

Leader in flour applications.

EMCEbest WA series



Innovative enzyme and active ingredient complexes to improve water absorption. Strategies to meet every need.

Water absorption – an important variable for processing and the end product

In many areas of food production, water absorption is an important and complex issue. In the milling industry, for instance, vital wheat gluten or hydrocolloids have been used for years to increase the water binding capacity of flours.

In industrial baking, good water absorption has a direct influence on processing properties and the quality of the products. So the stability and consistency of the dough during preparation are quality parameters which are just as important as the volume, freshness and elasticity of the end products. In order to achieve optimum results, manufacturers have to adjust their recipes carefully to the requirements of packed or unpacked bakery products.

EMCEbest increases water absorption

We – the sister companies Mühlenchemie, SternEnzym and DeutscheBack – have developed innovative strategies at our baking technology centre. In order to respond flexibly to price fluctuations in raw materials we have created the **EMCEbest WA** series, a flour treatment line consisting of enzymes, hydrocolloids and vegetable fibres with synergistic effects. In response to the increasing demand for clean label products we also offer **EMCEbest WA Pure** as an alternative without E numbers.

Benefits of the EMCEbest WA series:

Technical
<ul style="list-style-type: none">• Greater water absorption capacity• Optimized dough stability• More succulent crumb
Financial
<ul style="list-style-type: none">• Profitability and flexibility through a choice of raw materials• Increased yield• Prolonged freshness of the crumb• Label-friendly EMCEbest WA Pure



The farinogram as proof of increased water binding

Guar gum powder is often used as a water binder in industrial processes. For that reason, the new complexes of enzymes and other active ingredients were compared with the guar gum powder **EMCEgum 35**.

The water absorption capacity of the products was determined in the farinograph. A flour with a 13% protein content and a darker wheat flour Type 1050 (ash content approx. 1%) were used as the base.

Water absorption increased significantly, as Table 1 shows. Whereas the addition of vital wheat gluten (**EMVEvit C**) had very little effect, the addition of 1% guar gum powder enabled a 4% greater water addition. With **EMCEbest WA Plus** and **EMCEbest WA Pure** the flours absorbed as much as 10% more water than the untreated control.

Moreover, besides a nearly 8% higher water absorption the farinogram showed the flour treated with **EMCEbest WA** to have very good stability (Fig. 1).

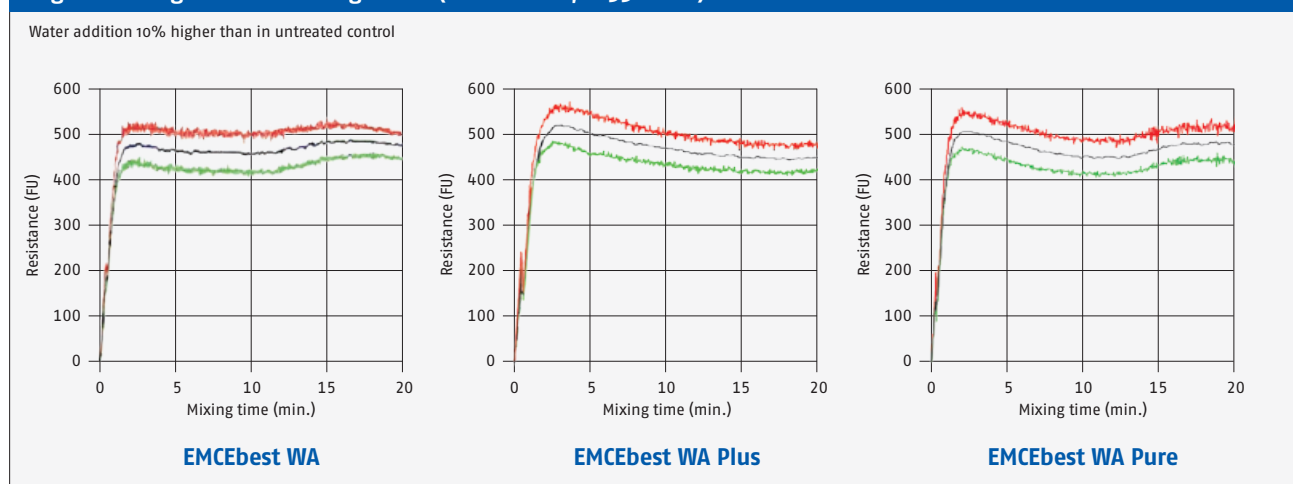


The guar bean

Table 1: Overview of the farinograph data for water absorption at 1% dosage level

In %	Wheat flour (0.55% ash)		Wheat flour (1.00% ash)	
	Water absorption	Difference from control	Water absorption	Difference from control
Control	59.7		67.2	
EMCEvit C	59.9	0.34	68.3	1.64
EMCEgum 35	62.2	4.19	70.1	4.32
EMCEbest WA	64.4	7.87	72.4	7.74
EMCEbest WA Plus	65.5	9.72	74.1	10.27
EMCEbest WA Pure	66.2	10.89	74.5	10.86

Fig. 1: Farinogram at 1% dosage level (wheat flour, 0.55% ash)



Greater yield and better stability in baking trials

The farinogram data obtained served as a basis for baking trials. In order to test the consistency, machinability and stability of the dough and the quality of the end products, 5% extra water was added for guar gum powder and 10% extra for the **EMCEbest WA** products as compared to the control.

The doughs with the **EMCEbest WA** series were largely similar to those of the control.

With **EMCEbest WA** Pure they actually felt drier. In other words, this clean label product proved superior to guar gum powder in two respects: the swelling time usual with guar gum powder was no longer necessary, and the water absorption was 5% higher.

The texture of the bread was even, and the elasticity of the loaves after three days was similar when measured with the Texture Analyzer.

Fig. 2: Baking trials with white hearth bread



Volume increase with all products

All the products were found to have resulted in a volume increase as compared to the reference sample. **EMCEbest WA Plus** produced the best results. With over-fermentation, **EMCEbest WA** proved to be the most stable product.

These effects were found with both white bread and mixed wheat bread. Table 3 shows the results for all the products.

Table 2: Overview of the increase in volume (%) over the control at a 1% dosage level in baking trials

	White bread		Mixed wheat bread 70/30*
	in %	Volume NF	Volume OF
Control	0	0	0
EMCEgum 35	4.7	11.8	16.3
EMCEbest WA	3.3	22.4	11.9
EMCEbest WA Plus	6.9	14.1	20.7
EMCEbest WA Pure	4.4	1.5	11.6

*) 70% dark wheat flour Type 1050 (approx. 1% ash), 30% rye flour Type 1150 (approx. 1.2% ash)
NF: normal fermentation; OF: over-fermentation

Table 3: Overview of effects

	Water absorption	Dough consistency	Volume NF	Volume OF	Label declaration
EMCEgum 35	+	-	+	+	With E numbers
EMCEbest WA	++	+	+	++	With E numbers
EMCEbest WA Plus	++	+	++	+	With E numbers
EMCEbest WA Pure	+++	++	+	0	Without E numbers

Processing

The use of **EMCEbest WA** products does not require adjustments to dough processing or baking.

Dosage levels

EMCEbest WA	0.2–1%
EMCEbest WA Plus	0.2–1%
EMCEbest WA Pure	0.2–1%



Tailor-made strategies for every application

The combination of functional hydrocolloids, vegetable fibres and enzymes in the **EMCEbest WA** series brings about a noticeable improvement in the end products. Adjusted to the user's technical and economic requirements, the new complexes of active ingredients offer a suitable strategy to meet any need.

Which product is most suitable for you?
Get in touch with us, so that we can make the right choice together!

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