

Arteezyme 900CO

Arteen Chimi Applications Manuals
Vers.I - 2012



the product



- Arteezyme 900CO is a highly concentrated, neutral protease derived from a non genetically modified proprietary strain of bacillus subtilis
- the optimum activity is to be found at pH 7-8 and 50-60 °C. The enzyme is denatured at normal oven temperatures
- Arteezyme 900CO is highly water soluble and very stable in dry and cool conditions

activity

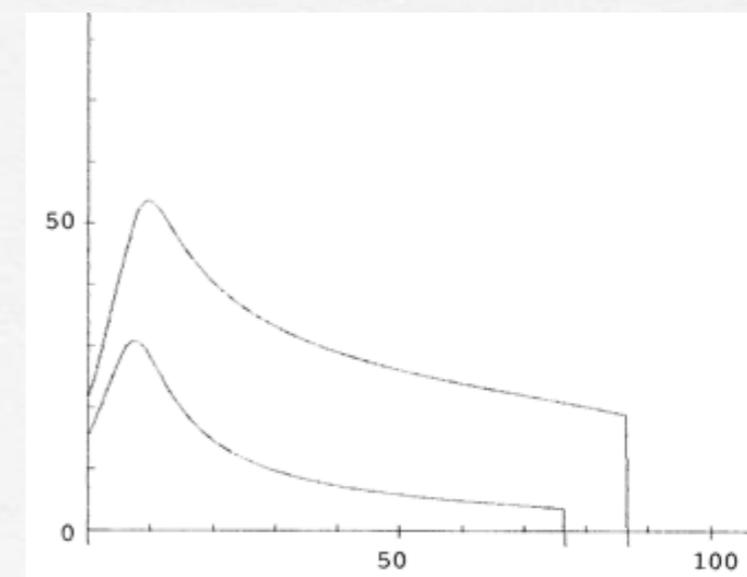
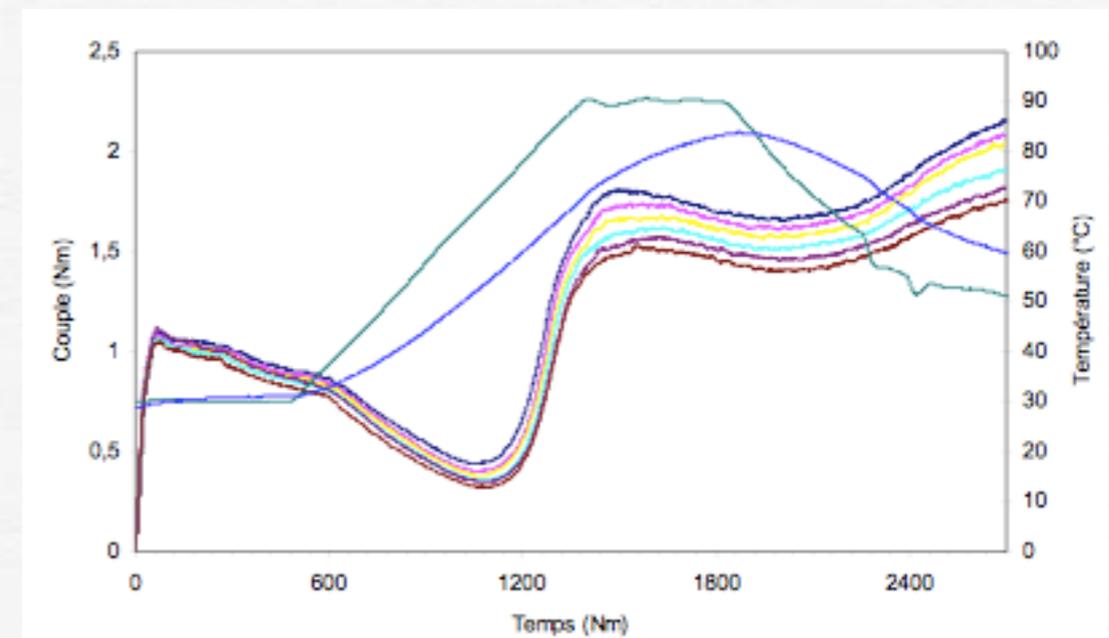


- Arteezyme 900CO catalyzes the hydrolysis of peptide bonds in proteins. This action results in the rapid disruption of proteins into small peptides.
- Arteezyme 900CO would be active on all grain proteins resulting in serious effects on rheological and baking quality of flours

rheological effects



- Arteezyme 900CO effects on flour and dough can be measured using conventional rheological laboratory equipment.
- Figure 1 (top right side) shows the effects of increasing amount of Arteezyme 900CO to wheat flour dough as measured by a viscoamylograph (Chopin's Mixolab). As can be easily understood, additions of Arteezyme 900CO result in weakening of the gluten network, reduction in kneading resistance and reduced viscosity of the hot gel-dough
- Figure 2 (bottom right side) shows the effects of adding Arteezyme 900CO as measured by a Chopin's Alveograph. As can easily be seen the total area under the curve (W, a measure of flour strength) is strongly reduced but the extensibility of the dough (as measured by the ratio p/l) is unaffected



application table



application	effect	Arteezyme 900CO dosage
milling-biscuit flour	reduce W, reduce flour strenght	1-10 ppm
milling- crackers flour	improve machineability	1-20 ppm
biscuit manufacture	improve dough handling, printing	10-50 ppm
biscuit manufacture	removal of sodium metabisulphite	10-50 ppm
sugar wafers	improve dough handling	10-30 ppm



flour milling

milling applications



- Proteases, like Arteezyme 900CO, are very commonly applied in milling as a way to improve flour quality. In view of its granulometry and solubility Arteezyme 900CO can be applied at the milling stage by simple mixing with the flour.
- The effect of Arteezyme 900CO when applied to flour would be to reduce the flour strength, disrupt the gluten matrix and change the rheological values of the flour
- Principal application would be in the milling of special flours for biscuits or crackers; minor applications would be in treatment of overly strong flours
- If recorded with a Chopin Alveograph, the effect of the addition of Arteezyme 900CO would be strong reduction of W with no effect on dough extensibility (P/L).

examples and dosages



- Arteezyme 900CO can be used in flour milling to prepare special flours, targeted to specific markets or bakery items
- Biscuit flours need to have low W values (i.e. less than 100): an small addition of Arteezyme 900CO, usually in the range of 0,1-5 ppm is needed to assure constant flour quality
- Flour for cracker production: Arteezyme 900CO is very important in preparing a special flour for crackers production. Together with Arteezyme 100AL and Arteezyme 200P a special flour based on Arteezyme 900CO can reduce processing times, assure constant quality and improve dough handling properties.

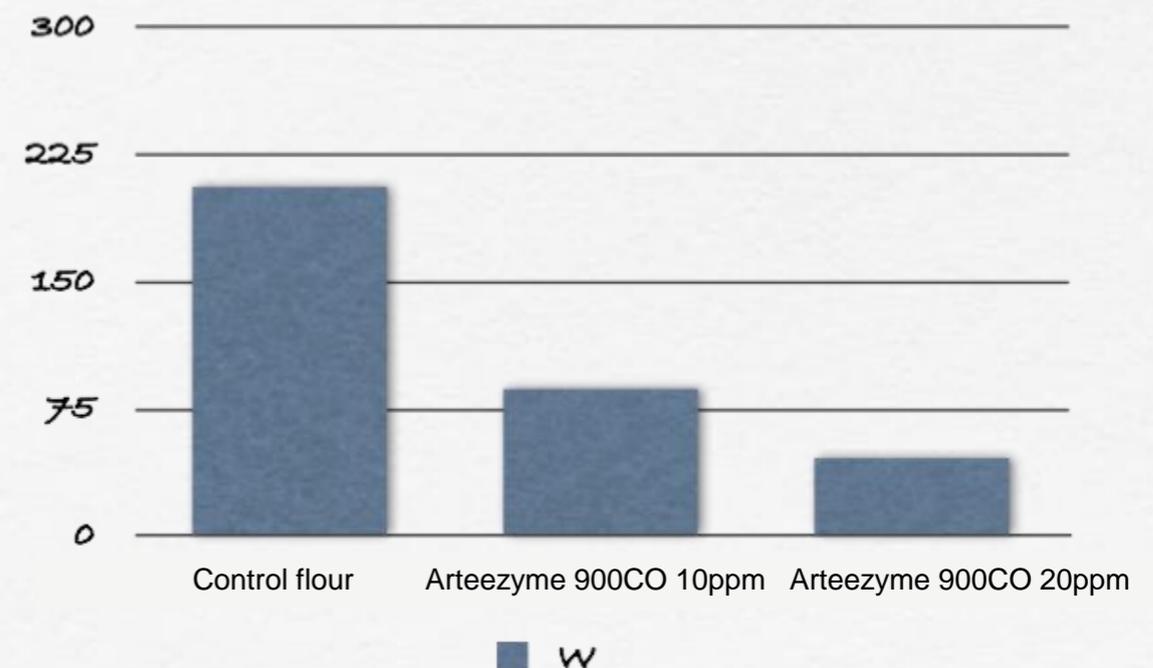




dosages and effects

- Arteezyme 900CO is an extremely active protease; as shown in the graphs and table on the right side 0,5 ppm to 1 ppm are, normally, enough to achieve serious effects on dough rheology
- Arteezyme 900CO should be diluted before marketing it to the final customer. Maltodextrins with low moisture (below 5 %) are the diluent of choice; blending and dilution instructions can be obtained writing at Arteen Chimi, possibly specifying the available diluents in your market

addition rate	W	P/L
reference flour	206	1,1
addition Arteezyme 900CO 10ppm	87	1,1
addition Arteezyme 900CO 20ppm	46	1,0





biscuit technology

applications



- Biscuit manufacturing needs protease addition to reduce normal flour dough tendency to develop a strong gluten structure. Arteezyme 900CO addition would suitably modify the protein structure and prevent the formation of gluten lumps
- Addition of Arteezyme 900CO to a biscuit dough or batter, would prevent gluten matrix formation . Biscuits baked with the addition of Arteezyme 900CO would be easier to print, will keep the shape better and would have the best possible eating qualities
- Sodium metabisulphite is still widely used as a gluten modifier; however it can be safely and easily substitutable with a purpose-made enzyme blend based on Arteezyme 900CO. In addition to Arteezyme 900CO some xylanase (Arteezyme 200P) should be added.

metabisulphite replacement



- metabisulphite is normally added at 400-500 ppm on flour weight of a regular biscuit recipe
- it is sometimes important to prepare an enzymatic blend able to replace metabisulphite on a 1:1 basis, to help the baker in the process of shifting from metabisulphite to enzymes
- the process can also be progressing with metabisulphite being replaced, partially and with increasing dosages, by the enzyme blend
- replacing metabisulphite is effective and improves product quality and nutritional profile

enzymatic replacer, 400-500 ppm	
ingredient	%
Arteezyme 900CO	2,0-5,0
Arteezyme 100AL	3,0
Arteezyme 200P	3,5
Maltodextrin	up to 100

biscuit quality		
sample	thickness mm	form factor (length/width)
with metabisulphite	6,1	0,972
with enzyme blend	6	0,980
untreated	7,3	0,831



crackers technology

possibilities



- crackers quality and manufacturing are very dependent on the flour quality and dough handling characteristics.
- addition of Arteezyme 900CO, normally in the dough phase of a typical sponge-and-dough crackers manufacturing process, improves the sheeting quality of the dough and the eating quality of the crackers
- Arteezyme 900CO might also be used to reduce the overall processing time, shortening the dough development and fermentation times, reducing costs and saving energy
- In crackers manufacturing Arteezyme 900CO should be added together with minor quantities of alpha amylase (Arteezyme 100AL) and small amounts of xylanase (Arteezyme 200P). This will improve cracker color and improve processing balancing the water uptake of the dough

- Questions, suggestions needed?
- write to head office or directly at:
- service@arteenco.com



- Head office: #7 & 9, 5th and 6th Floor, No.80, Neda Junction, Kadj Blvd.,Azimieh, Karaj, Iran
- Factory: Payam Special Economic Zone, Karaj, Iran
- Phone : +98 26 32512132-3 & 26 32545358
- Fax : +98 26 32545218
- e.mail: service@arteenco.com
- Web: www.arteenco.com