safety standards. Electrical products. General safety requirements)

GOST 12.3.002-75 System of labor safety standards. Production processes. General safety requirements (System of occupational safety standards. Production processes. General safety requirements)

GOST 17.2.3.02-78 Nature protection. 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)

GOST 332-91 Cotton and mixed raw filter fabrics. Technical conditions (Cotton and mixed strict filtering fabrics. Technical conditions)

GOST 2263-79 Caustic technical. Technical conditions (Caustic technical conditions. Technical conditions)

DSTU 4492:2017

- GOST 5037–97 Metal cans for milk and dairy products. Technical conditions (Metal flasks for milk and dairy products. Technical conditions)
- GOST 5471–83 Vegetable oils. Rules of acceptance and methods of sampling (Oils. Rules of acceptance taking and sampling methods)
- GOST 5472–50 Vegetable oils. Determination of smell, color and transparency (Oils. Determination of smell, color and transparency)
- GOST 5717–91 Glass cans for canned goods. Technical conditions (Glass jars for canned goods. Technical conditions)
- GOST 6552–80 Orthophosphoric acid. Technical conditions (Orthophosphoric acid. Technical conditions)
- GOST 7625–86 Label paper. Technical conditions (Paper for labels. Technical conditions)
- GOST 9218–86 Tanks for food liquids installed on motor vehicles. General technical conditions (Tanks for food liquids installed on motor vehicles. General technical conditions)
- GOST 10354–82 Polyethylene film. Technical conditions (Polyethylene film. Technical conditions)
- GOST 10444.12–88 Food products. The method of determining yeast and mold fungi (Food products. Method for determining yeast and mold fungi)
- GOST 10678–76 Thermal orthophosphoric acid. Technical conditions (Orthophosphoric acid for thermal. Specifications)
- GOST 11354–93 Multi-turn boxes made of wood and wood materials for the production of food industries and agriculture. Technical conditions (Multi-turn boxes made of wood and wood materials for products of the food industry and agriculture. Technical conditions)
- GOST 13358–84 Wooden boxes for canned goods. Technical conditions (Board boxes for canned goods. Technical conditions)
- GOST 13511–91 Corrugated cardboard boxes for food products, matches, tobacco products and detergents. Technical conditions (Corrugated cardboard boxes for food products, matches, tobacco products and detergents. Technical conditions)
- GOST 13516–86 Corrugated cardboard boxes for canned goods, preserves and food liquids. Technical conditions (Corrugated cardboard boxes for canned goods, preserves and food liquids. Technical conditions)
- GOST 13950–91 Welded and sunken steel barrels with corrugations on the body. Technical conditions (Steel and rolling barrels with corrugations on the body. Technical conditions)
- GOST 14083–68 Sunflower oil for export. Technical conditions (Sunflower oil for export. Technical conditions)
- GOST 14192–96 Marking of goods (Marking of goods)
- GOST 16337–77 Polyethylene of high pressure. Technical conditions (High-pressure polyethylene. Technical conditions)
- GOST 16338–85 Low pressure polyethylene. Technical conditions (Low-pressure polyethylene. Technical conditions)
- GOST 17133–83 Rubber plates for products in contact with food products. Technical conditions (Rubber plates for products that come into contact with food products. Technical conditions)
- GOST 21650–76 Fastening means of packaging and unit cargo in transport packages. General requirements (Means for fastening taro-artificial loads in transport packages. General requirements)
- GOST 22477–77 Means of fastening transport packages in covered wagons. General technical requirements (Means for fastening transport packages in covered wagons. General technical requirements)
- GOST 22702–77 Corrugated cardboard boxes for bottles with food liquids, supplied for export. Technical conditions (Corrugated cardboard boxes for bottles with food liquids, which are supplied for export. Technical conditions)
- GOST 23285–78 Transport packages for food products and glass containers. Technical conditions (Transport packages for food products and glass containers. Technical conditions)
- GOST 24597–81 Packets of packaged goods. Basic parameters and dimensions (Packages of artificial loads. Main parameters and dimensions)
- GOST 24831–81 Packaging equipment. Types, main parameters and dimensions (Container equipment. Types, main parameters and sizes)

- GOST 25336–82 Laboratory glassware and equipment. Types, main parameters
 (Laboratory glass dishes and equipment. Types, main parameters and sizes)
- GOST 25951–83 Heat-shrink polyethylene film. Technical conditions (Thermo-shrinkable polyethylene film. Technical conditions)
- GOST 26663–85 Transport packets. Formation using packaging tools. General technical requirements (Transport packages. Forming using packaging tools. General technical requirements)
- GOST 26927–86 Raw materials and food products. Method for determining mercury (Raw materials and products food Mercury determination methods)
- GOST 26928–86 Food products. Method for determining iron (Food products. Method for determining iron deficiency)
- GOST 26930–86 Raw materials and food products. Method for determining arsenic (Raw materials and products Arsenic determination method)
- GOST 29224–91 (ISO 386–77) Laboratory glassware. Liquid glass laboratory thermometers. Principles of device, construction and application (Laboratory glassware. Liquid glass laboratory thermometers. Principles of device, design and application)
- GOST 30178–96 Raw materials and food products. Atomic adsorption method for the determination of toxic elements (Raw materials and food products. Atomic adsorption method for the determination of toxic elements)
- GOST 30417–96 Vegetable oils. Methods of determining mass fractions of vitamins A and E (Vegetable oils. Methods of determining mass fractions of vitamins A and E)
- GOST 30418–96 Vegetable oils. The method of determining the fatty acid composition (Vegetable oils. Method for determining the fatty acid composition).

Note. The validity of the standards referred to in this standard is checked according to the official publications of the national standardization body — the catalog of national regulatory documents and the monthly information index of national standards.

If the referenced standard is superseded by a new one or amended, the new standard should apply, covering all amendments made to it.

3 TERMS AND DEFINITIONS

This standard uses terms and definitions according to DSTU 2423, DSTU 2575 and DSTU 6032, and also the following:

3.1 unrefined oil

Oil from which the accompanying substances have not been completely or partially removed

3.2 cold pressed oil

Oil obtained without changing the nature of the oil only by mechanical procedures (squeezing and pressing), without heating.

4 CLASSIFICATION

4.1 Sunflower oil, depending on the technology (extraction, processing) and quality indicators pour into the following species, varieties and brands (table 1).

Table 1 — Classification of sunflower oil

Type of sunflower oil	Kind	Brand
Unrefined sunflower oil:		
Cold pressed, unfrozen	Higher First	— —
Cold pressed frozen	Higher First	— —
Unfrozen (pressed, extracted or a mixture of pressed and extracted)	Higher First Second	— — —
Frozen (press)	Higher First	— —

DSTU 4492:2017

End of table 1

Type of sunflower oil	Kind	Brand
Refined sunflower oil:		
Unfrozen (pressed, extracted or a mixture of pressed and extracted)	—	—
Frozen (press, extraction or a mixture of press and extraction)	—	—
Deodorized unfrozen (pressed, extracted or a mixture of pressed and extracted)	—	P
Deodorized frozen (press, extraction or a mixture of press and extraction)	—	P
Deodorized frozen (press)	—	D
<p>Note 1. Reference information on the method of sunflower oil production is indicated in parentheses. This information can be additionally applied to the label at the discretion of the manufacturer.</p> <p>Note 2. Sunflower oil unrefined pressed frozen or unfrozen and extracted or a mixture of pressed and extracted unfrozen can be hydrated.</p>		

4.2 Sunflower is used for the production of baby and dietary food products pressed oil refined deodorized frozen brand D.

4.3 Unfrozen and frozen cold-pressed soybean oil is intended for direct consumption and for the production of food products; unrefined pressed of the highest and first grades unfrozen and frozen, refined pressed unfrozen and frozen; as well as refined deodorized unfrozen and frozen "P" and "D" brands.

4.4 Sunflower oil unrefined pressed of the second grade, as well as extracted and a mixture of pressed and extracted is intended for industrial processing for food purposes.

4.5 During the production of organic sunflower oil, it is necessary to comply with the requirements of the current legislation.

5 GENERAL TECHNICAL REQUIREMENTS

Sunflower oil must meet the requirements of this standard, it is produced from sunflower seeds in accordance with DSTU 4694 or another valid regulatory document, provided that the quality and safety indicators meet the requirements specified in the specified standard, in accordance with the current technological regulations or technological instructions approved in the prescribed manner. in compliance with the requirements of DSP 4.4.4–090 [7].

Sunflower oil is identified according to GOST 30418 and DSTU ISO 5508.

5.1 Characteristics

5.1.1 According to organoleptic and physicochemical indicators, sunflower oil must meet the requirements specified in tables 2, 3, 4 and 5.

Table 2 — Organoleptic and physicochemical indicators of unrefined cold-pressed unfrozen and frozen sunflower oil

Indicator	Characteristics of oil indicators		Test method
	of the highest grade	first grade	
Transparency	Transparent without sediment		According to GOST 5472
Taste and smell	Inherent sunflower oil without extraneous smell, taste and bitterness		According to GOST 5472 and Appendix A
Color number, mg of iodine, not more than	10	15	DSTU 4568

End of table 2

Indicator	Characteristics of oil indicators		Test method
	of the highest grade	first grade	
Acid value, mg KOH/g, not more than	1.0	1.5	According to DSTU 4350
Peroxide number, $\frac{1}{2}$ O mmol/kg, not more than	7.0	7.0	According to DSTU ISO 3960 DSTU 4570
Mass fraction of phosphorus-containing substances*, % — in terms of stearo-oleolecithin	0.10	0.20	According to DSTU 7082
— in terms of P ₂ O ₅	0.010	0.019	
Mass fraction of non-fat impurities, %, not more than	Absence**		According to DSTU ISO 663 and DSTU 5063
Mass fraction of moisture and volatiles substances, %, not more than	0.10	0.15	According to DSTU ISO 662 and DSTU 4603
Wax and wax-like substances	Absence***		According to DSTU 4602
Degree of transparency, cm, no more than	25		According to GOST 5472
Anisidine number, u.o., not more than	3.0		DSTU ISO 6885
Mass fraction of vitamin E, total, mg %, not less than	75.0		According to GOST 30417
<p>* To determine the mass fraction of phosphorus-containing substances in terms of phosphorus in mg/kg (mg/kg) (ppm) use formula (4) of DSTU 7082.</p> <p>** The test result of the mass fraction of non-fat impurities, which is $\leq 0.03\%$, is considered the absence of non-fat impurities.</p> <p>*** Determination of the indicator only for frozen oil. A test result of less than 30 mg/kg (mg/kg) (ppm) or endurance of the cold test is taken for the absence of a mass fraction of wax-like substances.</p> <p>Note. The realization of unfrozen oil with a slight cloudiness or "mesh" is not a sign of a defect. "Grid" refers to the presence of small particles of wax-like substances in transparent oil, and "slight turbidity" refers to the presence of small particles of wax-like substances in the oil of a solid background, which slightly reduce the transparency of the oil.</p>			

DSTU 4492:2017

<p>Table</p> <p>Characteristics</p>	<p>Indicator</p>	<p>Not</p>	<p>...</p>	<p>Degree</p>	<p>25</p>	<p>40</p>	<p>25</p>	<p>35</p>	<p>15</p>	<p>10</p>	<p>25</p>	<p>4.0</p>	<p>4.0</p>	<p>25</p>	<p>from</p>	
		<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>from</p>
		<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>from</p>
		<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>from</p>
		<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>from</p>
		<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>from</p>
		<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>from</p>
		<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>from</p>
		<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>from</p>
		<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>from</p>
		<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>from</p>
		<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>	<p>from</p>

DSTU 4492:2017

<p>P</p>	<p>D</p>	<p>0.50</p>	<p>2.0</p>	<p>10.0</p>	<p>10.0</p>	<p>0.10</p>	<p>0.10</p>	<p>234</p>	<p>225</p>	<p>225</p>	<p>234</p>	<p>3.0</p>	<p>15</p>	<p>Not</p>	<p>Not</p>
		<p>10</p>	<p>15</p>	<p>0.10</p>	<p>0.10</p>	<p>225</p>	<p>225</p>	<p>234</p>	<p>Not</p>	<p>Not</p>	<p>Not</p>				

5.1.2 Sunflower oil can be used for technical purposes with indicators that match them with the customer.

5.1.3 Norms for indicators "iodic number", "mass fraction of non-soapable substances" for sunflower which oil is listed in Appendix D.

5.1.4 The fatty acid composition of sunflower oil is given in Appendix E.

5.1.5 According to microbiological indicators, refined, deodorized, frozen sunflower oil grade D must meet the indicators given in appendix B, table B.1.

5.1.6 The content of toxic elements and mycotoxins in sunflower oil should not exceed the maximum permissible concentrations established in accordance with the current regulatory documentation and specified in appendix B, table B.2.

The presence of mycotoxins is not allowed for sunflower refined deodorized frozen grade D oil in accordance with the order of the Ministry of Health of Ukraine No. 1140 dated 29.12.2012 [31].

The content of pesticides and radionuclides in sunflower oil should not exceed the maximum permissible concentrations established in DSanPiN 8.8.1.2.3.4-000 [8], \ddot{y} 6.6.1.1-130 [9] and specified in Appendix B, Tables B.3 and B.4.

5.1.7 The permissible level of benzo(a)pyrene and amounts of polycyclic aromatic hydrocarbons (PAH) for sunflower oil intended for direct consumption or for use as a component of food products is given in Annex B.

The presence of benz(a)pyrene is not allowed for sunflower refined deodorized frozen grade D oil in accordance with the order of the Ministry of Health of Ukraine No. 1140 dated 29.12.2012 [31].

5.1.8 The maximum level of dioxins and PCBs is given in Appendix D. The content of mineral oils and the residual content of technical hexane in sunflower oil are given in Appendix G.

Dioxins are not allowed for refined deodorized sunflower oil of the D brand in accordance with the order of the Ministry of Health of Ukraine No. 1140 dated 29.12.2012 [31].

The maximum levels of certain harmful substances in sunflower oil are in accordance with the order of the Ministry of Health of Ukraine No. 368 dated 13.05.2013 [11] and Commission Regulation (EC) No. 466/2001 dated 08.03.2001 [29] and No. 1881/2006 dated 19.12.2006 [30].

5.19 The nutritional (food) and energy value (calorie) of sunflower oil is given in Appendix C.

5.2 Requirements for raw materials

5.2.1 Raw materials for the production of sunflower oil are:

- unrefined — sunflower seeds in accordance with DSTU 4694 or another valid normative document, provided that the quality and safety indicators meet the requirements specified in the specified standard;
- refined and refined deodorized — unrefined sunflower oil;
- refined deodorized grade "D" — unrefined pressed sunflower oil of the highest grade.

5.2.2 For the production of sunflower oil frozen and unfrozen unrefined, refined washed and refined deodorized are used:

- food citric acid — according to DSTU GOST 908;
- grade A orthophosphoric acid — according to GOST 10678;
- orthophosphoric acid — according to GOST 6552;
- caustic soda of the RH, RD brands — according to GOST 2263;
- table salt — according to DSTU 3583;
- bleaching clays — in accordance with current regulatory documentation;
- perlite filter powder — according to DSTU 3665 and other filter materials in accordance with the current regulatory documentation;
- gaseous and liquid nitrogen of special or increased purity — according to DSTU GOST 9293;
- hexane solvents — in accordance with current regulatory documentation;
- drinking water — according to DSanPiN 2.2.4-171 [10].
- filter fabrics — according to GOST 332.

It is allowed to use other materials in accordance with the current regulatory documentation in the presence of a hygienic opinion of the central executive authority on health protection.

DSTU 4492:2017

5.2.3 It is allowed to introduce antioxidants, biologically active and flavor-aromatic food additives, vitamins into sunflower oil if technologically necessary in accordance with the current regulatory documentation, with the permission of the central executive body for health protection and according to the recipe.

5.2.4 The part of the storage period, which has passed from the date of manufacture, for the above-mentioned raw materials and ingredients entering production, should not exceed 1/3 of their total shelf life.

5.2.5 Sunflower oil unrefined unfrozen pressed, intended for the production of sunflower oil refined deodorized frozen grade D, and unrefined cold pressed sunflower oil is produced from sunflower seeds of only the highest class.

5.2.6 Unrefined sunflower oil, intended for supply to the trade network and restaurant enterprises, is produced from sunflower seeds of only the highest and first grades.

5.2.7 The content of toxic elements, pesticides and mycotoxins in raw materials intended for industrial processing into food products must comply with DSANPiN 8.8.1.2.3.4-000 [8] and the requirements of current regulatory documentation.

5.2.8 Content of ^{137}Cs ^{90}Sr in raw materials for the production of sunflower oil should not exceed and established permissible levels of content of radionuclides in accordance with GN 6.6.1.1-130 [9].

6 SAFETY REQUIREMENTS

6.1 During the production of sunflower oil, the safety requirements set forth in the SDP 4.4.4.090 [7] are observed.

6.2 During the production and processing of sunflower oil, the requirements of NPAOP 15.4-1.06 [17] and NPAOP 15.4-1.10 [18] are followed.

6.3 Technological equipment for production and processing — according to GOST 12.2.003.

6.4 The operation of technological equipment and the management of the technological process of production and processing of sunflower oil are carried out in accordance with DSTU EN 1672-1, DSTU EN 1672-2 and GOST 12.3.002.

6.5 Processes of production and processing of sunflower oil according to sanitary characteristics belong to group "2a" DBN V. 2.2-28 [5].

6.6 Safety requirements for workplace lighting — according to DBN B.2.5-28 [6].

6.7 The noise level at workplaces should not exceed the norms according to GOST 12.1.003 and DSN 3.3.6.037 [12].

6.8 The air of the working area must meet the requirements of GOST 12.1.005, the microclimate of production premises must meet the requirements of DSN 3.3.6.042 [14].

6.9 Fire safety requirements — in accordance with GOST 12.1.004, explosion safety — in accordance with GOST 12.1.010, electrical safety - according to GOST 12.2.007.0.

6.10 Sunflower oil is a flammable product.

In accordance with NPAOP 40.1-1.32 [20], rooms where flammable liquids with a flash temperature of more than 61 °C circulate are classified as "P-1".

6.11 The equipment used in the processes of production and processing of sunflower oil must provide acceptable levels of vibration at workplaces in accordance with DSTU GOST 12.1.012 and DSN 3.3.6.039 [13].

6.12 Employees must be provided with overalls and personal protective equipment in accordance with the requirements of NPAOP 15.0-3.09 [19].

7 ENVIRONMENTAL PRESERVATION REQUIREMENTS NATURAL ENVIRONMENT

7.1 Emissions of harmful substances into the atmosphere are controlled in accordance with GOST 17.2.3.02 and other valid ND.

7.2 Soil protection from contamination by household and industrial waste is carried out by belongs to the "State sanitary norms and rules for maintaining the territories of populated areas" [32].

7.3 Purified water must meet the sanitary-hygienic and technological requirements in accordance with the regulatory documentation.

7.4 Handling of sunflower oil production and processing waste is carried out in accordance with the requirements of the Laws of Ukraine "On Environmental Protection" [2] and "On Waste" [3].

8 MARKING

8.1 They are marked in the official language of Ukraine and in the language specified in the supply contract. The content of the labeling must comply with the Technical Regulations on the Rules of Food Labeling and the requirements of DSTU 4518, DSTU OIML R 79, the Law of Ukraine "On Basic Principles and Requirements for the Safety and Quality of Food Products" [1], the Technical Regulations on Certain Products That Are Packaged by weight and volume into a finished package [33].

8.2 Each unit of consumer container with sunflower oil must be pasted with an artistically designed label, for which label paper in accordance with GOST 7625 or other label material in accordance with current regulatory documentation is used. Marking is applied to the label in any way that ensures clear marking and reading.

Marking contains:

- the name of the oil, its type, grade, brand (if available) and intended use;
- composition of the product (in case of introduction of food additives with indication of their list, number of ingredients);
- application of vitamin content (in case of introduction);
- nominal amount of oil — net mass g, kg (g, kg); additionally allowed — volume l (dm³, l);
- production date (date, month, year) and bottling date (date, month, year), if it does not coincide with the production date;
- expiry date or "use by";
- storage conditions;
- name and location (legal entity address, country) of the market operator;
- production batch number;
- nutritional value in g (g) per 100 g (g) of product, energy value (calorie) in kJ (kJ) and/or kcal (kcal) per 100 g (g) of product;
- information on the presence or absence of genetically modified organisms;
- sign for goods and services (if available);
- designation of this standard;
- product bar code.

8.3 It is additionally allowed:

- application of natural vitamin content as confirmed by research;
 - putting information on packaging with the use of preservative gases to extend the shelf life ("Packed in a protective environment");
 - putting information on certification for all types of oil (if available);
 - applying advertising inscriptions about the quality and safety of sunflower oil as confirmed by research;
 - conditions and time characteristics of suitability after opening this package (applies to packaged oil intended for direct consumption or for use as an ingredient in food products);
 - design with counter-labels (for bottles, boxes — additionally with collars with advertising inscriptions on them).
- It is allowed to add additional information (telephone, fax of the company, etc.).

DSTU 4492:2017

8.4 Marking by embossing or other means may be applied directly on a bottle made of polymer materials.

8.5 The date of production and the date of bottling of sunflower oil are allowed to be affixed with a composer or a stamp on the label, embossing on the cap or in another way, in particular with a marker on the bottle itself, which ensures its clear marking and reading.

8.6 For each transport unit with packaged and non-packaged sunflower oil in bulk the container must be labeled containing:

- the name of the oil, its type, grade, brand (if available);
 - name and location (legal entity address, country) of the market operator;
 - sign for goods and services (if available);
 - the net mass for unpackaged oil or the number of consumer container units in the transport unit packaging for packaged oil;
 - date of manufacture, date of filling (date, month, year) for oils in barrels, flasks, tanks, tanks (if the date of manufacture and the date of pouring do not match) and the expiration date or "use by";
 - storage conditions (temperature regime);
 - production lot number;
 - designation of this standard;
 - bar code for each transport unit with packaged oil (it is allowed to apply a bar code for bulk oil in containers);
 - information on certification for all types of oil (if available).
- It is allowed to provide information on the marking of the transport unit in the accompanying document.

Marking is applied by printing on the label or with the help of a stamp directly on each packaging unit. Marking can be applied to paper, cardboard, plywood, metal and other labels in a way that ensures its clear marking and reading.

Containers are not marked when bottles with sunflower oil are packed in open boxes or shrink wrap.

8.7 Information on the marking of railway tanks and road tankers is provided in the accompanying documents.

8.8 Transport labeling must be carried out in accordance with GOST 14192 with the manipulation signs "Keep away from moisture" and "Keep away from heat". In the case of packaging in glass bottles, it is additionally necessary to apply "Fragile - carefully".

8.9 In the case of supplying sunflower oil for export, the labeling must meet the requirements of foreign trade organizations, taking into account the product nomenclature of foreign economic activity.

8.10 Additional information and labeling in the case of delivery for export are determined by the terms of the agreement or contract.

9 PACKAGING

9.1 Sunflower oil is produced packaged and unpackaged.

9.2 Sunflower oil intended for direct consumption, supply to the trade network and restaurant enterprises is packaged in containers made of domestic and imported colored or non-colored polymer materials, in glass containers in accordance with DSTU GOST 10117.1, DSTU GOST 10117.2, GOST 5717, DSTU GOST 5717.2, bags with a laminated cover and other packaging materials that ensure the preservation of oil in the package during transportation and storage and are approved for use by the central executive authority on health care.

Permissible negative deviations of the net mass of the packaging unit are given in DSTU OIML R 87.

Note. The product, the deviation of the amount of which in the package meets the requirements of the EU directives, can be voluntarily marked with the "e" sign. During labeling, the sign "e" is applied to the package next to the designation of the nominal amount of the product in cases where the weight of the oil in the package is from 5 g (g) to 10 kg (kg) and from 5 ml (ml) to 10 l (l) [34].

9.3 Bottles made of polymer materials with sunflower oil must be hermetically sealed with caps made of polymer materials in accordance with GOST 16337 and GOST 16338 and of high-pressure, low-density polymer materials in accordance with current regulatory documentation. The color of the caps may correspond to GOST 9808 or current regulatory documentation.

9.4 Glass bottles with sunflower oil are closed with aluminum caps for capping bottles with food liquids made of aluminum foil in accordance with DSTU GOST 745 with a cardboard sealing gasket with a polymer coating or materials approved for use by the central executive authority on issues health care for contact with food products.

9.5 Bottles with sunflower oil are packed in transparent heat-shrinkable film in accordance with GOST 25951, using cardboard as a gasket for the bottom of the bottles, and without it, corrugated cardboard boxes in accordance with GOST 13511, GOST 13516, GOST 22702, in wooden multi-circulation boxes for bottles in accordance with GOST 11354 and plastic multi-circulation boxes for bottles in accordance with current regulatory documentation. During packaging, adhesive tape or polymer tape is used for gluing with a sticky layer in accordance with the current regulatory documentation.

Glass bottles are packed in multi-circular wire boxes in accordance with current regulatory documentation, as well as in containers-equipment in accordance with GOST 24831 only for local sale.

9.6 Products packed in corrugated cardboard boxes are allowed to be formed into bags on pallets with the use of a polymer film.

9.7 It is allowed to use other types of containers for packing prepackaged sunflower oil, which will ensure preservation of product quality during transportation and storage.

9.8 Sunflower oil is packaged immediately after its production. If sunflower oil is stored for some time in a closed capacity before packaging, it is additionally controlled by indicators characterizing the depth of oxidation processes (acid number, peroxide number, anisidine number) in accordance with DSTU ISO 3960, DSTU ISO 6885 and DSTU ISO 6886.

9.9 Unpackaged sunflower oil is poured into aluminum flasks in accordance with GOST 5037 with sealing grease-resistant rubber rings in accordance with GOST 17133, non-galvanized steel barrels for food products in accordance with GOST 13950 and other containers approved for use by the central executive authority, which ensures formation and implementation of state policy in the field of health care.

9.10 Sunflower oil, upon agreement, is poured into the customer's container, which guarantees quality and storage during transportation and storage.

9.11 Sunflower oil is bottled by types, grades and brands.

9.12 The container used for pouring sunflower oil must be clean, dry, without extraneous odors and ensure the preservation and quality of the product during transportation and storage.

9.13 Containers used for pouring refined, refined deodorized sunflower oil must be thoroughly cleaned of the remains of the oil previously stored in them, steamed, washed and dried.

9.14 Sunflower oil for regions with specific climatic conditions is packaged in accordance with DSTU GOST 15846.

10 TRANSPORTATION AND STORAGE

10.1 Sunflower oil is transported in railroad tanks with a bottom outlet designed for the transportation of oils in accordance with DSTU 3445 (GOST 10674), which have stencils and the inscriptions "Oil" in accordance with the current rules of cargo transportation.

10.2 Sunflower oil is transported in tank trucks with tightly closed hatches in accordance with GOST 9218 and in other covered vehicles in accordance with the rules of cargo transportation in force on the corresponding mode of transport.

10.3 During transportation by open vehicles, barrels, flasks and boxes with packaging with sunflower oil should be protected from atmospheric precipitation and the influence of sunlight.

DSTU 4492:2017

10.4 Transportation of packaged oil in open boxes must be coordinated with the customer.

10.5 Railway tanks, road tankers and other means of transport must meet the requirements established for the transportation of food products, be clean, dry, without extraneous odors and guarantee the preservation of the quality of the transported products.

Sunflower oil intended for direct consumption is poured into railway tanks, tank trucks, and other vehicles using a pipeline that reaches the bottom of the tank. Refined, deodorized sunflower oil is poured into communications intended only for this type of oil.

10.6 Barrels, flasks, as well as boxes with packed sunflower oil are transported them in packages in accordance with the requirements of GOST 21650, GOST 22477, GOST 23285 and GOST 26663.

10.7 Sunflower oil for pouring into railway tanks, road tankers and other vehicles, flasks and barrels or for pouring into consumer containers is stored in closed containers according to types, grades, brands and in accordance with the manufacturer's instructions.

10.8 Sunflower oil in containers made of domestic and imported colored or non-colored polymer materials, glass and bags with a laminated cover, in flasks and barrels is stored in closed darkened rooms in the recommended temperature range from 0 ^{at}C to 30 ^{at}WITH.

In the case of transportation and storage of sunflower oil at sub-zero temperatures, clouding and thickening of the oil is not a sign of defect.

Unrefined sunflower oil is transported and stored in accordance with current national regulations and international rules, in particular DSTU SAC/RCP 36–2005 [35].

11 CONTROL METHODS

11.1 Sampling — in accordance with DSTU ISO 5555 and DSTU 4349.

11.2 Definition of taste - according to Appendix A; transparency and smell - according to GOST 5472.

11.3 Determination of the color number — according to DSTU 4568.

11.4 Determination of acid number — according to DSTU 4350.

11.5 Determination of the peroxide number — according to DSTU ISO 3960 and DSTU 4570.

11.6 Determination of phosphorus-containing substances - according to DSTU 7082.

11.7 Determination of the mass fraction of non-fat impurities - according to DSTU 5063 and DSTU ISO 663.

11.8 Determination of the mass fraction of moisture and volatile substances — according to DSTU 4603, DSTU ISO 662.

11.9 Determination of the content of wax and wax-like substances - according to DSTU 4602.

11.10 Definition of soap — according to DSTU 6048.

11.11 Determination of the flash point of extraction oil — according to DSTU 4455.

11.12 Determination of the degree of transparency - according to GOST 5472.

11.13 Determination of the anisidine number — according to DSTU ISO 6885.

11.14 Preparation of samples for the determination of toxic elements — according to DSTU 7670.

11.15 Determination of toxic elements: lead — according to GOST 30178 and DSTU ISO 12193, cadmium — according to GOST 30178 and DSTU ISO 15774, arsenic — according to GOST 26930, mercury — according to GOST 26927, copper — according to GOST 30178 and DSTU ISO 8294, zinc - according to GOST 30178, iron - according to GOST 26928 and DSTU ISO 8294.

11.16 Determination of mycotoxins — according to MU 2273 [24], MU 4082 [26], MR 2964 [25], DSTU EN 12955.

11.17 Determination of the residual content of pesticides - according to DSTU EN 1528-1.

11.18 Determine the content of radioactive substances 90Sr and 137Cs according to MV 6.6.1-10.10.1.7.158 [16].

11.19 Determination of iodine number — according to DSTU 4569 and DSTU ISO 3961.

11.20 Determination of the mass fraction of non-soap substances - according to DSTU 6050 and DSTU ISO 3596.

11.21 Determination of fatty acid composition — according to DSTU ISO 5508 and GOST 30418.

11.22 Determination of the mass fraction of antioxidants in the case of use - according to DSTU ISO 5558, biologically active and flavoring food additives, in the case of their use, according to the methods approved in the prescribed manner.

Determine the mass fraction of vitamins according to DSTU EN 12821, DSTU EN 12822, DSTU EN 12823-1 and GOST 30417.

11.23 Determination of microbiological parameters — according to DSTU 7357, GOST 10444.12, DSTU EN 12824, DSTU IDF 93A and DSTU ISO 6888-1.

11.24 Determination of the mass fraction of benzo(a)pyrene — according to DSTU 4689, the amount of benzo(a)pyrene, benzo(a)anthracene, benzo[b]fluoranthene, dioxins according to the methods approved in the prescribed manner.

11.25 Determining the mass fraction of mineral oils — according to MVU 030/05-2008 (MVY 17/41-08) [27].

11.26 Determination of the residual content of technical hexane — according to DSTU ISO 9832.

11.27 Determination of the net mass of packaged oil - according to I 00032744-869 [23].

11.28 It is allowed to use other standard techniques, methods and devices, which according to metrological and technical characteristics do not contradict the above and have appropriate metrological support in accordance with the current legislation of Ukraine.

12 RULES OF ACCEPTANCE

12.1 Accept sunflower oil in batches. A batch is a quantity of sunflower oil with the same physical and chemical parameters according to the type, grade and brand, intended for the shipment of products packed in the same type of consumer container, the same packaging and simultaneous filling and shipment of unpackaged products in a transport container, issued with a single document regarding quality and safety.

12.2 Accept products in accordance with GOST 5471 and DSTU 4349.

12.3 Periodic control of the content of toxic elements, mycotoxins, pesticides, radio-nuclides, dioxins, the amount of surfactants is provided by the company, which guarantees compliance with the quality and safety of products. The periodicity of monitoring indicators is provided in the technological documentation (instructions, regulations) or in the documents of the HACCP system.

12.4 The content of all food additives, antioxidants, if they are used, shall be determined with periodicity in accordance with sanitary standards approved in the prescribed manner.

12.5 Quality indicators of sunflower oil are controlled: "taste and smell", "transparency", "acid number", "peroxide number", "mass fraction of phosphorus-containing substances", "mass fraction of moisture and volatile substances", "color number", "mass proportion of non-fat impurities", "soap (qualitative sample)", "test for wax and wax-like substances" in accordance with the current regulatory and technical documentation.

The "degree of transparency" indicator is determined at the request of the customer, if there are discrepancies in the case of evaluating the "transparency" indicator.

Indicators "anisidine number", "mass fraction of vitamin E", "mass fraction of benz(a)pyrene" are guaranteed by the market operator and determined once every 90 days.

12.6 The periodicity of control of the content of microbiological indicators for refined deodorized grade D sunflower oil is determined periodically, but at least once every 90 days, or at the request of the customer.

12.7 Indicators "iodine number", "mass fraction of unsoapable substances", "fatty acid composition", "mass fraction of mineral oils", "residual content of technical hexane" in accordance with Annexes D, E, Z are determined at the request of the customer.

12.8 In case of shipment of sunflower oil for export, the market operator accompanies the cargo with a document confirming the quality and safety in accordance with the requirements established for foreign economic activity.

DSTU 4492:2017

12.9 In case of unsatisfactory test results for at least one of the indicators, the oil is tested from a double sample. The results are distributed to the entire batch. If unsatisfactory results are obtained, the batch is completely rejected.

13 WARRANTIES OF THE MARKET OPERATOR

13.1 The market operator guarantees that the quality of sunflower oil meets the requirements of this standard, provided that the requirements for transportation and storage are met.

13.2 The shelf life of prepackaged and unpackaged sunflower oil is determined by the market operator depending on the production technology on the basis of research in accordance with current methods approved in the prescribed manner.

13.3 The warranty period of storage of sunflower oil depending on the type and storage conditions according to 10.8 is indicated in table 10.

Table 10 — Warranty period of storage of sunflower oil

Type of oil packaging	Warranty period of storage of sunflower oil								
	unrefined cold pressing		unrefined			hydrated	refined	refined deodorized	
	of the highest grade	first grade	of the highest grade	first grade	second grade				
packaged	4 months		4 months			—	4 months	2 months	6 months
unpackaged	4 months		3 months			1 month	2 months	1 month	1 month

APPENDIX A (mandatory)

DETERMINING THE FLAVOR OF SUNFLOWER OIL

A.1 The essence of the method

The method of determining the taste of sunflower oil consists in the organoleptic evaluation of the parameter.

A.2 Testing

A.2.1 *Measuring instruments, devices and auxiliary devices:*

Laboratory scales — according to the current regulatory documents, of the 3rd class of accuracy with the highest weighing limit up to 1 kg or other scales of the same accuracy class.

The set of weights is in accordance with current regulatory documents.

Glass B-1-250 THC — according to GOST 25336.

Glass boxes with a polished cover SV-34/12, SV-45/13 — according to GOST 25336.

Glass thermometer - according to GOST 29224.

Laboratory water bath that provides temperature (100 ± 2) °C — in accordance with current regulations

five documents.
Air-heat laboratory cabinet, which provides a temperature of 40 in accordance with °C to 200 °C WITH - current regulatory documents.

The dry-air thermostat, which ensures a temperature of (50 ± 2) °C — in accordance with the current norms supporting documents.

The watch is in accordance with current regulatory documents.

The electric kettle is made of stainless steel - in accordance with current regulatory documents.

Disposable dishes made of PVC or paper.

It is allowed to use measuring equipment, devices and auxiliary devices of national and foreign ones with technical and metrological characteristics not lower than those specified.

A.2.2 *Preparation for testing*

The air-heat cabinet or thermostat is heated to a temperature of (50 ± 1) °C WITH.

A.2.3 Sample preparation

A sample of the oil sample in the amount of 150 g to 200 g is heated in a water bath to a temperature of (45 ± 2) . From 25 cm³ to 30 cm³ of the oil sample is placed in a glass jar, covered with a lid and thermostated in an air-heat cabinet or a thermostat at a temperature of (50 ± 1) °C for 30 minutes.

Heated samples at the test temperature are tasted no later than in 30 minutes. Re-heating is not allowed.

A.2.4 Test methodology

The temperature of the oil sample during the test should be (50 ± 1) °C. The closed box with the sample is removed from the air-heat cabinet or thermostat and stirred. The box cover is opened immediately before the analysis.

When determining the taste, the amount of product should be from 10 cm³ to 15 cm³.

The product is distributed throughout the oral cavity in such a way as to create contact with all taste points. They inhale air through the mouth and evaluate the taste by exhaling through the nose.

A sample of the oil sample is removed from the oral cavity into a disposable cup. If necessary, the mouth is rinsed with boiled water at a temperature of (50 ± 1) °C. The cup is closed again with a cover, a sample is taken, stirred and repeated testing is carried out.

APPENDIX B
(mandatory)

SAFETY INDICATORS

Table B.1 — Microbiological indicators of sunflower oil refined deodorized frozen grade D

Indexes	Acceptable levels, no more than	Control methods
The number of aerobic and facultatively anaerobic microorganisms, CFU/g, is no more than	500	According to DSTU 7357
Bacteria of the group of coliforms (coliforms) in 1 g	Inadmissible	According to DSTU 7357
Coagulase-positive <i>Stafilococcus</i> , in 1 g	Inadmissible	According to DSTU ISO 6888-1
Pathogenic microorganisms, in particular bacteria of the genus <i>Salmonella</i> , in 25 g	Inadmissible	According to DSTU EN 12824 and DSTU IDF 93A
Yeast, CFU/g	Inadmissible	According to GOST 10444.12
Mold fungi, CFU/g, not more than	100	According to GOST 10444.12
Note. Coagulase-positive staphylococci are determined when the maximum permissible level of the total number of microorganisms is exceeded.		

Table B.2 — Permissible levels of toxic elements and mycotoxins in sunflower oil

The name of the toxic element	Permissible levels, mg/kg, not more than	Control methods
Lead	0.1	According to GOST 30178 and DSTU ISO 12193
Arsenic	0.1	According to GOST 26930
Cadmium	0.05	According to GOST 30178 and DSTU ISO 15774
Mercury	0.03	According to GOST 26927
Copper	0.5	According to GOST 30178 and DSTU ISO 8294
Iron	5.0	According to GOST 30178 and DSTU ISO 8294
Zinc	5.0	According to GOST 30178
Aflatoxin B1	0.005	According to MR 2273 [24], MU 4082 [26] and DSTU EN 12955
Zearalenone	1.0	According to MR 2964 [25]

DSTU 4492:2017

Table B.3 — Permissible levels of pesticide content in sunflower oil

The name of the pesticide	Maximum permissible levels, million ⁻¹ (mg/kg)			Control methods
	For direct use for food purposes	For processing into food products	For technical purposes	
HCCG gamma isomer (hexachloran)	0.05	1.0	greater than 1.0	According to DSTU EN 1528-1
Heptachlor	Inadmissible			According to DSTU EN 1528-1
DDT	0.1	0.25	more than 0.25	According to DSTU EN 1528-1

Table B.4 — Permissible levels of radionuclides

The name of radionuclides	Permissible levels, Bq/kg	Control methods
137Cs (Cesium-137)	100	According to MV 6.6.1-10.10.1.7.158 [16]
90Sr (strontium-90)	30	

APPENDIX B
(mandatory)

**MAXIMUM LEVEL OF POLYCYCLIC
AROMATIC HYDROCARBONS (surfactants)**

Table B.1

Indicator	Maximum level (µg/kg)	Control methods
Benz(a)pyrene	2.0	DSTU 4689 and international methods
The amount of benz(a)pyrene, benz(a)anthracene, benzo[b]fluoranthene ¹⁾	10.0	Methods approved in the prescribed manner and international methods
1) For sunflower oil intended for direct consumption or for use as a component of food products.		

APPENDIX G
(mandatory)

MAXIMUM LEVEL OF DIOXINS AND PCBs

Table D.1

Indicator	Maximum level	Control methods
Total dioxins (WHO-PCDD/F-TEQ)	0.75 pg/g (g) of fat	Methods approved in the prescribed manner and international methods
The sum of dioxins and dioxin-like substances PCBs (WHO-PCDD/F-TEQ)	1.25 pg/g (g) of fat	
The sum of PCB28, PCB52, PCB101, PCB138, PCB153 and PCB180 (ICES-6)	40.0 ng/g (g) of fat	

DSTU 4492:2017

APPENDIX E
(reference)

FATTY ACID COMPOSITION OF SUNFLOWER OIL

Table E.1

Conventional sign acid	The name of the acid according to the trivial nomenclature	Fatty acid mass fraction (% of total fatty acids)
C14:0	Miristinova	Up to 0.2
C16:0	Palmitinova	From 5.0 to 7.6
C16:1	Palmitooleinova	Up to 0.3
C18:0	Stearinova	From 2.7 to 6.5
C18:1	Oleinova	» 14.0 » 39.4
C18:2	Linoleum	» 48.3 » 74.0
C18:3	Linolenova	Up to 0.3
C20:0	Arakhinova	From 0.1 to 0.5
C20:1	Gondoinova	Up to 0.3
C22:0	Begenov	From 0.3 to 1.5
C24:0	Lignocerinova	Up to 0.5

APPENDIX Z
(reference)

**NORM FOR INDICATORS "MASS PARTICLE
MINERAL OILS" AND "RESIDUAL CONTENT
TECHNICAL HEXANE"**

Table Z.1

Indicator	Norm	Control methods
Mass fraction of mineral oils, mg/kg, no more than	50	According to MVU 030/05-2008 (MVY 17/41-08)
The residual content of technical hexane for oil, except for pressed oil, mg/kg, not more than	80	According to DSTU ISO 9832

APPENDIX Z
(reference)

**NUTRITIONAL (NUTRITIONAL) AND ENERGY
VALUE (CALORICY) OF SUNFLOWER OIL**

Table C.1

Sunflower oil	Nutritional value, g (g) per 100 g (g) of the product	Energy value (calories) per 100 g (g) of the product
Unrefined cold pressed	From 99.85 to 99.90	From 898 kcal (kcal) to 899 kcal (kcal) (3757 kJ (kJ) — 3761 kJ (kJ))
Unrefined	» 99.70 » 99.85	898 kcal (kcal) (3757 kJ (kJ))
Refined and refined deodorized	99.90	899 kcal (kcal) (3761 kJ (kJ))
Note. The nutritional value is determined depending on the content of moisture and volatile substances in sunflower oil.		

APPENDIX I
(reference)

DCPP CODE

Table I.1 — Codes of DCP according to DK 016:2010 [28]

Product type	DCP code
Sunflower oil, crude	10.41.24
Sunflower oil and its fractions, refined, chemically unmodified	10.41.54

APPENDIX K
(reference)

BIBLIOGRAPHY

- 1 Law of Ukraine "On Basic Principles and Requirements for the Safety and Quality of Food Products" dated July 22, 2014 No. 1602-VII
- 2 Law of Ukraine "On Environmental Protection" dated June 25, 1991 No. 1264-XII
- 3 Law of Ukraine "On Waste" dated 05.03.1998 No. 187/98-VR
- 4 Technical regulations on food labeling rules, approved by order of the State Committee of Ukraine on Technical Regulation and Consumer Policy No. 487 dated 28.10.2010, registered in the Ministry of Justice on 11.02.2011 under No. 183/18921
- 5 DBN V.2.2-28:2010 Buildings for administrative and domestic purposes, approved by order of the Ministry of Regional Construction of Ukraine dated 12.30.2010 No. 570
- 6 DBN V.2.5-28-2006 Natural and artificial lighting, approved by order of the Ministry of Construction of Ukraine dated 15.05.06 No. 168
- 7 DSP 4.4.4.090-2002 State sanitary rules for enterprises that produce vegetable oils, approved by the resolution of the Ministry of Health of Ukraine dated 31.05.2002 No. 21
- 8 DSanPiN 8.8.1.2.3.4-000-2001 Permissible doses, concentrations, quantities at the level of pesticide content in agricultural raw materials, food products, air of the working area, atmospheric air, water of reservoirs, soils, approved by the Ministry of Health of Ukraine, by the Resolution of the Chief of the state sanitary doctor 19.02.03 No. 137
- 9 ґґ 6.6.1.1-130-2006 Permissible levels of radionuclides 137Cs and 90Sr in food and drinking water, approved by the order of the Ministry of Health of Ukraine dated 03.05.2006 No. 256, registered in the Ministry of Justice dated 17.07.2006 under No. 845/12719

DSTU 4492:2017

10 DSanPiN 2.2.4-171-10 Hygienic requirements for drinking water intended for human consumption, approved by order of the Ministry of Health of Ukraine dated May 12, 2010 No. 400, registered in the Ministry of Justice on July 1, 2010 under No. 452/17747

11 State hygienic rules and regulations "Regulation of maximum levels of certain pollutants in food products", approved by order of the Ministry of Health of Ukraine dated 05/13/2013 No. 368, registered with the Ministry of Justice of Ukraine on 05/18/2013 under No. 774/23306

12 DSN 3.3.6.037-99 Sanitary norms of industrial noise, ultrasound and infrasound, approved by the resolution of the Ministry of Health of Ukraine dated 01.12.1999 No. 37

13 DSN 3.3.6.039-99 State sanitary norms of industrial general and local vibration, approved by the resolution of the Ministry of Health of Ukraine dated 01.12.1999 No. 39

14 DSN 3.3.6.042-99 Sanitary norms of the microclimate of industrial premises, approved by decree order of the Ministry of Health of Ukraine dated 01.12.1999 No. 42

15 List of food products, in respect of which the control of the content of genetically modified of these organisms, approved by order of the Ministry of Health of Ukraine dated 09.11.2010 No. 971

16 MV 6.6.1-10.10.1.7.158-08 "Sampling. Primary processing and determination of the content of ⁹⁰Sr and ¹³⁷Cs in food products", approved by the order of the Ministry of Health of Ukraine dated August 11, 2008 No. 446

17 NPAOP 15.4-1.06-97 Safety rules for oil and fat production, approved by the order of the State Supervision of Labor and Employment of Ukraine dated 04.22.1997 No. 99

18 NPAOP 15.4-1.10-92 Safety rules in the production of oils by the method of pressing and extraction, approved by the order of the Derzhirtekhnadzor of Ukraine 25.11.1992

19 NPAOP 15.0-3.09-98 Standard industry standards for free issuance of special clothing, special footwear and other means of personal protection to employees in the food industry, approved by the order of the State Supervision and Protection of Labor of Ukraine dated 10.06.1998 No. 115, registered in the Ministry of Justice of Ukraine on 14.07.1998 No. 446/ 2886. With changes: Order of the Derzhirpromnadzor of Ukraine dated March 26, 2007 No. 59

20 NPAOP 40.1-1.32-01 Rules for the construction of electrical installations. Electrical equipment of special installations, approved by order of the Ministry of Labor and Social Policy of Ukraine dated 21.06.2001 No. 272

21 R 50-056-96 The product is packed in a package. General requirements for the quantity approved by Kazom of the State Standard of Ukraine dated 18.07.96 No. 300

22 PMU 17-2000 Instructions on the procedure for state metrological supervision of the quantity of packaged goods in packages, approved by the order of the State Standard of Ukraine dated 05/17/2000 No. 314

23 I 00032744-869-2003 Instruction on the procedure and method of determining the mass of oil in a packaging unit, approved by the State Department of Food on February 4, 2003

24 MP 2273-80 Methodological recommendations for the detection, identification and determination of aflatoxin content in food products (Methodical recommendations for the detection, identification and determination of aflatoxin content in food products), approved by the Ministry of Health of the USSR on 10.12.1980 No. 2273

25 MR 2964-84 Methodological recommendations for the detection, identification and determination of the content of zearalenone in food products (Methodological recommendations for the detection, identification and determination of the content of zearalenone in food products), approved by the Ministry of Health of the USSR on 01.23.84 No. 2964

26 MU 4082-86 Methodological guidelines for the detection, identification and determination of aflatoxin content in food raw materials and food products using high-performance liquid chromatography), approved by the Ministry of Health of the USSR on March 20, 1986 No. 4082

27 MVU 030/05-2008 (MVY 17/41-08) "Methodology for measuring the mass fraction of mineral oils in vegetable oils by the gas-liquid chromatography method" (Methodology for measuring the mass fraction of mineral oils in oils by the gas-liquid chromatography method). State register of measurement methods (MVU) for 2015, developed by Ukrmetrteststandard

28 DK 016-2010 State Classifier of Products and Services (SCC)

29 Commission Regulation (EC) No. 466/2001 dated 08.03.2001 establishing maximum levels for some contaminants in food products

30 Commission Regulation (EC) No. 1881/2006 dated 19.12.2006 establishing maximum levels for some contaminants in food products

31 State sanitary norms and rules "Medical requirements for the quality and safety of food products and food raw materials", approved by order of the Ministry of Health of Ukraine dated 29.12.2012 No. 1140, registered in the Ministry of Justice of Ukraine on 09.01.2013 under No. 88/22620

32 DSanPin State sanitary standards and rules for maintaining the territories of populated areas, approved by order of the Ministry of Health of Ukraine dated 17.03.2011 No. 145, registered in the Ministry of Justice of Ukraine on 04.05.2011 under No. 457/19195

33 Technical regulations regarding certain goods that are packaged by weight and volume in ready-made packaging, approved by the resolution of the CMU on 16.12.2015 No. 1193

34 Changes made to the Technical Regulations regarding some goods that are packaged by mass and volume in ready-made packaging, approved by the Resolution of the Cabinet of Ministers of Ukraine of January 18, 2017 No. 23

35 DSTU SAC/RCP 36–2005 Recommended international norms and rules for storage and transport filling of food fats and oils in bulk.

Code according to DK 004: 67.200

Keywords: sunflower oil, production and processing technology, organoleptic, physicochemical parameters, safety requirements, packaging, labeling, rules of transportation, storage and reception, control methods, storage and shelf life.

Editor M. Klymenko
Editor V. Mulyan

Signed for printing on 12/19/2018. Format 60 × 84 1/8. Mind.
printing. sheet 3.25. Deputy 2581. The price is negotiable.

Executor

**State Enterprise "Ukrainian Research and Training Center for Standardization,
Certification and Quality Problems" (SE "UkrNDNC") str.
Svyatoshynska, 2, Kyiv, 03115**

**Certificate of registration of the publisher of publishing products in the State Register
of Publishers, Manufacturers and Distributors of Publishing Products dated 14.01.2006 series DK No. 1647**

AMENDMENTS TO THE NATIONAL STANDARDS

AMENDMENT #1

UKND code 67.200

DSTU 4492:2017 "Sunflower oil. Specifications"

Place of amendment	Printed	Must be
P. 22, appendix Z, table Z.1, first line	"Mass share of mineral oils..."	"Mass share of mineral oils..."
P. 22, appendix Z, table Z.1, second line, column "Norm"	"80"	"75"

(IPS No. 1–2019)

AMENDMENT #2

UKND code 67.200

DSTU 4492:2017 "Sunflower oil. Specifications"

Place of amendment	Printed	Must be
P. 16, section 10, subsection 10.8, last paragraph	"They transport and store unrefined sunflower oil..."	"They transport and store unpackaged sunflower oil..."

(IPS No. 1–2019)