

## Required Machines List for A Bakery :

1. Flour silo :
2. Flour sieving machine :
3. Water dosing machine
4. Spiral or fork mixer:
5. Dough through (first fermenting)
6. Bun or Volumetric Divider :
7. Dough Rounder
8. Intermediate prover (second fermenting)
9. Baguette/bread moulder
10. Fermentation cabinet
11. Tray and trolleys (Racks)
12. Baking Oven (Rack, Deck, pipe or tunnel oven)
13. Bread packing machines

- Soybean obstructs staling up to 10-15 days if it is used for 5% as a additive.
- Standard dough contains 100% flour, 60% water, 2% additive, 2% yeast and 3% oil.
- The best fermentation happens at 27-30 °C, pH 7.
- Temperature of the dough should be 22°C at the summer and 27°C at the winter season.
- In winter season, more yeast is used against summer season.
- If fermenting time dose longer than average, the dough doesn't rise, bread becomes dryer than normal, cracks accurse on bread crust and crust becomes hart.
- Water ratio in the dough for bread is appr. 47% of the total weight of dough.
- If water quantity in the dough less than normal, core of the bread becomes dry and small size than normal.
- Water temperature should be around 14°C in summer and 36°C in winter.
- Bakers should use about 1-2% salt for dough. Salt is very important for taste, fermentation, shape of the holes in the bread, flexibility of the product, good shaping of dough and digestion system of human.
- Too much salt cause longer fermentation time, less quantity cause hard crust.
- A little bit cheese water can be added to the dough for ;
  - More nutritive results
  - Good crust color
  - Supporting activities of additives.
- Bread making processes :
  - Flour sieving
  - Dough mixing
  - First fermenting
  - Dough dividing
  - Rounding
  - Second Fermenting by Intermediate prover
  - Moulding
  - Final fermenting by fermentation cabin
  - Baking

- Cooling and resting
  - Packing
  - Selling
- Air circulation at the dough processing area must be very quiet.
  - If mixing time cannot be adjusted well, dough surface becomes chap, dividing is difficult.
  - If a little bit of sugar is added to the dough, bread color turns red faster but the inside might be a little bit raw. Adding sugar also decreases fermentation time.
  - Temperature in the intermediate proving cabinet should be around 27-29°C and the inside must be moist. This process is also necessary for easier moulding.
  - Final fermenting (at fermentation cabinet) should be at 30-35°C and 70-80% humidity level.
  - Knifing is important for good baking and shape of bread. Knifing should be almost horizontal in position on the dough.
  - Generally breads are baked at ;
    - 280-290°C for rotary ovens
    - 230-240°C for deck ovens
    - 200-230°C for tubular ovens

for 17-20 minutes. Steam is injected onto the bread surface for the first 7-15 seconds of the baking period. Baking time and temperature changes according to each product.

- The reasons given below cause staling;
  - Anti-hygienic air conditions during cooling and storing.
  - Irritation during bread slicing.
  - Unsuitable packing materials.
- The factors mentioned below are important for bread quality ;
  - Quality of flour:
    - Suitable flour type must be chosen for bread making.
    - Flour particles must not be too thin.
    - Flour must not be stored too long.
  - Water quantity and temperature
  - Salt quantity
  - Additives and yeast quality
  - Fermentation time
  - Dough weight, volume and shape
  - Baking time and temperature
  - Steaming
  - Oven quality