

Leader in flour applications.

# EMCEgluten Enhancer



The all-rounder for weak and composite flours

## Flour quality is not always optimal

In daily milling practice it is not always possible to use wheat with optimum properties. Reasons for this include shortages, crop damage and widely fluctuating prices. So mills are often obliged to mix quality hard wheat with lower-grade soft wheat or work in wheat lots that have failed to develop satisfactorily because of climatic conditions. In some regions, too, the addition of alternative flours made from soy, maize, beans or cassava is usual or even prescribed by law. The disadvantage of this practice: the weaker the wheat gluten, or the smaller the percentage in the mix, the more the stability of the dough and the baked volume are impaired. The aim must therefore be to prevent such loss of quality with suitable flour improvers.

## Vital wheat gluten has its limitations

One possibility is to add wheat protein. But the prices and availability of vital wheat gluten vary enormously, and it does not always achieve the desired effect in the baked goods.

## EMCEgluten Enhancers compensate for deficits

Against this background we have developed a product series that significantly improves the structure of the dough. **EMCEgluten Enhancers** make it possible to use low-gluten soft wheat, or to include non-bread flours, without spoiling the baking properties and without the need for vital wheat gluten.

The effects of the new compounds were tested in our applications laboratory with various mixtures of hard and soft wheat and the addition of cassava.

## Benefits of EMCEgluten Enhancer

### Benefits in baking

- Increases the water absorption capacity
- Optimizes dough stability
- Enhances the crumb structure
- Compensates for the use of composite flours

### Financial benefits

- Maintains good baking properties when soft wheat is used
- Permits the replacement of vital wheat gluten at 1/10 of the dosage
- Cuts costs through the use of cheaper raw materials
- Product series based on different raw materials, permitting a response to price fluctuations

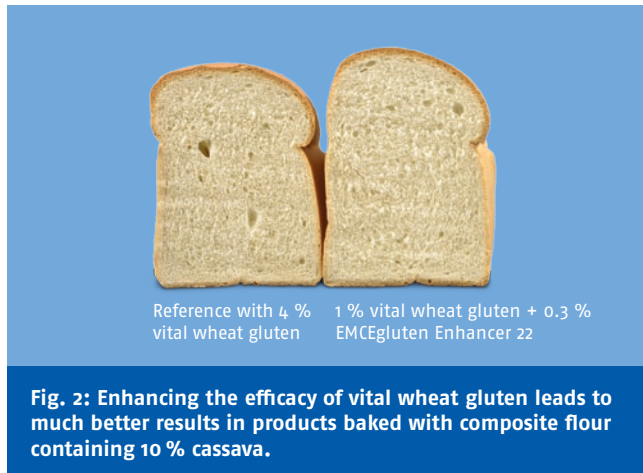
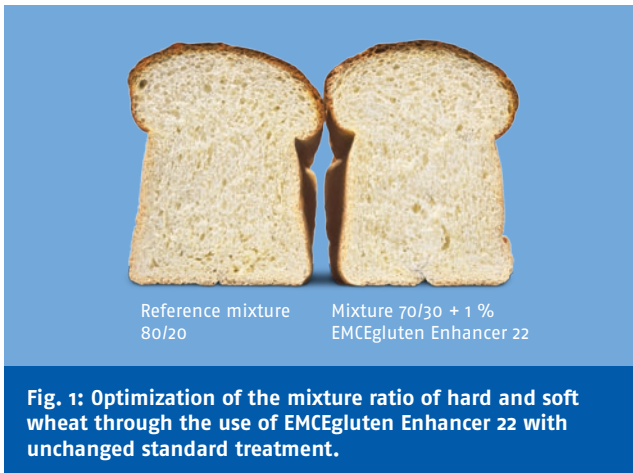
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Tab. 1: Influence of mixtures of hard and soft wheat on water absorption in the Farinograph

Hard/soft wheat	100	90/10	80/20	70/30	60/40	50/50
Protein (NIR)	14.8	14.6	14.5	14.2	13.9	13.7
WA Farinograph in %	64.6	64.1	63.7	63.2	62.7	62.1
With EMCEgluten Enhancer 22						
Usage level in %	0	0.05	0.1	0.2	0.25	0.3
WA Farinograph in %	64.6	64.5	64.4	64.3	64.3	64.1
Stability per Farinograph in min.	20:19	20:04	19:45	19:02	19:05	19:43



### Optimization of hard and soft wheat mixtures

The starting point for this series of tests was a shortage of hard wheat in certain regions. The aim was to find a flour treatment that would permit mixing with soft wheat and compensate for the resulting loss of protein quality.

**EMCEgluten Enhancer 22** brought about a great improvement in quality. Whereas the water absorption measured in the Farinograph without the flour improver fell continuously as the proportion of soft wheat increased, the addition of **EMCEgluten Enhancer 22** maintained the required level. The product also had a favourable effect on stability (Tab. 1). The rheological results were confirmed by baking trials. For example, a 70/30 mixture of hard and soft wheat with the addition of 0.1 % **EMCEgluten Enhancer 22** produced a loaf similar to that of an 80/20 mixture without the additive (Fig. 1).

### Cassava flour: EMCEgluten Enhancer proves superior to vital wheat gluten

The second series of tests was conducted with cassava flour – a raw material that contains no gluten and disrupts the structure formation of the proteins present in the

wheat flour. In order to produce cassava loaves capable of competing with pure wheat loaves, the dough must be strengthened and its baking properties improved. The usual procedure is to add vital wheat gluten.

Fig. 2 shows our test with 10 % cassava flour, for which 4 % vital wheat gluten had been replaced with 1 % wheat gluten and 0.3 % **EMCEgluten Enhancer 22**. This modification significantly improved the quality of the end products; it was reflected, above all, in an appreciable increase in volume and a more even crumb structure.

### Processing

The use of **EMCEgluten Enhancer** does not require either a change in dough processing or adjustment of the baking process.

### Examples of usage levels

Gluten replacement: 0.1 % **EMCEgluten Enhancer** replaces 1 % vital wheat gluten.

Mixtures of hard and soft wheat: 0.05 – 0.1 % **EMCEgluten Enhancer** for each 10 % soft wheat.

Examples of products		
Product	Active ingredients	Purpose
<b>EMCEgluten Enhancer 16</b>	Enzymes, vegetable fibres, hydrocolloids, ascorbic acid	Basic version with a balance of raw materials for volume and dough stability
<b>EMCEgluten Enhancer 21</b>	Enzymes, vegetable fibres, hydrocolloids	Basic version for increasing water binding without changing dough properties
<b>EMCEgluten Enhancer 22</b>	Enzymes, vegetable fibres, ascorbic acid	Adjusted enzyme system for high volume yield
<b>EMCEgluten Enhancer AS</b>	Enzymes, vegetable fibres, ascorbic acid	Ascorbic acid to optimize dough stability

Mühlenchemie GmbH & Co. KG, Kurt-Fischer-Straße 55, 22926 Ahrensburg, Germany  
 Phone: +49 (0) 41 02 / 202-001, Fax: +49 (0) 41 02 / 202-010  
 info@muehlenchemie.com, www.muehlenchemie.com