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|  | Specification   |  |
|  | <b>High-oleic Refined Deodorized Winterized Sunflower Oil</b> | Integrated Management System<br>Document Code No.<br><b>SP-8.5.1-02-02</b><br>Revision No. 0<br>Sheet 1 of 5 |



Brought into force by Order No. 27 dated February 03, 2020

Original enactment/Implemented to supersede:

REFERENCE COPY

| Product Characteristic  | Components/Indicators  |                                 |                                |
|---|--|---------------------------------|--------------------------------|
| Product / Product Category (Name, Type)   | High-oleic refined deodorized winterized sunflower oil.  |                                 |                                |
| 1. Raw material   | High-oleic sunflower seeds   |                                 |                                |
| 2. Method for production  | According to the Manufacturing Specification on sunflower oil production   |                                 |                                |
| 3. Process  | - Production of high-oleic refined deodorized winterized sunflower oil.<br>- Prepackaging process                                      |                                 |                                |
| 4. Target market  | Fat-and-oil industry companies, general public.  |                                 |                                |
| 5. Consumer / Use and application   | Ready for processing and use by all categories of consumers.   |                                 |                                |
| 6. Known and potential methods of unintended use of the product and their hazardous effects | Not found.   |                                 |                                |
| 7. Type of sales (distribution)   | Wholesale in oil tank trucks. Wholesale of oil prepackaged in PET bottles, metal cans and other containers intended for food products. |                                 |                                |
| 8. Regulatory document on the product   | TU U 10.4-00687267-001:2016 High-oleic sunflower oil. Specifications.<br>DSTU 7011:2009 "Sunflower"                                    |                                 |                                |
| 9. Nutritional and energy value (per 100 g of product)                                      | 3761 (kJ) / 899 (kcal.)  |                                 |                                |
| 10. Warehouse   | Fatty acid profile of sunflower oil:   |                                 |                                |
|   | Shorthand name of acid   | Trivial (systemic) name of acid | Mass fraction of fatty acid, % |
|   | C <sub>6:0</sub>   | Caproic                         | 0                              |
|   | C <sub>8:0</sub>   | Caprylic                        | 0                              |
|   | C <sub>10:0</sub>  | Capric                          | 0                              |
|   | C <sub>12:0</sub>  | Lauric                          | 0                              |
|   | C <sub>14:0</sub>  | Myristic                        | 0-0.1                          |
|   | C <sub>16:0</sub>  | Palmitic                        | 2.6-5.0                        |
|   | C <sub>16:1</sub>  | Palmitoleic                     | 0-0.1                          |
|   | C <sub>17:0</sub>  | Margaroleic                     | 0-0.1                          |
|   | C <sub>17:1</sub>  | Heptadecenoic                   | 0-0.1                          |
|   | C <sub>18:0</sub>  | Stearic                         | 2.0-6.2                        |
|   | C <sub>18:1</sub>  | Oleic                           | 75.0-90.7                      |
|   | C <sub>18:2</sub>  | Linoleic                        | 2.1-17.0                       |
| C <sub>18:3</sub>   | Linolenic  | 0-0.3                           |                                |
| C <sub>20:0</sub>   | Arachidic  | 0.2-0.5                         |                                |

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|  | $C_{20:1}$ | Gondoic       | 0.1-0.5 |
|  | $C_{20:2}$ | Eicosadienoic | 0       |
|  | $C_{22:0}$ | Behenic       | 0.5-1.6 |
|  | $C_{22:1}$ | Eruric        | 0-0.3   |
|  | $C_{24:0}$ | Lignoceric    | 0-0.5   |

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| II. Organoleptic, physical and chemical parameters | <b>Organoleptic, physical and chemical parameters of high-oleic refined deodorized winterized sunflower oil</b>  |  |  |
|  | <b>Parameter name</b>  | <b>Description</b>   |  |
|  | Clarity  | Clear without lees   |  |
|  | Taste and smell  | Taste of a non-specific oil, without smell                 |  |
|  | Colour index, mg of Iodine, not > than   | 10   |  |
|  | Acid-degree value, mg of KOH/g, not >  | Freshly produced – 0.25<br>At the end of shelf life – 0.60 |  |
|  | Peroxide index, 1/2 O mmol/kg, not >   | Freshly produced – 2.0<br>At the end of shelf life – 10.0  |  |
|  | Mass fraction of phosphorus-containing substances, %, not > than:<br>- in terms of stearo-oleo-lecithin<br>- in terms of P <sub>2</sub> O <sub>5</sub> | Absence  |  |
|  | Mass fraction of nonoleaginous impurities, %   | Absence  |  |
|  | Mass fraction of moisture and volatile substances, %, not >  | 0.10   |  |
|  | Iodine index, g, J 1/2 /100 g  | 80-95  |  |
|  | Anisidine value, conv. units   | Not standardized   |  |
|  | Mass fraction of oleic acid (% of total fatty acids), not less than:   | 82.0   |  |
|  | Wax and wax-like substances  | Absence  |  |
|  | Soap (test for identification):  | Absence  |  |
|  | Flash point of extracted oil, °C, not less than:   | 234 °C   |  |
|  | Mass fraction of benzo(a)pyrene, in µg/kg, not more than -   | 2.0  |  |

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| 12. Safety parameters (chemical, physical, biological) | <b>Chemical</b>  |  |
|  | Allowable levels of content of toxic elements and mycotoxins |  |
|  | <b>Name of toxic element</b>                                 | <b>Allowable levels, mg/kg, shall not exceed</b> |
|  | Lead   | 0.1  |
|  | Arsenic  | 0.1  |
|  | Cadmium  | 0.05   |
|  | Mercury  | 0.03   |
|  | Copper   | 0.5  |
|  | Iron   | 5.0  |
|  | Zinc   | 5.0  |
|  | <b>Mycotoxins:</b>   |  |
|  | Aflatoxins B <sub>1</sub>                                    | 0.005  |
| Zearalenone  | 1.0  |  |



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|                                  | <p><b>Pesticides:</b><br/>Hexachlorocyclohexane (Gamma isomers) 0.05<br/>DDT 0.1<br/>Heptachlor Not allowed</p> <p><b>Radionuclides, Bq/kg:</b><br/>Caesium - 137 600<br/>Strontium – 90 200</p> <p><b>Benzo(a)pyrene</b> Allowable levels, µg/kg, shall not exceed<br/>2</p> <p><b>Biological</b><br/>Microbiological parameters of<br/>- refined deodorized winterized sunflower oil of mark P<br/>- are not defined but are determined at the client's request</p> <p><b>Physical:</b><br/>- absence of foreign particles such as metal, glass, stones, jewellery.</p>   |
| 13. Labelling                    | <p>Labelling is performed in the state language and the language stipulated in the supply contract. The content of the label must comply with the Law of Ukraine "On Information for Consumers about Food Products", DSTU OIML R 79, the Law of Ukraine "On Basic Principles and Requirements for Food Safety and Quality".</p> <p><u>Mandatory labelling information:</u></p> <ol style="list-style-type: none"> <li>1) Name of the food product;</li> <li>2) Composition of the food product;</li> <li>3) Number of individual ingredients (class of ingredients)</li> <li>4) Quantity of food product in the established units of measurement;</li> <li>5) Temporal characteristics of the expiration of the food product;</li> <li>6) Storage conditions, if the food product requires special storage conditions;</li> <li>7) Conditions and recommendations for use, if the food product requires special conditions of use;</li> <li>8) Name, location and telephone number of the manufacturer or hotline, the actual address of the facilities (object) of production.</li> <li>9) Batch number of production;</li> <li>10) Information on genetically modified organisms in the food product (in accordance with current legislation);</li> <li>11) Nutritional value with indication of the amount of proteins, carbohydrates and fats in the established units of measurement per 100 g (100 ml) of food product and energy value (caloric content) expressed in kJ and/or kcal per 100 g (100 ml) of the food product;</li> <li>12) Indication of the trademark for goods and services under which the food product is sold (if any).</li> </ol> |
| 14. Packaging                    | <p><u>1. Primary packaging:</u><br/>- for bulk oil – oil tank truck.<br/>- for prepackaged product - a preform from polymer of polyethylene terephthalate (PET), a polymeric cap.</p> <p><u>2. Packaging for transportation:</u><br/>For prepackaged product – a corrugated cardboard box.</p>  |
| 15. Storage terms and conditions | <p>Shelf life:<br/>- Refined deodorized winterized sunflower oil (pressed, extraction or a mixture of pressed and extraction oils) of mark P, prepackaged – not more than 24 months;<br/>- Refined deodorized winterized sunflower oil (pressed, extraction or a mixture of pressed and extraction oils)</p>  |



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|                                 | of mark P, prepackaged – not more than 12 months (at the request of the customer);<br>- Refined deodorized winterized sunflower oil (pressed, extraction or a mixture of pressed and extraction oils) of mark P, bulk – not more than 12 months.  |
|                                 | Shelf life after opening consumer packaging:<br>- For refined deodorized winterized sunflower oil (pressed, extraction or a mixture of pressed and extraction oils) of mark P with a shelf life of 24 months: at a temperature of +18 °C to +25 °C – not more than 40 days; at temperatures from 0 °C to +11 °C – not more than 90 days;<br>- For refined deodorized winterized sunflower oil (pressed, extraction or mixture of pressed and extraction oils) of mark P with a shelf life of 12 months (at the request of the customer): at a temperature of +18 °C to +25 °C – not more than 40 days; at temperatures from 0 °C to +11 °C – not more than 90 days. |
| <b>16. Transport conditions</b> | Refined deodorized winterized sunflower oil of mark P is transported:<br><u>In bulk</u> in oil tank trucks with tightly closed hatches intended for transportation in accordance with the cargo transportation regulations effective for the respective type of transportation facility.<br><u>Prepackaged sunflower oil:</u><br>Transported in corrugated cardboard boxes. Boxes with prepackaged oil are transported by trucks in accordance with the regulations on transportation of goods effective for the respective type of transportation facility.  |



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