



Private Production and Commercial Enterprise

VIMAL

since 1992

Registration address: 70 Shevchenka street, Drozdivka, Chernihiv Region, Ukraine, 16331; Registrational number: 14224631



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Postal: 5 Instrumentalna, Chernihiv, Ukraine, 14037



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Technical Data Sheet

Native Potato Starch “VIMAL”

Potato starch is a white powder, a biopolymer obtained from potato tubers. It has significantly better and unique characteristics compared to its analogues (corn, tapioca, rice, pea, etc.) It is a versatile and high-quality carbohydrate obtained from potatoes through a thorough and environmentally friendly process. It is a fine, white, odourless and tasteless powder with exceptional binding, thickening and gelling properties. Renowned for its purity, consistency and functionality, potato starch is widely used in a variety of industries. It has excellent thickening and binding properties, helps to improve the texture and moisture content of foods, and is a gluten-free alternative to wheat flour.

General characteristics

| No. | CHARACTERISTICS | VALUE |
|-----|--|---|
| 1. | Form | Homogeneous powder |
| 2. | Color | Crystalline white |
| 3. | Witnesses | min. 91% |
| 4. | Odour | Characteristic of starch, free from foreign odour |
| 5. | Moisture content | max. 20 % |
| 6. | Acidity | $\leq 7,5 \text{ cm}^3/100 \text{ g}$ |
| 7. | Ash (on dry base) | $\leq 0,3 \%$ |
| 8. | Foreign starch content | Absent |
| 9. | Sulphurus Anhydride (SO ₂) | Absent |
| 10. | pH | 6,5 - 7,5 |
| 11. | Viscosity, (Brabender tech.) | 1200 - 2000 BU |
| 12. | Metal foreign matter | Absent |
| 13. | GMO content | Absent |

Nutritional Content per 100 g

| No. | CHARACTERISTICS | VALUE |
|-----|--------------------|----------|
| 14. | Energy value | 318 kcal |
| 15. | Fat | 0 gr |
| 16. | of which saturated | 0 gr |
| 17. | Carbohydrates | 79,5 gr |
| 18. | of which sugars | 0 gr |
| 19. | Protein content | 0 gr |
| 20. | Salt | 0 gr |
| 21. | Fibers | 0,5 gr |



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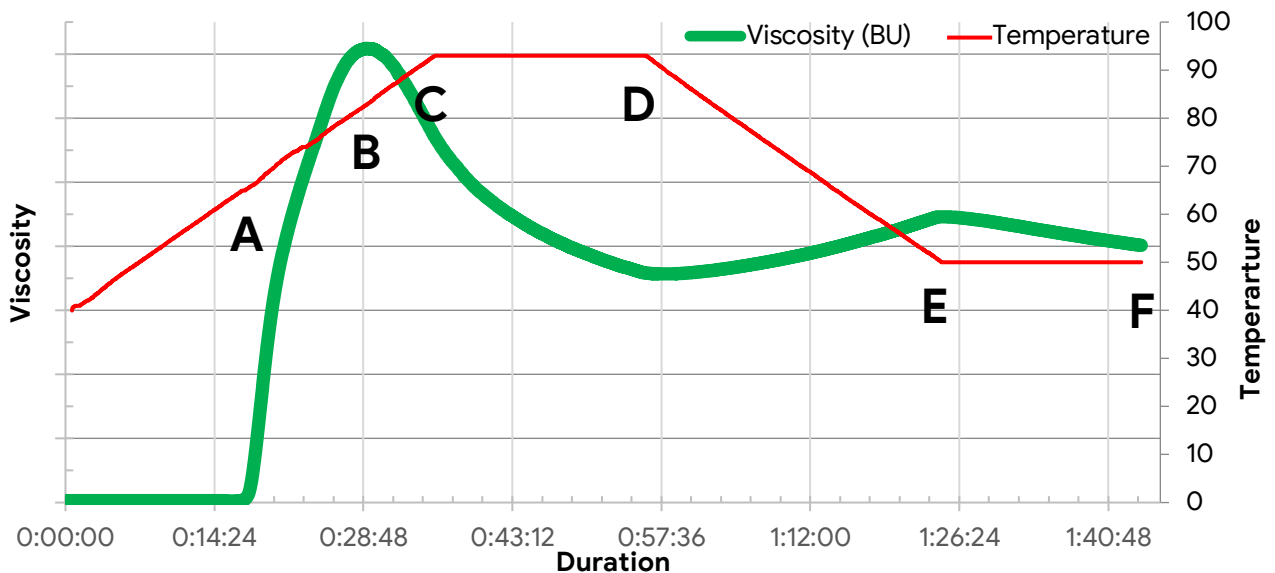
Toxic elements And Radionuclides Content

| No. | CHARACTERISTICS | VALUE |
|-----|---------------------|-------|
| 22. | Mercury (Hg), mg/kg | <0,02 |
| 23. | Arsenic (As), mg/kg | <0,1 |
| 24. | Copper (Cu), mg/kg | <10 |
| 25. | Lead (Pb), mg/kg | <0,05 |
| 26. | Cadmium (Cd), mg/kg | <0,1 |
| 27. | Zink (Zn), mg/kg | <30 |
| 28. | Strontium-90, Bq/kg | <200 |
| 29. | Caesium-137, Bq/kg | <600 |

Microbiological Characteristics

| No. | CHARACTERISTICS | VALUE |
|-----|--------------------------|--------|
| 30. | Total plate count, CFU/g | <10000 |
| 31. | Escherichia coli (1 g) | Absent |
| 32. | Salmonella (25 g) | Absent |
| 33. | S. aureus (1 g) | Absent |
| 34. | Moulds, CFU/g | <250 |
| 35. | Yeast, CFU/g | <100 |

Average Brabender viscosity graph (BU)



- | | | |
|--------------------------------------|--------------------------------------|----------------------|
| A Beginning of gelatinization | D Start of cooling period | B-D Breakdown |
| B Maximum viscosity | F End Of final holding period | E-D Setback |
| C Start of holding period | E End of cooling period | |

Viscosity analysis method ISI 19-6e:

4% slurry concentration is prepared with demineralized water and tested on Brabender Viscograph unit with 700cmg head using + 1.5 °C/min - 1.5 °C/min temperature slope and 75RMP speed.



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Approved By Our Client's Production's and Excellent In

| SECTOR | APPLICATION | DETAILS |
|---|-------------------------|--|
|  <p>Food industry</p> | Thickening agent | Thickening agent in soups, sauces, gravies etc., gives a transparent, glossy appearance to the food items |
| | Gluten-Free Baking | Provides structure and moisture to baked goods |
| | Meat Processing | Improves water retention and protein stability |
| | Fish Products | Binder in fish cakes and patties, coater in breaded or battered fish, texturizer surimi-based products, fish sausages and fish balls, fish soups and sauces. |
| | Noodles/Pasta | Improves texture and taste |
| | Confectionery | Used as a gelling agent, thickener, and stabilizer, It's used in the production of candies, jellies, and chewing gums |
| | Prepared Foods | Improves texture and stability. It helps to stabilize the water content, preventing syneresis (water separation) |
| | Dairy Alternatives | Non-dairy yogurts and cheeses, used for its gelling properties to provide the desired texture and consistency |
| | Batter and Coatings | Used in batter and coatings for its ability to create a crispy crust when fried, also helps to prevent the product from absorbing too much oil |
| | Pharmaceutical Industry | Tablet Disintegrant |
| Textile Industry | Adhesive | Sizing of yarns to strengthen the yarn and reduce breakage during weaving |
| Paper Industry | Surface Sizing Agent | Surface sizing agent to improve the printability and strength of paper |
| Bioplastics | Sustainable Packaging | Biodegradable and renewable nature being used plastic substitute for packaging material |
| Cosmetics | Natural Ingredient | Used in cosmetics as a natural ingredient for its absorbent and properties |



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VIMAL strengths

- **Experience and legacy:** We are the first and largest potato starch producer in Ukraine with experience since 1992 having production quality as a philosophy.
- **Viscosity to maximum:** Thanks to unique laboratory equipment from Germany, we can control such an extremely important indicator as **viscosity**. By purchasing our product with an average viscosity of 1400 BU, you will use half as much as a competitive product with a viscosity of 700 BU.
- **Purity and quality:** Our potato starch is produced from premium potatoes, which ensures high purity and exceptional quality, without any additives or impurities. This makes it an ideal choice for industries requiring first-class ingredients, including pharmaceuticals and baby food.
- **Thickening and stabilizing properties:** VIMAL starch has excellent thickening and stabilizing properties, making it a valuable ingredient for a variety of products such as adhesives, coatings and tackifiers.
- **Adhesive strength:** Its strong adhesive properties make it an indispensable component in the production of paper, corrugated board and other paper products, enhancing their structural integrity and performance.
- **Film-forming properties:** Our starch creates strong and flexible films when used in film-forming processes, such as in the production of biodegradable plastics and coatings.
- **Gelling agent:** Thanks to its gelling ability, potato starch from VIMAL is an important ingredient in the production of gel-like products, including desserts, fruit fillings and jellies.
- **Texture improvement:** The addition of VIMAL potato starch to food, pharmaceuticals and personal care products improves their texture and flavour, increasing the overall appeal of the product.
- **Gluten-free and non-allergenic:** Potato starch with its nature is gluten-free and non-allergenic, making it suitable for people with dietary restrictions and allergies.
- **Environmentally friendly and renewable source:** Derived from potatoes, a renewable and sustainable resource, our potato starch is in line with environmentally conscious practices and supports environmental initiatives.



Packing

Native potato starch VIMAL is packed into 25 kg bags or 0,5 kg packets for retail chains. We are thoroughly look after our goods packing process thus, we have spent verity of experiments and made many tests under more than one hundred bag samples till we got the best variant. As a result, now we are packing our starch into paper bags which are made under unique technology, it allows the goods to "breathe" during the transportation but at the same time it protects the starch from the external environment. As evidence you can freely throw our bag from an altitude of the human height without any risk of breach. But even this is not all of our packing benefits. Small 0,5 kg packets can bear the weight which is 200 times bigger than their own one and by the way it is the weight of an adult man under 100kg.



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VIMAL potato starch 25kg bag packing



Labeling

Date of manufacture and best before are market If needed, an additional customer's labels may be performed on a special place for labeling which is present at the side of the bag. The labeling is made by direct printing or by placing a sticker on a bag.

Side of the bag



Top side of the bag



Storage

According to DSTU 4286:2004 Amendment No. 1, potato starch should be stored at a temperature not exceeding 40 °C. It is not allowed to store starch together with substances that have a strong odour, but the manufacturer recommends storing starch in cool, dry facilities with the original packaging intact and avoiding direct contact with sunlight in storage.

Shelf life – 60 months.