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### DEFINITION

English muffins are also known as muffin splits. These muffins are flatter and more crumpet-like than other more cake-like muffins. They are yeast raised and should be chewy with light air pockets. Usually split, toasted and buttered for breakfast or eaten as a snack.

### HISTORY

The origin of English muffins is not clear, but they may have been developed from “Bara Mean,” a yeast-leavened cake baked on hot stones in 10th century Wales. A similar cake or muffin baked on griddles was popular in 19th century England. The hot fresh muffins were peddled door to door in the early morning, hence the “muffin man.”

### INGREDIENTS

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#### FUNCTION & SPECIFICATIONS (\*Based on flour content.)

Flour	Quality and type of flour affects characteristics of English muffins. A hard wheat flour is preferred with protein content of 12–13%. Flour needs high water absorption capacity (79–85%) to secure rapid spreading needed during proofing and baking to get desired characteristics. The higher water absorption levels also assist with greater porosity of crumb, as consumers prefer crumb structure with randomly spaced medium to large holes. If a weaker flour is used then it is common practice to supplement this with vital wheat gluten, using 1% gluten for each 0.6% the flour protein is below 12.5%.
Water	Specifically free water in the dough is key to leavening as it is most easily evaporated into steam and produces the open, porous structure characteristic of English muffins. 83–87%*is the common amount of water.
Yeast	Compressed yeast is added at 2–8%*due to short fermentation time and cold dough. Its function is to provide fermentation gases during proofing and early stage of baking as well as to add flavour.
Salt	Is added at 1–2%*, and this low level when compared with other bakery products is responsible for the bland flavour. Also, this seems to improve the flow of the batter as a weaker gluten network is formed.
Sugar	Sweeteners are kept at low levels as English muffins are not a sweet product. Sugar, dextrose and corn syrup are all suitable and when added at 2%* this is enough to sustain fermentation during proofing and aid crust colour.
Fat	Fat is left out of some formulae or present at very low levels of 1–1.5%* as higher levels of fat cause excessive tenderness and more uniform crumb.
Mould inhibitors	These are necessary as the finished product has a higher moisture content than bread, while it is also expected to have longer shelf life than bread due to the lower volumes sold. Calcium propionate is commonly used at 0.5–0.7% in the dough, as well as additional use in the dusting flour to protect the external surface of the muffin as well.

Additional ingredients may include protease enzymes (decrease dough viscosity), baking powder and vinegar.

### PROCESSING

#### PROCESS

#### DETAILS

Mixing	Doughs are overmixed on the principal that such doughs will have good flowability and a coarse crumb will result from the weakened gluten network. Batch or continuous processes are used for mixing. As muffin dough must be slack and very extensible to obtain typical form and grain of muffins, processing difficulties can occur when put through conventional dividing and rounding equipment. To improve handling issues the dough needs to be very cold when removed from the mixer, approximately 20°C. If dough is too warm it will be sticky and it will not process well through next stages. Due to the large amount of water added to the mix it is best to first add all the ingredients except salt and 10% water, and mix until the dough has cleared mixer. The remaining water should then be added with further mixing before the salt is added. This procedure produces a more completely hydrated dough.
Fermentation	This should be short, about 10–15 minutes, as excessive time produces a temperature build up resulting in a sticky dough that is hard to process.

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Dividing & rounding	Dividing can be achieved with standard roll dividers with normal scaling weight 65–70 grams per dough piece. Rounding is an important step as it affects the quality of the muffin – too much rounding or making a compact piece will produce good volume but a product with little porosity, while too little rounding will produce excellent porosity but lacking in volume and symmetry. After rounding the first dusting is applied before the dough is transferred to the proofer. Dusting should coat the whole dough but not be excessive.
Proofing	Most proofing systems last 28–30 minutes. The individual dough pieces are dropped into canvas covered cups. Temperatures range from 45–55°C with relative humidity of 50–55%. After proofing the dough should feel slightly dry but should not have formed a skin. The dough piece should be flat and of the right diameter to almost fill the griddle cup when deposited.
Depositing & baking	Proofed dough pieces are deposited onto a hot baking surface which warms the dough and softens it, making it flow to fill the retainer ring. Before the dough is expanded, the rings are covered. At this stage the gas vesicles in the dough are small and uniform. After 2.5 minutes the dough enters the hot area of the oven, with temperatures of 245°C. As the interior temperature increases, the water vapour pressure also increases, causing the expansion of the bubbles. Eventually some of these rupture and coalesce so they become large and uneven. This produces the desired English muffin characteristics of holes and tunnels of varying sizes. After 4 minutes grilling, muffins are turned over and baked for a further 3.5 minutes before being cooled in forced air for 50–60 minutes.

## REFERENCES

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