

## HIGH QUALITY WHOLE GRAIN PROTEIN CONCENTRATE -

produced from non-GMO wheat grains grown in the Baltics, EU origin, rich in fiber, after fermentation.

Moisture, % - **6**

Protein composition in the product - **60-65%**

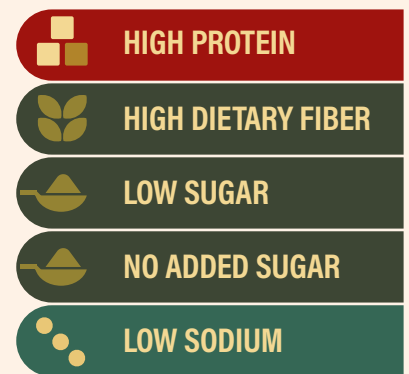
Dietary fiber composition in the product - **17%**

Water activity ( $a_w$ ) - **0.434**

pH - **4.01**

Contains all essential amino acids

Total amount of amino acids - **60%**



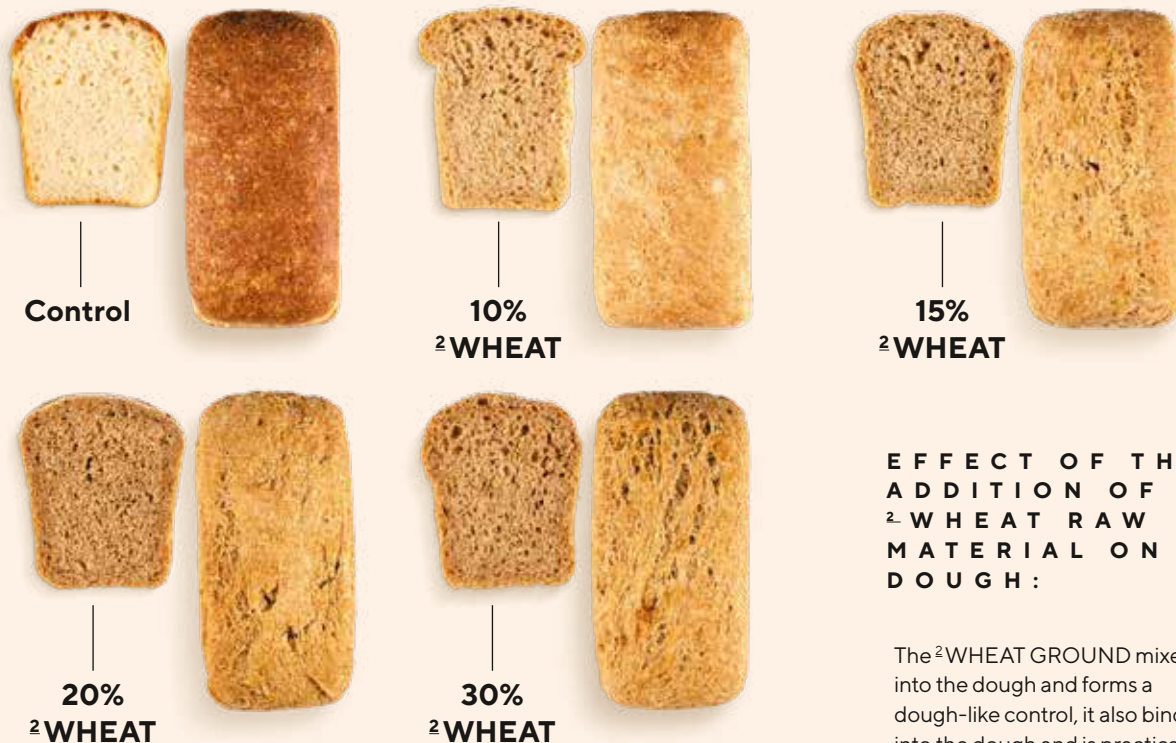
According to the recipe, the indication "PROTEIN SOURCE" may be used for control sample in accordance with the EC Regulation, but for the indication "HIGH PROTEIN" to be used, 15% of the total flour must be replaced by <sup>2</sup>WHEAT and then the protein content of 100 g of the product will be 17.7 g.

According to the recipe, it is not necessary to add <sup>2</sup>WHEAT in order to use the indication "FIBRE SOURCE" in accordance with the EC Regulation, but to use the indication "HIGH FIBRE" from the total flour content of <sup>2</sup>WHEAT must comprise 18% or 16% of the total quantity of all raw materials (except water).

According to experiments - the optimal <sup>2</sup>WHEAT content according to physical and sensory parameters is 15-20% of the total flour.

Samples	Structure (hardness), N	Moisture, %	pH	$a_w$	Color		
					L* (lightness)	a* (green-red)	b* (blue-yellow)
Control sample	1.85	32.3	5.74	0.831	70.34	19.55	7.42
10% <sup>2</sup> WHEAT granulated	1.79	32.8	5.13	0.845	61.94	18.28	10.2
10% <sup>2</sup> WHEAT ground	1.83	33.4	5.1	0.844	67.08	19.03	8.24
20% <sup>2</sup> WHEAT granulated	2.84	32.0	4.84	0.849	67.08	16.15	15.19
20% <sup>2</sup> WHEAT ground	3.55	31.8	4.77	0.848	60.83	16.97	8.89
30% <sup>2</sup> WHEAT granulated	4.64	31.1	4.61	0.848	51.97	16.45	15.34
30% <sup>2</sup> WHEAT ground	7.20	33.5	4.6	0.847	57.45	17.83	8.3

The amount of <sup>2</sup>WHEAT added is of the total amount of flour.



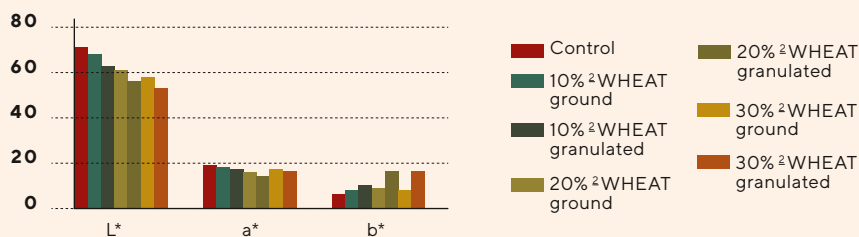
**EFFECT OF THE ADDITION OF <sup>2</sup>WHEAT RAW MATERIAL ON DOUGH :**

The <sup>2</sup>WHEAT GROUND mixes better into the dough and forms a dough-like control, it also binds better into the dough and is practically invisible. Doughs with <sup>2</sup>WHEAT GRANULATED can also feel this fraction to the touch.

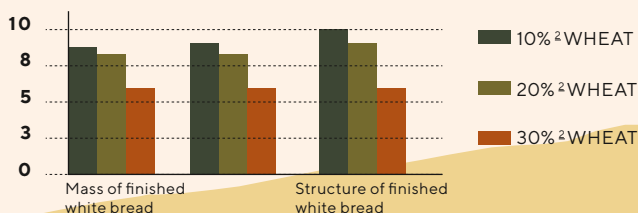
The dough, with 30% <sup>2</sup>WHEAT, makes a sticky, more plastic, uniform, heavier, tougher dough, while the rest of the doughs are non-sticky and similar in structure to the control.

All doughs both swell and ferment well and similar to the control.

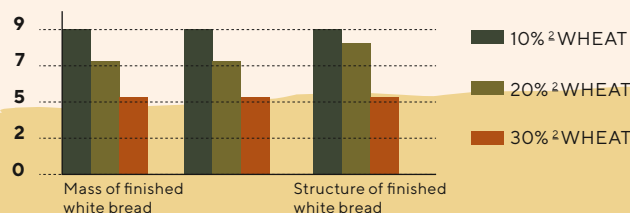
**COLOR OF WHITE BREAD :**



**EFFECT OF THE ADDITION OF <sup>2</sup>WHEAT GROUND RAW MATERIAL ON DOUGH :**



**EFFECT OF THE ADDITION OF <sup>2</sup>WHEAT GRANULATED RAW MATERIAL ON THE FINISHED PRODUCT**



Adding <sup>2</sup>WHEAT does not affect moisture and water activity ( $a_w$ ) in white bread. There is an effect on the pH of white bread – the higher the concentration of <sup>2</sup>WHEAT, the higher the acidity of bread. The addition of <sup>2</sup>WHEAT affects the color of bread: if <sup>2</sup>WHEAT GRANULATED is added, they form dark, beige-colored, small-sized areas (dots), which cause associations with bran, seeds, whole grains; if <sup>2</sup>WHEAT GROUND is added - the color of the bread is uniform, and a little darker than the control.

The addition of <sup>2</sup>WHEAT has no significant effect on the aroma. A higher concentration of <sup>2</sup>WHEAT produces a sour taste, reduces porosity, creates smaller pores and air volume, and the structure becomes slightly crumblier. During storage, the color of products with <sup>2</sup>WHEAT does not change, nor does the aroma change significantly. The taste of products with <sup>2</sup>WHEAT becomes more expressive and a higher concentration of <sup>2</sup>WHEAT contributes to the crumb structure,

but the moisture content of the products does not change significantly. The addition of <sup>2</sup>WHEAT significantly affects the nutritional value of bread: the content of protein, dietary fiber and fat changes, it increases - for example, the protein content of the 30% protein concentrate sample is three times more than the control, while the dietary fiber content is 2.6 times more.

**PRODUCER :**

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