



Australian Government

Assessment Requirements for FBPTEC4009
Identify the physical and chemical
properties of materials, food and related
products

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Modification History

Release	Comments
Release 1	This version released with the FBP Food, Beverage and Pharmaceutical Training Package Version 2.0.

Performance Evidence

An individual demonstrating competency in this unit must satisfy all of the elements and performance criteria of this unit.

There must be evidence that the individual has effectively identified the physical and chemical properties of materials, food and related products, including:

- accurately identifying and describing the physical and chemical characteristics of three different foods and the impact that processing has on each
- using common tests and measures to identify the components of three different food items
- identifying the characteristics of acids and bases and their application in food processing
- identifying the basic molecular structures of carbohydrates, proteins and fats
- distinguishing the difference between solutions, suspensions and colloidal systems
- identifying hazards and control methods in managing hazardous materials when working with food
- communicating technical information using correct technical terms, flow charts and sketches.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- characteristics and phenomena that occur during processing; and products and processes where these phenomena are observable, including:
 - shear and strain
 - friction
 - surface tension
 - pressure
 - crystallisation
 - total solids
 - heat and temperature

- relative humidity
- work and energy input
- viscosity
- particle size
- melting points, boiling points, freezing points
- dew and condensation points
- additional phenomena appropriate to the production process
- common chemical reactions that occur in food processing, including both spontaneous and controlled reactions, including:
 - oxidation
 - enzymic
 - Maillard
 - acid-based
 - the role of enzymes in generating biological reactions
- tests commonly used to measure phenomena, and related units of measurement
- transition phases applicable to a given production process
- the role of temperature and pressure in the transition process
- pH and its impact on food processes, including:
 - differences between a strong acid and a concentrated acid
 - units of measurement
 - classification of commonly used materials, ingredients and indicators according to pH
 - the typical strengths and concentration levels required for commonly used acids and bases
 - the significance of pH for processing, food safety and cleaning applications
- basic molecular structures of carbohydrates, proteins and fats
- molecular changes that occur in states of matter, and common applications, including:
 - refrigerant
 - freeze drying
- effect and compatibility of cleaning agents with equipment surface materials
- processing stages designed to affect the structure of compounds (including hydrogenation or denaturing proteins in cooking processes of oil)
- typical applications of solutions, suspensions and colloidal systems in food processing, including:
 - emulsions (oil in water/water in oil)
 - sols (solid-liquid/solid-solid)
 - gels
 - foams (gas-liquid/gas-solid)
 - differences between dispersed particles and the dispersion medium in colloids
 - factors that affect stability of colloidal systems, including the stages in a production process that can cause changes to colloid structure
- technical information resources

- how to develop explanatory sketches or flow charts to communicate how observed phenomena affect products and the process
- safety hazards and required control methods when handling chemicals and working with processes involving chemical reactions
- basic research skills required for technical information to describe food properties and reactions, including recognising and applying appropriate units of measurement and terms.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
 - skills must be demonstrated in a workplace setting or an environment that accurately represents a real workplace
- resources, equipment and materials:
 - production process and related equipment
 - tests used to report relevant product/process information and recorded results
- specifications:
 - manufacturers' advice and operating procedures for equipment
 - test methods.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are found in VETNet: -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=78b15323-cd38-483e-aad7-1159b570a5c4>