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The All Rounder Bakery Emulsifier

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An Introduction to DATEM (Diacetyl tartaric acid ester of monoglycerides)

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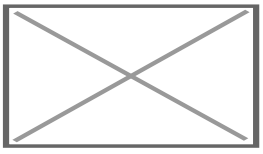
DATEM are glycerol derivatives esterified with edible fatty acids and mono and di-acetyl tartaric acids. It is one of the widely used emulsifier in bakery applications providing multi-purpose benefits like improved and uniform product quality, tolerance towards variations in raw materials and processing parameters, aiding in the production of specialty bakery products using different type of cereals.



Wheat flour is the most important and crucial raw material in baked goods. The quality of wheat plays a very important role in baking. The inherent quality of wheat flour depends on the wheat variety, climate and growth conditions. In baking, the quality of gluten is considered to be the prime element responsible for producing baked goods with the right texture and volume. Often there is a challenge to get consistent quality of wheat flour, DATEM helps bakers to overcome the fluctuations in flour quality. The table below shows the improvement in specific volume with the addition of DATEM in wheat flour.

Effect of DATEM on flour quality

DATEM Functionality: Myriad Benefits

It is an ionic emulsifier and primarily works as a dough strengthener due to its strong ability to interact with gluten forming a network which gives stability to the dough and further helps in gas retention. DATEM exhibits huge ability to form hydrogen

bridges with amidic groups of the gluten proteins, the hydrophobic part of the emulsifier forms strong network with the ethylene side chains (non-polar) of gluten proteins to form a homogeneous network.

The presence of a good dough strengthener will improve the ability of the gluten to form a film that can retain the gas produced by the yeast; higher gas retention ability will always result in better dough tolerance and higher baked volume of the bread.

DATEM) also improves dough handling by altering the water binding properties of the dough resulting in a slightly drier surface, this together with improved stability results in easier dough handling and improved machinability as the dough does not stick to the equipment.

Versatility in Popular Bakery Applications

DATEM upgrades the quality of flour to a better baking quality and minimizes the variation of the flour over the season. This results in positive benefits across multiple bakery applications. For instance,

- In biscuits, it improves the emulsification of flour lipids and fat resulting in developing homogeneous dough which improves the eating properties of biscuits.
- Improved emulsification of fat also allows reduction of fat from the recipe. It also helps in machinability and facilitates processing reducing pressure on rollers.
- It can also aid in reducing the breakages during processing.

- In cakes, DATEM is used in combination with distilled monoglycerides and alpha tending emulsifiers like PGMS, PGE for an improved texture and better mouthfeel.

- In rusks, it improves the texture and experience in every bite, aids in enhancing crispiness and also fat reduction

Conclusion

The application of DATEM in baked goods are multiple, right from standardizing the quality of flour to producing fine baked goods with the right textural attributes. They have extensive application in bakery with huge benefits. At DuPont we put science into action by testing our ingredients in local recipes and raw materials to create value added and cost optimized offerings for our customers.