

Pan loaf method for 100% whole hard red wheat sourdough bread

The method is based on a set amount of 100% whole wheat flour, in a dough piece that will fit a correspondingly sized loaf pan. The sourdough leavening is stable, and predictable in usage when prepared in the specified way, which is representative of one style of 100% whole wheat sourdough bread; it is used at the rate of 10 percent with respect to the flour. The temperature of the dough for all fermentation steps, is 86°F (30°C). *Note that for dough at 68°F (20°C) all fermentation steps will take 2-3 times longer than at 86°F (30°C).*

The basic formulation contains whole wheat flour, enzyme active malt flour with vitamin C, extra virgin olive oil, salt, activated-carbon-filtered water and sourdough starter with a specific formulation.

Hard red wheat flour generally contains strongly elastic gluten. Therefore, care is needed to only knead and shape the relaxed dough in as few steps as possible. If the dough becomes too tight to work with, relax the dough by waiting 10 - 15 minutes before continuing with shaping. In this way the dough should stay smooth and free from splitting or tearing.

Note that no more flour is added to the dough after the initial mixing. To prevent sticking, handling should be with moistened hands and surfaces.

Formulation for pan bread dough

<i>Ingredients</i>	<i>Bakers per cent</i>	<i>Grams</i>	<i>Grams</i>	<i>Grams</i>
Whole wheat flour <i>(organic & freshly stone ground)</i>	100	500	250	125
Enzyme active malt with vitamin C ¹	1	5	2.5	1.3
Enzyme active malt	2	10	5	2.5
Extra virgin olive oil	4	20	10	5
Salt <i>(without additives)</i>	1.5*	7.5	3.8*	1.9*
Water ² <i>(active charcoal filtered)</i> at 86°F (30°C)	60**	300**	150**	75**
Sourdough starter ³	10	50	25	12.5
Loaf pan size <i>(volume in mL measured when full to the brim with water)</i>		1,000mL	500mL	250mL
Loaf pan dimensions (length x width x depth) inches		8 x 4 x 2.5	5.625 x 3.125 x 2.1875	4.5 x 2.5 x 1.75

* 1.5% salt is considered to be a low salt option; 2% salt with respect to flour is more usual.

** Highly variable water amount, according to wheat variety, moisture content, age of grain milled to flour, etc. 65±5% water with respect to flour most often produces desired medium stiff initial dough.

1,2,3 See below for ingredient preparations

Method for pan bread dough

[] In mixing bowl, mix together whole wheat flour, and malt. Add oil. Blend all ingredients by hand using a fork, or with a paddle in a stand mixer, or in a food processor with a blade.

[] In a separate container, add salt. Add water and dissolve salt. Add sourdough. Mix well and add the aqueous mixture to flour-mixture in mixing bowl.

[] Mix well until all ingredients are completely and smoothly incorporated. Compact the dough and leave to ferment in a covered container, at 86°F (30°C) for 3 hours.

[] Punch dough down or knead briefly, to finish dough development and to aerate the dough. Shape into a ball. Rest the dough at 86°F (30°C) for 15-30 minutes.

[] Prepare test loaf pan, by cutting out a liner for the loaf pan from unbleached baking parchment paper. Shape the dough piece, place on parchment paper and place in loaf pan. Enclose pan with plastic bag or ensure adequate humidity in proof cabinet. Leave for 2 hours at 86°F (30°C), for final fermentation step.

[] Just before baking make a quarter-inch deep vertical cut along the center top of the loaf, using a small serrated knife, stopping just before each end of the loaf. Bake for 30 – 60 minutes (according to loaf size) at 375°F (190°C) in a preheated and equilibrated oven that is preferably humidified, e.g. with an open pan of water in the oven 15 minutes before and during baking.

Ingredient preparations

1. Preparation of Enzyme Active Malt with Vitamin C

Thoroughly mix 1.5 grams pure vitamin C crystals with 100 grams of enzyme active malt flour.

When this mixture is used at the rate of 1% with respect to the flour, the concentration of vitamin C in the final dough will be in the range of 75±10 ppm according to the amount of water added to the dough.

2. Water

Potable water containing its natural quota of mineral ions such as calcium and magnesium, and filtered through activated carbon, should be used to make bread. *Activated charcoal (carbon) filtration will remove most organic compounds and disinfecting chemicals that may be present in the water.*

3. Sourdough Starter Replenishment and Storage - ready for use in pan, or any other bread dough

<i>Ingredients</i>	<i>Bakers percent*</i>	<i>Grams</i>
Whole wheat flour <i>(organic & freshly stone ground)</i>	100	100
Barley or wheat malt <i>(enzyme active & optionally with vitamin C)</i>	1	1
Salt	1.5	1.5
Water <i>(charcoal filtered)</i>	125	125
Mature sourdough from previous batch	10	10
Total amount	237	237

** per cent with respect to total flour*

[] In a bowl, mix whole wheat flour and malt

[] Separately dissolve salt in water, add mature sourdough; mix well.

[] Add the water mixture to the flour mixture and mix well. Scrape down sides of bowl and bring mixture together in bottom of bowl. Cover and leave to ferment at 86°F (30°C). Stir well at least twice daily.

Fermentation should be complete by 24 – 36 hours at 86°F (30°C). If you choose to work at 68°F(20°C) the whole process will take 3-4 days. Notice that the mixture is thick initially, gases well after a few hours and gradually thins to a smooth batter at maturity. Also, at maturity fermentation stops, no more gas is produced although some is retained, aroma will be mildly fruity, somewhat sour, pH will be 3.5 or less and an overgrowth of microorganisms (probably a yeast) may appear. pH can be measured by taking out a blob of starter and dabbing it onto colored pH test paper, which is available at micro-brewing supply stores.

[] Store mature sourdough in a loosely closed glass jar at 40°F (4°C) for up to 2 weeks; it is best if regularly used up for bread and replenished within one week. Separation of a watery layer on standing is typical with some whole wheat flour, especially hard red wheat flour; the watery layer can be stirred back in, before using. Keep sides of container well scraped down.