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Pastry and Bakery



TOPIC 1 (Part 1):

INTRODUCTION TO BAKING



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LEARNING OUTCOMES

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01 Understand mathematics in baking

02 Understand food safety in baking

03 Identify bakery and pastry equipment and tools

04 Identify and understand bakery and pastry ingredients



LEARNING OUTLINES

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- Mathematical aspects in baking involving the importance of standardized recipe or formulation, measurements in baking, baker's percentage, basic formula and recipe conversion
- Food safety in baking involving subtopic of types of hazards and introduction to HACCP system
- Introduction to bakery and pastry equipment and tools commonly used in baking industry
- Introduction to bakery and pastry ingredients such as flour, fats, sugar, liquids, leavening agents and others



MATHEMATICAL ASPECTS IN BAKING:

Standardized recipe or formulation

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01

A standardized recipe or Formula is a set of instructions describing the way a particular establishment prepares a particular item.

02

Functions:
controlling quality and quantity



MATHEMATICAL ASPECTS IN BAKING:

Measurements in Baking

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Metric System should be used for accurate measurement in baking.
There is one basic unit for each type of measurement:

01 Gram is the basic unit of weight.

02 Liter is the basic unit of volume.

03 Meter is the basic unit of length.

04 Degree Celsius is the basic unit of temperature.



MATHEMATICAL ASPECTS IN BAKING:
Percentage

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The amount of each ingredient used as a percentage of the amount of flour used. Flour is always 100%.

$$\frac{\text{Total weight of ingredient}}{\text{Total Weight of flour}} \times 100\% = \%\ \text{of ingredient}$$

Ingredients	Weight	Percentage
Cake Flour	2500g	100%
Sugar	2500g	100%
Baking Powder	125g	5%
Salt	60g	2.5%
Butter	1250g	50%
Milk	1500g	60%
Eggs	1500g	60%
Total	9435g	377.5%



MATHEMATICAL ASPECTS IN BAKING:
Percentage

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Procedure for calculating the weight of an Ingredient if the weight of flour Is known

1. Change the ingredient percentage to decimal form by moving the decimal point two places to the left.
2. Multiply the weight of the flour by this decimal to get the weight of the ingredient.

Example :

A formula calls for 20 percent sugar and you are using 5000g flour. How much sugar is needed?

20% = 0.20 → 5000g X 0.20 = 1000g sugar



MATHEMATICAL ASPECTS IN BAKING:

Basic Formula and Recipe Conversion

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Procedure for converting a formula to New Yield:

1. Change the total percentage form by moving the decimal point two places to the left.
2. Divide the desire yield by this decimal figure to get the weight of flour
3. If necessary, round off this number to the highest figure. This will allow for losses in mixing, make up and panning and will make calculation easier.
4. Use the weight of flour and remaining ingredient percentages to calculate the weights of the ingredients, as in the table 1.

Example : In the Table 1 sample cake formula, how much flour is needed if you require 3000g cake batter?

377.5% = 3.775 → **3000g / 3.775 = 794.7g**



FOOD SAFETY IN BAKING

Contamination

HAZARD: ANY SUBSTANCE IN FOOD THAT CAN CAUSE ILLNESS OR INJURY

BIOLOGICAL

BIOLOGICAL HAZARDS

Microorganism: tiny, usually single celled, organism that can be seen only with a microscope.
A microorganism that can cause disease is called a pathogen.

Conditions needed for bacterial growth: Food, Moisture, Temperature, Acidity or alkalinity, Oxygen and Time

Protection against bacteria
Three basic principles of protecting food against bacteria:

- Keep bacteria from spreading
- Stop bacteria from growing
- Kill bacteria

Other Biological Hazards : Viruses, Parasites, Fungi, Plant toxins, Allergens

FOOD SAFETY IN BAKING

Contamination

HAZARD: ANY SUBSTANCE IN FOOD THAT CAN CAUSE ILLNESS OR INJURY

CHEMICAL

CHEMICAL HAZARDS

Chemical Hazards is

- Antimony
- Cadmium
- Cyanide
- Lead
- Copper
- Zinc

FOOD SAFETY IN BAKING

Contamination

HAZARD: ANY SUBSTANCE IN FOOD THAT CAN CAUSE ILLNESS OR INJURY

PHYSICAL

PHYSICAL HAZARDS

Physical Hazards is the contamination of food with objects that may not be toxic but may cause injury or discomfort. Examples of physical hazards are:

- Glass
- Metal shavings
- Stones
- Insects
- Soil
- Hair

Cross-contamination: transferring of hazardous substances, mainly microorganisms, to a food from another food or surface.

FOOD SAFETY IN BAKING

HACCP System

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1. Assess hazards
2. Identify critical control points
3. Set up procedures For monitoring CCPs
4. Set up standards or limits for CCPs
5. Establish corrective actions
6. Set up a record keeping system
7. Verify that the systems are working





BAKERY & PASTRY EQUIPMENT AND TOOLS

Safety in using bakery and pastry equipment:

- Never use a piece of equipment until you are thoroughly familiar with the operation and all its features.
- Study the operating manual supplied with each item.
- When purchasing a piece of equipment looks for models that have been tested and certified by recognized agencies.

Large Equipments

There are a few categories of baking equipment and tools.

Mixers

- Stand mixer, spiral mixer, cake mixer and hand mixer.
- Vertical mixers have 3 main mixing attachments:
  - Paddle for general mixing.
  - Wire whip for beating or whipping.
  - Dough arm or dough hood for mixing and kneading yeast doughs.
- Dough-Handling Equipment
- Dough Sheeter rolls out portions of dough into sheets of uniform thickness.

Proofer is a special box in which the ideal conditions for fermenting yeast doughs can be created.

Ovens

- *Deck Oven*
- *Convection ovens*
- *Combi oven*
- *Conventional ove*

Other tools

Bowls (staineless steal and ceramic), measuring utensils, molds and baking trays and other tools.

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Thank You



PASTRY AND BAKERY