



## Higher National Unit specification

### General information for centres

**Unit title:** Food Composition: Raw Materials

**Unit code:** F8L5 35

**Unit purpose:** This Unit is designed to enable candidates to explain the ways that raw materials and food additives are used in the food industry and the effects that they have on the activities of manufacturers and on consumers.

On completion of the Unit the candidate should be able to:

- 1 Explain raw materials and their use in the food industry.
- 2 Explain the use of food additives in the food industry.

**Credit points and level:** 1 HN credit at SCQF level 8: (8 SCQF credit points at SCQF level 8\*)

*\*SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

**Recommended prior knowledge and skills:** Access to this Unit will be at the discretion of the centre. However, candidates should have some prior knowledge of the chemical components of food which could be demonstrated by relevant practical experience or achievement of relevant Units at SCQF level 7, such as F6VD 34 Food Composition and F6VC 34 Food Analysis.

**Core Skills:** There are opportunities to develop the Core Skills component of *Written Communication (Writing)* at SCQF level 6 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

**Context for delivery:** If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

**Assessment:** The assessment can be based on examples of the use of raw materials and additives taken from across all parts of the food industry. Candidates can be asked to explain the effects of the chemical factors involved in each case. Candidates can present their assessments in several forms, eg a report or other suitable format such as presentation software.

## Higher National Unit specification: statement of standards

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The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

Please refer to *Knowledge and/or Skills for the Unit* and *Evidence Requirements for the Unit* after the Outcomes.

### Outcome 1

Explain raw materials and their use in the food industry

#### Knowledge and/or Skills

- ◆ Chemical composition of raw materials
- ◆ Composition of food products manufactured from raw materials
- ◆ Enzymes
- ◆ Non enzymic browning

### Outcome 2

Explain the use of food additives in the food industry

#### Knowledge and/or Skills

- ◆ Functions of food additives
- ◆ Factors affecting the use of food additives in food products
- ◆ Legislation on food additives

### Evidence Requirements for the Unit

Candidates will need to provide written/oral evidence to meet all the Knowledge and/or Skills items by showing that they can explain:

- ◆ the use of two different raw materials in the food industry and in each case the explanation must:
  - refer to the chemical composition of the raw materials
  - give reasons why the raw materials are used and the effects of their use on food manufacture and nutrition
- ◆ the use of a food product manufactured from raw materials, and the explanation must:
  - refer to the chemical composition of the food product
  - give reasons to explain why raw materials are used in its manufacture and the effects of this use on food manufacturers and on nutrition for food consumers

## Higher National Unit specification: statement of standards (cont)

### Unit title: Food Composition: Raw Materials

- ◆ explain the use of enzymes in the manufacture of a food product, and the explanation must:
  - refer to the modes of action of enzymes and the role of enzymes
  - comment on the factors which affect the use of enzymes in food manufacturing
  
- ◆ the importance of non-enzymic browning, and the explanation must:
  - refer to the chemical properties of the reaction
  - give reasons to indicate why the reaction is significant for food manufacturing
  
- ◆ the use of two different additives used in the food industry, and in each case the explanation must:
  - refer to the functions of the additive and give reasons to explain its use in a particular food product
  - refer to legislative requirements which may affect the way the additive is used by food manufacturers

### Assessment Guidelines

Candidates can be given examples of raw materials and additives used in food ranging across all sectors of the food industry. They could be asked to research each example to find out the information required in order to explain how each is used and the effects that it may have. As the Unit is fundamentally about food chemistry, candidates should concentrate throughout on the chemical factors involved. Candidates could be given a brief to help them focus on the key factors in each case.

Assessment can be undertaken as candidates progress through the Unit and can be presented in several forms, eg candidates could present their explanations in a report form or by making use of presentation software or any other suitable methods.

## Administrative Information

**Unit code:** F8L5 35  
**Unit title:** Food Composition: Raw Materials  
**Superclass category:** NH  
**Original date of publication:** August 2009  
**Version:** 02

### History of changes:

| Version | Description of change   | Date     |
|---------|---|----------|
| 02      | Titles of Units F6VD 34 and F6VC 34 amended by removal of numeral 1 in line with QDT agreement. | 26/04/10 |
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## Higher National Unit specification: support notes

### Unit title: Food Composition: Raw Materials

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

### Guidance on the content and context for this Unit

This Unit is intended to provide candidates with essential underpinning knowledge and understanding about the chemical composition of raw materials and additives used in the food industry and the chemical reactions associated with them. Candidates are expected to apply this knowledge and understanding to food manufacturing and explain the ways that raw materials and food additives are used in the food industry – as well as the effects that they have as far as food manufacturers are concerned. Candidates must also consider the effects from the point of view of consumers by looking at the effects on nutrition of the use of raw materials and food additives.

The Unit does not contain practical scientific work but it is a predominantly an applied science Unit as candidates are expected to apply their knowledge and understanding of chemistry to food processing and the food industry.

If this Unit is being delivered as part of the HN in Food Science and Technology, it builds on two other mandatory Units in the framework, ie F6VD 34 Food Composition and F6VC Food Analysis. From their practical experience or their previous study, candidates should therefore already have a good appreciation of the importance of food chemistry to food manufacturing and this Unit should deepen and extend this awareness. This Unit is about applying food chemistry to the food industry, which can be done by highlighting the implications for food manufacturers and food consumers of the raw materials and additives used in the food industry.

There now follows some more detail on each of the Outcomes:

**Outcome 1** deals with the use of raw materials in the food industry. The emphasis is on assessing the way they are used in food manufacturing, as well as the effects they may have on the way manufacturers operate and on food consumers. Candidates should, however, be aware of the sources, harvesting and distribution of raw materials. The raw materials covered can include: tea; coffee; chocolate; alcoholic beverages; cereals; fruits; nuts; eggs; vegetables; etc.

Modes of action of enzymes can include: specificity; active site; temperature; pH.

Role of enzymes can include: hydrolysis; synthesis; oxidation; lipolysis.

Non-enzymic browning can cover the Maillard reaction and other processes such as caramelisation.

**Outcome 2** covers food additives. It should focus on the common additives in current use and include the types of foods in which they are used. The emphasis in the Outcome is assessing the way additives are used but candidates should be able to match additives to their function and types of additive to food products.

Additives could include: humectant; thickener; emulsifier; antioxidant; preservative; propellant; acidity regulator; flavour enhancer; sweetener; colour, probiotics, nutraceuticals, etc.

## **Higher National Unit specification: support notes (cont)**

### **Unit title: Food Composition: Raw Materials**

Legislation can be included as one of the factors affecting the use of additives. Legislation should be current at the time of delivery. Candidates are not expected to know the details of all relevant legislation but are expected to demonstrate that they can give examples of relevant legislation when assessing the use of food additives. Legislation may, for example, have an impact on the way food manufacturers use additives and on the effects that additives may have on the diet and nutrition of consumers.

Also, it would be helpful if tutors referred to current guidelines produced by relevant bodies such as FSA etc.

### **Guidance on the delivery and assessment of this Unit**

#### **Delivery Guidance**

This Unit is an applied Unit which also includes significant underpinning theoretical knowledge and understanding of chemistry as related to the food industry. The purpose of the Unit is to enable candidates to become aware of the significance of the chemical composition of raw materials and food additives and the chemical reactions associated with them. The delivery of the Unit should keep this purpose firmly in mind and encourage candidates to see how the material can be applied to the day to day operations and activities of food manufacturers.

Candidates are not expected in this Unit, however, to undertake practical laboratory work. There is a complementary Unit, ie (F8L4 35) Food Analysis and Nutritional Labelling, which does develop laboratory skills related to nutritional analysis. In awards which include both these Units, eg HND Food Science and Technology, it may be appropriate to integrate the delivery of these Units.

#### **Assessment Guidance**

Assessment for this Unit can take several forms but it focuses on the application of the knowledge and understanding of relevant aspects of food chemistry. Candidates are therefore expected to refer to specific examples of raw materials and food additives. They are asked to explain their chemical composition and other chemical aspects, but in addition, they are also required to investigate the effects of the use of raw materials and food additives on food manufacturers and food consumers. This means, if desired, candidates can carry out assessment work during the delivery of the Unit. Alternatively, candidates can be given a research brief towards the end of the delivery period and asked to apply the knowledge that they have gained during their study of the Unit. It would be possible, and may be desirable, to give different examples to different candidates. Candidates can be encouraged to do their own research to support their investigation of the application of theoretical concepts and principles from chemistry.

Candidates can present their explanations for assessment in a number of ways. They could provide a report, perhaps structured around some questions which they have been given in advance. They could do a poster presentation or make use of presentation software. Oral evidence should be recorded (eg by video) and retained.

## **Higher National Unit specification: support notes (cont)**

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### *Opportunities for developing Core Skills*

#### ***Communication: Written Communication (Writing) at SCQF level 6***

As part of their assessment work for this Unit, candidates are expected to explain the ways in which food additives and raw materials are used in the food industry. To do this they will have to apply their knowledge and understanding of the chemical composition of food additives and raw materials, as well as the chemical reactions associated with food additives and raw materials. Candidates could do this by producing a written report although other presentation methods could be adopted. If they do produce a written report they will be expected to present and analyse essential information in a logical and effective order. The report will have a structure which links the various points together and organises the content in a manner which enables candidates to draw conclusions about the effects of the use of food additives and raw materials as far as food manufacturers and consumers are concerned. They will be expected to make use of a format appropriate for a scientific audience and could be asked to base their report on research which they have carried out for themselves.

### **Open learning**

If this Unit is delivered by open or flexible learning, additional resources and materials will be required for candidate support, assessment and quality assurance.

### **Disabled candidates and/or those with additional support needs**

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website

[www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements)

## General information for candidates

### Unit title: Food Composition: Raw Materials

This Unit is designed to give you the underpinning knowledge and understanding of the chemical composition of raw materials and food additives used in the food industry. It also looks at the chemical reactions associated with these raw materials and food additives. It extends and develops your practical experience or the work you did on other food chemistry Units such as Food Composition. An understanding of food chemistry is vital to food manufacturing and the food industry. This Unit is important, therefore, because it gives you more of the knowledge and understanding that you will need to take up employment in the food industry. It also enables you to discuss what happens to food to a greater extent than you could previously. In addition, it will also extend your knowledge and understanding of the effects that the chemical composition of food can have on consumers as well as on food manufacturers.

However, this is an applied Unit. You will be asked to apply your knowledge and understanding of food chemistry to explain the ways that raw materials and food additives are used in the food industry. You will also be asked to look at the effects that raw materials and food additives have on the activities of manufacturers and on consumer nutrition and health. There is no laboratory work in this Unit - there is another Unit (ie Food Analysis and Nutritional Labelling), which is designed to develop the practical laboratory skills and techniques associated with nutritional analysis.

In this Unit, you will study the chemical composition of raw materials and of food products manufactured from them. You will also examine the functions of food additives and the factors affecting their use in food products, including current legislation on food additives. Your study of additives will include the role of enzymes in food manufacturing.

The assessment for this Unit requires you to explain the use of raw materials and food additives in the food industry. Throughout you will be expected to relate your explanation to specific examples of raw materials and food additives - for instance, there will be two different examples of food additives. As assessment for this Unit can be presented in several forms, your tutor will advise on how you should present your assessment work eg present your explanations in a report form or by using relevant presentation software etc. You will have succeeded in meeting all the requirements of this Unit if you pass the assessments.