

GMS® Hydrated Emulsifiers

ENSEMBLE® non-PHO Emulsifiers



PHOs: the race to non is **on.**

Four reasons to begin the non-PHO conversion now.

- 1 FDA Mandate:** Food and beverage manufacturers must be PHO compliant by June 18, 2018.
- 2 Diminishing PHO Supply:** As oil producers move away from PHOs, the supply available to the market will decline.
- 3 Testing Time:** Validation of PHO alternatives can be lengthy and time-consuming.
- 4 International Ripple Effect:** Other countries are currently re-evaluating their own legislation regarding PHOs.

When it comes to removing partially hydrogenated oils from formulations, it's not enough to just substitute a non-PHO option. You deserve more. That's why Corbion created ENSEMBLE - the full line of non-PHO emulsifiers that knows how to play together, right from the first note.

Drop it in. Move on.

Corbion experts have re-engineered our popular emulsifier portfolio with one goal in mind: provide non-PHO options that deliver drop-in ease while maintaining flavor, texture, quality, ease of handling and shelf stability.

The result? ENSEMBLE non-PHO emulsifier solutions minimize reformulation hurdles and operational disruptions, allowing you to simplify and streamline formulation efforts.

Short mixing time? Quick Solution.

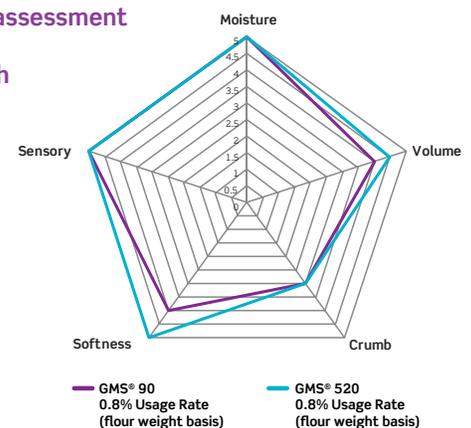
When a powdered monoglyceride isn't fast enough, try Corbion's GMS product line. These hydrated monoglycerides deliver the power of a powder, in a fraction of the time. Provided in an easy-to-disperse, pumpable paste, they are ideal for no-time dough processes. GMS can eliminate the time-consuming sponge stage, or applications with short mixing times.

Want more advantages? GMS® 520 and GMS® 540 offer the same handling and quality as their PHO counterparts (figure 1 and 2). As demonstrated in figure 2, GMS® 540 can even outperform it's PHO counterpart at a 20% reduced usage rate, saving you time and reducing your cost in use. Lower usage rates. Lower costs. Better results!

- ▶ Best solution for no-time dough systems
- ▶ Drop-in functionality
- ▶ Improves crumb grain
- ▶ Enhances softness

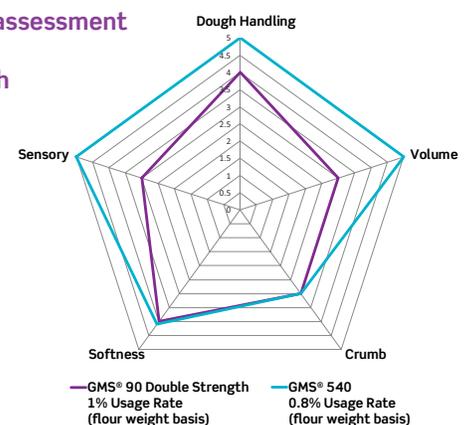
Functionality assessment of GMS® 520 No-Time Dough

Figure 1



Functionality assessment of GMS® 540 No-Time Dough

Figure 2



GMS® Hydrated Emulsifiers

ENSEMBLE® non-PHO Emulsifiers



Double the options. Double the strength.

GMS products utilize a hydration process that creates a monoglyceride with a higher surface area than powdered versions. This results in a faster acting emulsifier that provides superior functionality in no-time dough systems and applications requiring short mixing times. To best meet your needs, we offer both GMS® 520 and GMS® 540. The difference? GMS® 520 provides a 21% minimum monoglyceride content, while the 540 version offers 38.5% monoglyceride.

GMS® 520 Applications

	Category	Function	Usage Rate	Comments
Bakery	Breads & rolls	Shelf life extension	0.5%-1.25% flour basis	Hydrated softeners for yeast-raised breads and rolls
Processed Foods	Pasta/Noodles	Starch complexing	0.5%-1.0% dry wt	Improves freeze-thaw stability, prevents sticking, gives resistance to overcooking and adds stability and firmness

GMS® 540 Applications

	Category	Function	Usage Rate	Comments
Bakery	Breads & rolls	Shelf life extension	0.5%-1.25% flour basis	Hydrated softeners for yeast-raised breads and rolls

Let Corbion help you make the non-PHO conversion *simple*. +1-800-669-4092

- ▶ Learn about our additional non-PHO solutions at CorbionEnsemble.com
- ▶ Request your free sample at corbion.com
- ▶ Get R&D support for your non-PHO conversion needs at corbion.com/contact

With over 100 years of global food technology experience and an extensive portfolio of high quality products, Corbion has a wealth of expertise in the world of bakery ingredients. Corbion is a leading company in natural food preservation, lactic acid based bioplastics, biobased chemicals and the worldwide market leader in lactic acid, lactic acid derivatives and lactides. Corbion operates 10 production plants, in the USA, the Netherlands, Spain, Brazil and Thailand, and markets its products through a worldwide network of sales offices and distributors.

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