

Candidate Support Pack

SVQ in Food Manufacture

Maintain product quality in food manufacture

Unit F2M9 04



Publishing information

First edition

Published date: August 2010

Publication code: DB5500

First Published 2010

Published by the Scottish Qualifications Authority
The Optima Building, 58 Robertson Street, Glasgow G2 8DQ
Ironmills Road, Dalkeith, Midlothian EH22 1LE

www.sqa.org.uk

The information in this publication may be reproduced in support of SQA qualifications. If it is reproduced, SQA should be clearly acknowledged as the source. If it is to be used for any other purpose, then written permission must be obtained from the Assessment Materials and Publishing Team at SQA. It must not be reproduced for trade or commercial purposes.

© Scottish Qualifications Authority 2010

History of changes

Version number	Date	Description	Authorised by

Contents

Introduction	1
About this pack	1
Information about the SVQ in Food Manufacture	1
Core Skills	2
Information about this Unit	2
Section 1: Performance requirements	3
1 Maintain quality checks effectively	3
2 Report to others clearly	11
Observation checklist	13
Section 2: Knowledge requirements	16
Introduction	16
Meanings of ‘quality’	16
Quality	17
What do we mean by quality?	17
Quality standards (K1)	17
Organisational/operational requirements	18
Monitoring — what regular checks must be made?	22
Corrective action — what must we do if any of the products are not up to standard? (K3)	22
Factors that can affect the quality of the product	22
Quality checks (K2 and K3)	25
Temperature checks	26
Labelling products	27
Foreign bodies	28
Factory closure (K4)	29
Golden rules	30
Reporting to others (K5 and K6)	31
Section 3: Sample questions and answers	32
Section 4: Evidence for this Unit	35
Performance evidence	35
Knowledge evidence	35

Introduction

About this pack

Welcome to the candidate support pack for Unit F2M9 04: Maintain Product Quality in Food Manufacture. This is an optional Unit in the SVQ in Food Manufacture at level 2. This pack will help you to develop your knowledge and skills to meet the knowledge and evidence requirements of the Unit.

The pack is divided into four sections: Section 1 covers the performance requirements, Section 2 the knowledge requirements, Section 3 the sample questions and answers, and Section 4 the evidence requirements of the Unit.

We hope that you enjoy using this pack and that you find it informative.

Information about the SVQ in Food Manufacture

The SVQ in Food Manufacture at level 2 is a nationally-recognised qualification and has been developed by SQA and Improve, the Sector Skills Council for Food and Drink Manufacture. To achieve the full SVQ in Food Manufacture at level 2, you will need to successfully achieve the following mandatory Units:

SQA code	Unit title	Improve code	SCQF level	SCQF credit
F2MD 04	Maintain Workplace Food Safety Standards in Manufacture	206	5	6
F2MB 04	Maintain the Workplace and Health and Safety in Food Manufacture	207	5	6

This pack covers the optional Unit Maintain Product Quality in Food Manufacture. (5 SCQF credit points at SCQF level 7¹). Support packs have been produced for both mandatory Units.

You will need to achieve six optional Units. There is a wide range of options to choose from. Your assessor will be able to advise you of the best optional Units to suit your job role.

¹ The SCQF provides the national common framework for describing all relevant programmes of learning qualifications in Scotland. The level a qualification is assigned within the framework is an indication of how hard it is to achieve. There are 12 levels, from level 1 for Access 1 through to level 12 for doctorates. The number of credit points for a qualification is based on the amount of time that an 'average' learner might take to achieve the Unit/qualification. One SCQF credit point represents 10 hours of learning time. For further information on SCQF go to www.scqf.org.uk.

Core Skills

Completion of Unit F2M9 04, Maintain Product Quality in Food Manufacture, provides opportunities for developing Core Skills in Problem Solving at Intermediate 1 and Communication at Access 3.

Information about this Unit

This Unit is about maintaining product quality in food and drink manufacturing operations. This can be applied to either processing or packaging operations. You need to be able to check product and materials against the required quality standards, record results, and take appropriate action if there are problems.

In order to maintain product quality you must first know the process the product will undergo and the product specifications that you must achieve with the end product. You must also know the business procedures for checking quality and the parameters within which you are permitted to work.

You must then carry out the required monitoring checks and ensure that you record your findings accurately. Any problems that may occur or any tolerances exceeded must be dealt with within the limits of your authority and reported promptly to the relevant person.

During the process, you must ensure that all health, safety, and hygiene procedures are followed at all times and deviation from the normal is reported immediately to a senior member of staff so that appropriate action is taken. Communication between the relevant staff must be maintained at all times.

Section 1: Performance requirements

To complete this Unit you need to show that you maintain the quality of the product in food and drink manufacturing operations. You will need to demonstrate that you can check products and materials against the required quality standards and that you record the results of your checks, taking appropriate action if required.

In order to be assessed as competent you must demonstrate to your assessor that you can consistently perform to the requirements of the standards that are set out below.

Your performance evidence must include at least one observation of you carrying out your normal work by your assessor.

1 Maintain quality checks effectively

This means that you:

- a) Follow the health, safety, and hygiene requirements when carrying out quality checks
 - maintaining high standards of personal hygiene, ie following hand-washing procedures, keeping cuts covered, not wearing jewellery, and not coughing/sneezing over food
 - wearing appropriate personal protective equipment (PPE), ie work overalls, hats, protective footwear, chainmail, and oven gloves
 - following hazard analysis and critical control point (HACCP) procedures to avoid product contamination
 - maintaining a safe work environment, ie storing tools and equipment safely, and removing hazards promptly
 - using tools and equipment safely, and using guards and safety systems appropriately

- b) Follow the specified methods and procedures for checking product quality
 - visual — checking for colour, bruising, condition, burst packaging, physical contamination, use-by dates, prepared to required specification, and quantities
 - smell — checking for foul odour
 - touch — checking for sticky products, changes to product texture, or consistency
 - temperature — storage or intake, cooking, chilling, cooling, or hot hold
 - weight — ensuring that product is within acceptable parameters
 - ensuring that the required checks are carried out at the correct times, eg on intake, twice per day, after 2 hours cooking, during processing

c) Compare accurately the results of quality checks against quality standards

Intake:

- fresh goods are below 8°C, frozen goods are below –18°C, packaging is intact, products are within date, and no sign of contamination
- delivery/unloading
- company process/procedure

Storage:

- fresh goods are below 5°C, frozen goods are below –18°C, packaging is intact, products are within date, no sign of contamination, and no signs of product spoilage
- packaged goods
- dry goods
- liquids
- packaging
- each product that you intake will have set storage conditions that you must know for all products and look at labels to ensure that you know how each has to be stored

Cooking, cooling, hot-hold, chilling, and ambient storage:

- cooking temperature of 75°C is achieved, reheat temperatures of 82°C and above are achieved, hot-hold temperature of above 63°C is maintained, products cooled to below 63°C within 90 minutes is achieved, and desired rise/colour/appearance achieved for cooked products
- chilled/frozen products dependent on requirements normally below 50°C; frozen products below –18°C
- ambient storage normally means storage at room temperature, with more emphasis on cleanliness and dry conditions away from light

Processing/manufacturing:

- desired product appearances, eg texture, mixing, forming, quantities, trimming, finishing, weights, and packaging requirements, have been achieved as per specifications; no signs of contamination or spoilage
- each stage of the manufacturing process from intake to final packing has set procedures and guidelines along with documentation that is required to be completed or information passed on to someone in charge

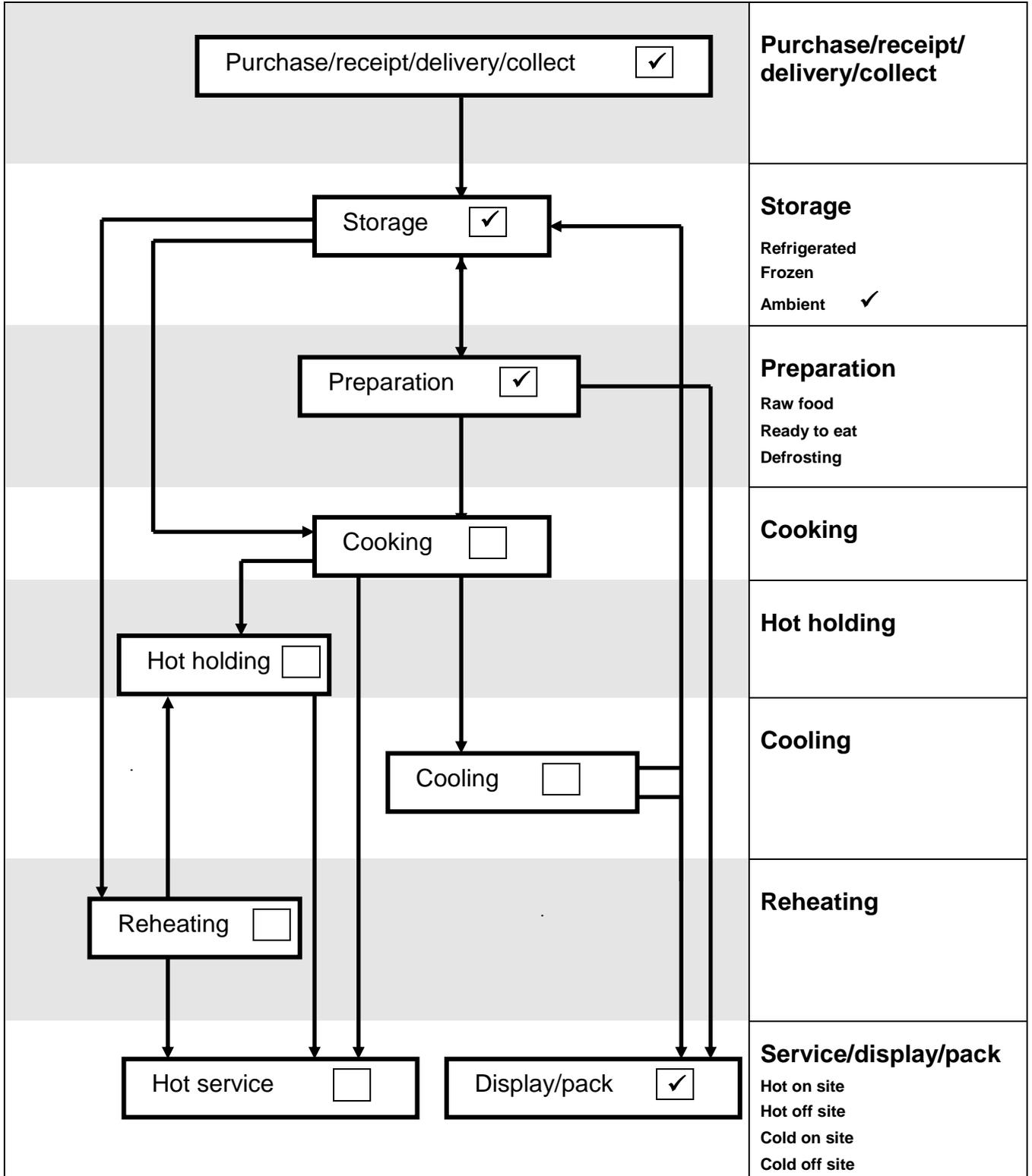
d) Record correctly the results of quality checks

This may include:

- Following business procedures to accurately record the findings of quality checks, eg HACCP documentation, which may include intake records, storage temperatures, cooking, cooling and hot-hold records, and batch numbers. Writing must be legible and easy to read, thus preventing mistakes.

Quality checks — food group flow chart

The following flow chart shows examples of where you would check the quality of the product(s) that you manufacture/receive.



(Source: FSA Food Safe/Retail Safe)

Activity 1 Food group flow diagram

Think of the flow of product that you manufacture and complete the diagram.

<div style="border: 2px solid black; width: 80%; margin: auto; height: 30px; position: relative;"> </div>	<p>Purchase/receipt/ delivery/collect</p>
<div style="border: 2px solid black; width: 60%; margin: auto; height: 30px; position: relative;"> </div>	<p>Storage Refrigerated Frozen Ambient</p>
<div style="border: 2px solid black; width: 60%; margin: auto; height: 30px; position: relative;"> </div>	<p>Preparation Raw food Ready to eat Defrosting</p>
<div style="border: 2px solid black; width: 60%; margin: auto; height: 30px; position: relative;"> </div>	<p>Cooking</p>
<div style="border: 2px solid black; width: 60%; margin: auto; height: 30px; position: relative;"> </div>	<p>Hot holding</p>
<div style="border: 2px solid black; width: 60%; margin: auto; height: 30px; position: relative;"> </div>	<p>Cooling</p>
<div style="border: 2px solid black; width: 80%; margin: auto; height: 30px; position: relative;"> </div>	<p>Reheating</p>
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 2px solid black; width: 40%; height: 30px; position: relative;"> </div> <div style="border: 2px solid black; width: 40%; height: 30px; position: relative;"> </div> </div>	<p>Service/display/pack Hot on site Hot off site Cold on site Cold off site</p>

e) Take action within the limits of your authority to maintain product quality

This may include:

- rejecting products/quarantine products
- further processing — mixing, reforming, further trimming or refinishing, alteration of weights by adding or removing product, repackaging, and further cooking
- transferring products to appropriate storage facilities, eg when a failure of storage facilities has occurred
- reporting problems to senior staff

Principles of HACCP

There are seven principles of HACCP:

1. Identify the hazard

Conduct a hazard analysis. Prepare a flow diagram, identify the hazards, and specify the control measures: biological, physical, chemical, and allergens.

2. Identify the critical control points (CCPs)

Determine the critical control points.

3. Establish critical limits at CCP

What you are checking and when you check these.

4. Establish effective monitoring procedures at CCP

What documents have to be completed?

5. Establish corrective actions

When monitoring indicates that a particular CCP is not under control.

6. Verify the HACCP study

Procedures that have been established for verifying the system.

7. Establish documents and records to validate HACCP.

Examples of HACCP

- control measures and critical limits
- monitoring and recording
- corrective action

Purchase, receipt/delivery, collect (internal and external)

Hazard (s) at CCP(s) What can go wrong?	Control measures and critical limits What action has to be taken to effectively reduce or get rid of the hazard? What are the critical limits?	Monitoring and recording How are the control measures checked and recorded?	Corrective action What should be done if the control measure fails and/or the critical limits are not met?
Presence and growth of harmful bacteria Cooked/ready-to-eat foods — where food is either delivered to the premises or collected by the food business	Accept deliveries from a reputable supplier at a temperature that will discourage the growth of harmful bacteria Food collected must be transported in a way that will ensure that the temperature on arrival will comply with your specified house rules Make sure that all food is within its use-by date	Monitor temperature of food on delivery Monitor temperature of food on arrival Visual check on use-by dates	<ul style="list-style-type: none"> • Decide if food should be rejected or is safe to use • Review supplier • Dispose of unsafe food • Review collection practices or methods of transportation • Reject food beyond use-by date and review supplier
Cross-contamination From raw to cooked/ready-to-eat foods	Keep raw and cooked/ready-to-eat foods separate Use safe handling practices	Observe and supervise separation practices Observe and supervise handling practices	<ul style="list-style-type: none"> • Reject food that may be contaminated • Review delivery methods • Review staff training
Other contamination eg from vehicle and equipment	(Delivery/collection) Make sure that delivery/collection vehicle is clean Make sure that food is protected and/or covered	Observe cleanliness of delivery vehicle/visual checks and supervision of collection practices Observe that food is protected	<ul style="list-style-type: none"> • Reject food that may be contaminated • Review supplier • Review staff training

Refrigerated storage

Hazard(s) at CCP(s) What can go wrong?	Control measures and critical limits What action has to be taken to effectively reduce or get rid of the hazard? What are the critical limits?	Monitoring and recording How are the control measures checked and recorded?	Corrective action What should be done if the control measure fails and/or the critical limits are not met?
Growth of harmful bacteria Cooked/ready-to-eat foods	Store food at a temperature that will discourage the growth of harmful bacteria Make sure that all food is within its appropriate use-by date	Check refrigerator/chill temperature Visual check on use-by dates	<ul style="list-style-type: none"> • Re-check temperature and consider if food is safe to use; dispose of food if necessary • Service engineer to check/repair equipment • Dispose of food beyond use-by dates
Cross-contamination From raw to cooked/ready-to-eat foods	Keep raw and cooked/ready-to-eat foods separate Use safe handling practices	Observe and supervise separation practices Observe and supervise safe handling practices	<ul style="list-style-type: none"> • Dispose of food that may be contaminated • Review staff training
Other contamination eg from equipment	Keep the refrigerator/chill clean Make sure that food is protected and/or covered	Observe and supervise cleaning of refrigerator/chill Observe and supervise protection of food	<ul style="list-style-type: none"> • Dispose of food that may be contaminated • Review staff training

Frozen storage

Hazard(s) at CCP(s) What can go wrong?	Control measures and critical limits What action has to be taken to effectively reduce or get rid of the hazard? What are the critical limits?	Monitoring and recording How are the control measures checked and recorded?	Corrective action What should be done if the control measure fails and/or the critical limits are not met?
Growth of harmful bacteria Cooked/ready-to-eat foods	Store food at your specified house rule temperature to discourage the growth of harmful bacteria	Monitor freezer function	<ul style="list-style-type: none"> • Re-check temperature and consider if food is safe to use; dispose of food if necessary • Service engineer to check/repair equipment
Cross-contamination From raw to cooked/ready-to-eat foods	Keep raw and cooked/ready-to-eat foods separate	Observe and supervise separation practices	<ul style="list-style-type: none"> • Dispose of food that may be contaminated • Review staff training
Other contamination eg from equipment	Keep the freezer clean Make sure that food is protected and/or covered	Observe and supervise cleaning Observe and supervise protection of food	<ul style="list-style-type: none"> • Dispose of food that may be contaminated

Ambient storage (storage at room temperature)

Hazard(s) at CCP(s) What can go wrong?	Control measures and critical limits What action has to be taken to effectively reduce or get rid of the hazard? What are the critical limits?	Monitoring and recording How are the control measures checked and recorded?	Corrective action What should be done if the control measure fails and/or the critical limits are not met?
Contamination eg from packaging, equipment, and premises	Keep storage areas clean Make sure that food is protected and/or covered	Observe and supervise cleaning Observe and supervise protection of food	<ul style="list-style-type: none"> • Dispose of food that may be contaminated • Review staff training
Other contamination eg from pests	Implement pest-control measures Prevent pests coming into your premises	Observe and check the store for signs of pests Observe and check food and packaging for signs of pests Observe the condition of the premises	<ul style="list-style-type: none"> • Dispose of food that may be contaminated by pests • Contact pest control contractor • Carry out repairs to premises

2 Report to others clearly

This means that you:

- a) Communicate accurate results of both quality checks and actions taken to the relevant people at the appropriate time

This will include:

- clearly and accurately informing the relevant people of your findings
- informing relevant people of any action taken to rectify problems

Check that all required records are accurate, complete, and written clearly by:

- ensuring that the appropriate records are completed as required by company procedures and are easy to read, signed, and dated as necessary

Example

Monthly probe thermometer check

Probe thermometer recording details

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Reading in iced water												
Reading in boiling water												
Checked by												
Date and details of yearly calibration							Date of next yearly calibration					
NB: The electronic display unit should be checked at least once per year. Manufacturers may offer a calibration service.												

The readings in iced water should be -1°C to $+1^{\circ}\text{C}$; if outside this range the unit should be replaced or returned to the manufacturer to be recalibrated.

The reading in boiling water should be between 99°C and 101°C ; if outside this range the unit should be replaced or returned to the manufacturer to be recalibrated.

Observation checklist

The performance outcomes for this Unit are very practical and as such are likely to be assessed through observation of you undertaking normal working duties.

The observation checklist on the next page can be used by assessors to record evidence of you carrying out tasks that reflect the required performance of the Unit. This checklist has been provided as an example. Assessors can adapt it, use it as it is, or devise their own checklist.

Observation Checklist – Maintain Product Quality in Food Manufacture (204)

Candidate's name:			
Assessor's name:		Date:	
<p>Assessment overview</p> <p>Please give details of what was observed and the date the observation took place:</p>			
Candidate activity		Assessor confirm	Evidence/comments etc
How did the candidate:			
Performance indicators for maintaining quality checks effectively			
1.1	Follow the health, safety, and hygiene requirements when carrying out quality checks		
1.2	Follow the specified methods and procedures for checking product quality		
1.3	Compare accurately the results of quality checks against required standards		
1.4	Record correctly the results of quality checks		
1.5	Take action within the limits of your authority to maintain product quality		

Candidate activity How did the candidate:		Assessor confirm	Evidence/comments etc	
Performance indicators for reporting to others clearly				
2.1	Communicate accurate results of both quality checks and actions taken to the relevant people at the appropriate time			
2.2	Check that all required records are accurate, complete, and written clearly			
Record feedback given on the assessment plan and any review notes				
Candidate's signature			Date	
Assessor's signature			Date	
Internal Verifier's signature (if required)			Date	

Section 2: Knowledge requirements

This section provides background information for the knowledge requirements. At appropriate headings, you will see reference to the K numbers. These numbers link directly to the knowledge requirements of the National Occupational Standards, specified by Improve.

Introduction

Whatever is produced in a food and drink factory, quality must be produced to a laid-down standard and packaged in the correct way. To do this, quality checks are carried out at each stage of the process.

There will be a team of quality controllers or auditors who carry out checks during manufacture, but every member of staff has a responsibility to make sure that the product is correct.

To be able to meet quality standards, you need to be able to:

- follow quality checking methods and procedures
- record results
- check results against required standards
- take the necessary action to maintain product quality

This is needed to ensure that the required standard is met. Customers will not be satisfied with the products that have been bought if the quality standards are not achieved and this could result in complaints and loss of sales.

Outcome 2 of the Unit relates to how you communicate and report to others. This will be specific to your organisation and you may be able to provide evidence to cover this outcome as part of your evidence of maintaining quality checks.

Meanings of 'quality'

Of the many meanings of the word 'quality', two are of critical importance to managing for quality:

- 'Quality' means those *features of products* that meet customer needs and thereby provide customer satisfaction. In this sense, the meaning of quality is oriented to income. The purpose of such higher quality is to provide greater customer satisfaction and, one hopes, to increase income. However, providing more and/or better-quality features usually requires an investment and hence usually involves increases in costs. Higher quality in this sense usually costs more.
- 'Quality' means *freedom from deficiencies* — freedom from errors that require doing work over again (rework) or that result in field failures, customer dissatisfaction, customer claims, and so on. In this sense, the meaning of quality is oriented to costs, and higher quality usually costs less.

Quality

The quality of the products you are involved in making is everyone's business, and everyone has a part to play to make sure that the standards are met.

Producing a good product at all times will mean:

- satisfied customers, both internal and external (internal customers are the recipients of the product you produce or the service you provide within your own organisation; external customers are the recipients of the product produced by the company outside the organisation — the consumers/customers)
- new business and development of existing business
- job security for all
- job satisfaction

What do we mean by quality?

Quality means the standard or fitness for purpose of a product. Often, we buy the same things because we expect them to always look and taste the same. This is called 'brand loyalty'. By sticking to the same brand, we know what to expect and are usually satisfied with what we have bought.

Quality means meeting a given standard all the time. In food and drink, this means the product will always look and taste the same.

The product made during the first shift on the first day of the working week must be of the same standard as that made during the last shift on the last day of the working week.

Companies have methods and procedures to make sure that their products always look and taste the same. These include:

- what goes into the product
- how the product is made
- how the product is packed
- where the product is stored

Quality standards (K1)

The standard of quality that must be met is set out in an organisation's *Quality Assurance Manual*.

The way we check that these standards are met is laid out in the *Quality Control Manual*.

A word you might hear used is specification. This lays down how the process will be carried out from start to finish.

Organisational/operational requirements

These are the requirements set out by your company with regard to:

- hygiene rules
- health and safety rules

Quality specification is the requirements of the customers conveyed to the workforce, usually in written or electronic form in a manner that they can interpret and use as checks against their working practices and their own end product.

The specification states:

- the raw ingredients that will be used to make the product
- who the supplier will be
- how the raw ingredients will be stored when delivered
- the quantities of raw ingredients to be used in each product
- the method of manufacture (or recipe)
- the size and shape of the formed product
- cooking/processing times and temperatures
- packing requirements
- labelling requirements
- methods of transport to the customer

Definitions

Objective quality specification

Quality specifications that can be measured by numerical or scientific methods, eg number of pieces in box, weight of product, or packaging type.

Subjective quality specification

Quality specifications that rely on individual judgements, eg size, colour, the things that we would pick for ourselves or others, or our own likes.

Tolerance

A tolerance is a permitted level of deviation away from the required standard, eg a 500 g pack can be overweight by a maximum of 5% but not under.

Unless the specification is followed exactly:

- the customer will not be able to rely on the quality of the final product
- the product will not be the same every time

The company may have written the specification if it produces products under its own company name or the specification may be written by the customer if the company is making products for someone else.

The **Food Safety (Hygiene) Regulations 1995** state that all food businesses must carry out their operations safely and hygienically. They must identify any part of the process where the product may become unsafe for human consumption and put in place controls to stop this from happening.

Manufacturing food and drink products can be a very complicated process, and there are several points in the process where things can go wrong. These are known as critical control points (CCPs) (K3, K4).

The harm that can happen to the ingredients or product is known as a ‘hazard’.

The system used to check for hazards is known as hazard analysis critical control points, sometimes shortened to HACCP.

It is useful to know and understand the following terms:

<i>Hazard</i>	Anything that has the potential to cause <i>harm</i> : biological, physical, chemical, or allergenic
<i>Risk</i>	An estimate of the likelihood of the harm happening and how bad it will be
<i>CCP</i>	The point in the process where control is needed to prevent or eliminate the hazard
<i>Control measure</i>	The action or activity that will be used to prevent or eliminate the hazard
<i>Monitoring</i>	Planned checks that are made at CCPs
<i>Non-conformance</i>	Not meeting the required standard
<i>Corrective action</i>	The action taken if the control measure is not working properly
<i>HACCP Plan</i>	The document that describes the process, the hazards that have been identified, and the procedures that are to be followed to control the risk

Activity 2

Let us think for a moment where the CCPs might be, the harm that could happen, and what could be done to stop or prevent it.

Complete this table below.

Area	What do you do to meet this?	What would happen if you do not do this?
Hygiene		
Health and safety		
Cleaning		

Quality checks you carry out	How do you do this?	What will happen if you do it?

These are examples of points where the ingredients or product are handled, processed, or stored from delivery, through production to despatch.

Hazard (harm)	What can we do to stop this happening? (Control measure)
Chemical contamination	Use chemicals only if you are trained to do so Make sure that all chemicals used in cleaning are rinsed away correctly
Bacterial contamination	Follow all hygiene rules Take hand swabs and equipment swabs Keep the product/ingredients at the correct temperature and in the correct storage location and conditions
Temperature fluctuation	Carry out regular tests to make sure that the equipment used is registering the correct temperature
Foreign bodies	Use a metal detector and/or visual checks on all products
Rough handling	Use the correct methods for lifting and handling and the right equipment for the job if necessary
Damage in transit	Make sure that the product or ingredients are packed correctly before being moved from one area to another
Infestation	Follow all hygiene rules Report any sightings or evidence of infestation to the correct person Keep all waste in the designated bins with well-fitting lids Keep waste away from product and ingredients

Monitoring – what regular checks must be made?

- Temperature checks on goods and storage areas.
- Visual checks on date codes and stock rotation.
- Checks on infestation controls.
- Metal detection and/or rejection reports.
- Hand and equipment/machinery swabs.

Corrective action – what must we do if any of the products are not up to standard? (K3)

- Reject product if it does not meet the required standard.
- Report/show the product/ingredients to the correct person.
- Return the products/ingredients to the supplier for refund/replacement.
- Quarantine stock.
- Do not accept products if they are not at the right temperature.
- Do not accept products if packaging is damaged.

Factors that can affect the quality of the product

There are four factors that can have a bad effect on the quality of the product and/or the ingredients used to make it:

- handling
- storage
- packaging
- preservation

Handling

From the moment raw ingredients are received from the supplier, they have to be handled. This may be done manually or by using equipment such as a forklift truck, pallet trucks, and trolleys.



©istockphotography/13346900/grimgram

All received goods must be checked to make sure that they are correct against the quantity and description on the order and have not become damaged in transit. This applies to goods internally received from department to department or received from external suppliers.

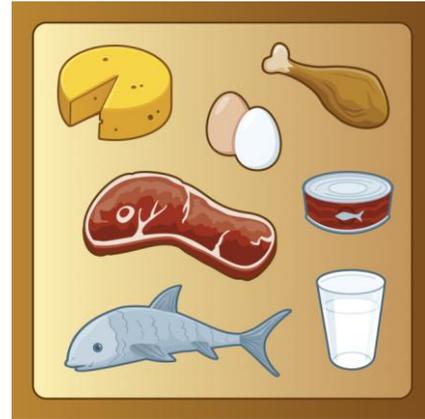
The product and ingredients also have to be handled during production. The same care must be taken and the same inspection procedure followed.

The last part of the job is to pack the product. This might be done automatically or by hand. Again, the product could be damaged during packing through carelessness or faulty equipment.

Storage

Some ingredients, such as butter, milk, and cream, need to be put into safe, cool storage as soon as possible after delivery. The temperature of the storage must be correct. This will be laid down in the specification.

Other goods, such as tins, do not need to be dealt with at once as the contents are well protected and they can have a shelf life of up to two years.



©istockphotography/4642990/centauria

Once the food or drink product has been processed, it may need to be stored before being packed. It may need to be cooled down quickly to prevent bacteria multiplying.

Packaging

Some products are packed directly after manufacture. This may be an automated process or done by hand. Packaging is used to protect the quality and condition of the product, and to give the customer information about the contents.

If the correct packaging is not used, the products could get damaged in transit to the customer.

Types of packaging

There are a number of types of packaging used within the industry. The common ones are the following.

- **Tray and overwrap:** The product is placed in a tray and wrapped up completely with a stretch film normally sealed by heat on the underside of the tray.
- **Vacuum packing:** The product is put into a strong plastic bag (the bag comprises three bags inside each other, which when heated in the dip tank or hot air system shrink round the product, giving an airtight seal) and placed in a vacuum packing machine that removes all of the air from the pack and heat seals it.
- **Cartons:** Generally used for frozen products, which are put into a cardboard container.
- **Foil trays:** A cardboard lid is crimped onto a pre-made aluminium foil tray. This can be done manually or automatically, and products can be fresh or frozen. It is normally used with a board sleeve or carton.
- **Sleeving:** Product that has been sealed in a stretch wrap (cling film) pack or tray is put inside a cardboard sleeve. This can be done manually or by machine.
- **Oven-proof pack:** A pre-made ridged tray containing product is fed into a machine, which seals on a film 'lid'.

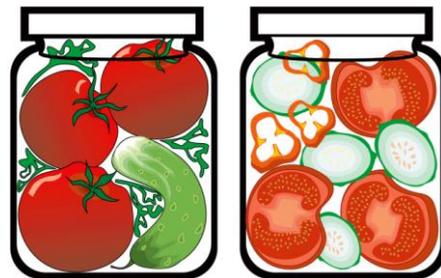
- **Bag and clip:** The product is placed into a bag and the air is pushed out. A clip is placed over the end of the bag to seal it.
- **Pre-printed bagging:** The products are put into a strong plastic bag (the bag comprises three bags inside each other, which when heated in the dip tank or hot air system shrink round the product, giving an airtight seal) printed with the customer or company name and placed in a vacuum packing machine that removes all of the air from the pack and heat seals or clips it.
- **Gas flushing or controlled atmosphere packaging (CAP):** The product is packed with a mixture of gases (usually carbon dioxide and oxygen) and heat sealed to prevent leakage in or out.
- **Bottling.**
- **Canning.**

Preservation

Depending on the products your company makes, some ingredients, such as raw fish or meat, may go through a preservation process. This is to control the growth of bacteria.

This process could be any of the following:

- salting
- smoking
- brining
- drying
- vacuum packing
- pasteurisation
- pickling



©istockphotography/1706745/Pingwin

There will be strict controls and checks on these processes at regular intervals.

Quality checks (K2 and K3)

There will be many methods for checking the quality of the product made in your workplace.

Some checks are obvious, and all you have to do is use your senses:

- sight
- touch
- smell
- taste

Sight

The ingredients and/or the product have to look right. It is easy to tell if the colour or size is not up to the usual standard.

You can also see if the packaging has been damaged, if it has been properly sealed, and if the label has been put in the right place. You can also see if the information on the label is correct.

Touch

The ingredients and/or product may not feel up to standard. They might be damp or slimy or too dry. You can also tell, by lifting a pack, if the contents are in good condition and not broken.

Smell

The ingredients and/or product may not smell right. They may smell musty, or 'off'.

Taste

Many food and drink manufacturers have a 'taste panel' where members of staff can taste the products that have been made and make comments. Samples are also tasted as part of the normal sampling process.

In production areas, samples may be taken for taste testing at various points and times throughout the shift.

These four tests, sight, smell, touch, and taste, are very simple and straightforward to do, but not very scientific. They depend on personal opinion and cannot be measured easily. If you are in any doubt, you should consult a supervisor.

If you know or think that the product is not up to the usual standard in any way, you must report this to the proper person at once.

Temperature checks

Testing the temperature of food must be done using a temperature probe. This is a special type of thermometer that measures temperature very accurately. It must be 'calibrated' or checked on a regular basis to make sure that it is working properly.

The probe is inserted into the product so that it can measure its core temperature, which may be quite different from the surface temperature.

These temperature readings must be taken regularly to make sure that the product is being manufactured correctly and cooked through at the right temperature. If this is not done, the end result will not be up to standard.

Thermometers or probes are also used to test the temperatures of refrigerators.

The **Food Safety (Temperature Control) Regulations 1995** require us to make sure that refrigerators are kept at a temperature of no more than 8°C. No food should be kept at temperatures that would result in a risk to health.

You could look at a vat or container of hot liquid and know by the steam and bubbles that it is very hot, but you would not know the exact temperature.

You could go into a chill or blast freezer and know it was very cold but again not know how cold.

To do temperature testing, you need to be trained to use specialist equipment and know how to complete quality control records.

Temperature checks must be carried out at set times, both on the product being made and on the storage areas. These temperatures must be recorded, signed, and dated by the person responsible for the readings.

Labelling products

The **Food Safety Act 1990** provides the legal requirements for labelling food.

The **Food Labelling Regulations 1996** state that all food and drink should be marked or labelled with the following information:

- the name of the food
- a list of ingredients
- the best-before or use-by date
- any special storage conditions or conditions of use (such as 'may be micro waved' or 'frozen')
- the name and address of the manufacturer or seller
- instructions for use

From this, you can see why it is extremely important that the information on the packs is correct. Checking this carefully is part of the quality process.

If any information is not correct, you must report this at once and put the packs to one side so they cannot be despatched or otherwise sold.

The **Trade Description Act 1968** makes it an offence to:

- apply a false description to any goods
- supply, or offer to supply, any goods to which a false description is applied

This covers:

- the quantity or size of goods
- how they were made or processed
- what they were made of
- their fitness for purpose
- statements that goods have been tested or approved by any person
- where the goods were made
- when they were made
- who made them

The **Weights and Measures Act 1985** requires most prepacked food to carry an indication of its net weight or volume on the container. This also means that any equipment you use for weighing the product must be accurate and the scales tested regularly to make sure that they register the correct weight.

Foreign bodies

Personal hygiene is very important when handling products that others are going to eat. Apart from the bacteria on our hands, hairs can fall into the product if we do not wear our head and facial hair protection correctly.



©istockphotography/1706745/Pingwin

This can be controlled by:

- following the correct hand-washing procedure
- wearing personal protective equipment (PPE) provided properly

However, other 'foreign bodies' can get into the product.

You will have been told that you are not allowed to wear any jewellery such as:

- earrings
- watches
- bracelets
- neck chains
- nose and tongue studs
- rings engraved or inset with stones

This is to prevent any metal objects from getting into the product.

Your coveralls or coats will have concealed fastenings, with no buttons or studs showing. Again this is to stop anything from falling into the product.

Metal objects can be found by passing the product through a metal detector. This may mean that a batch of product will have to be thrown away, but at least the product will not have got to the customer.

Wood and plastic will not be found this way. They can only be spotted visually. However, if they are not found before the product reaches the customer, there may be customer complaints and claims for compensation.

Examining batches of the product at each stage of the manufacturing process allows checks to be made for foreign bodies. The most common items found are pieces of plastic and human hairs.

Factory closure (K4)

Under the **Food Safety Act 1990**, Environmental Health Officers can make spot checks on food and drink manufacturing companies.

They can serve an Improvement Notice on any company that is found to be supplying food and drink products that do not meet the food safety standards or are found to cause food poisoning. The Improvement Notice lists the things that are wrong and what has to be done to put them right.

If the problem is very bad, the Environmental Health Officer may issue an Emergency Prohibition Notice, which means that a certain part of or the entire factory must close at once. It may also mean that a certain piece of equipment may not be used.

The employer must be able to prove that there are procedures in place to make sure that the product being made will be fit to eat and drink.

The employer must be able to prove that all the procedures have been followed properly and all checks have been made.

This is why it is important that accurate records are kept of all quality checks that are carried out during production. These may include:

- laboratory tests for bacteria
- swab tests from hands, plant, and equipment
- visual checks on product samples
- visual checks on labels
- metal detection checks
- temperature checks
- cleaning records
- weight checks on the product

These records must be kept in a safe place, usually in the laboratory or technical department.

These records are used to compare what is actually happening against the written down standard or specification. They are also used for checking on any trends, which might show that:

- cleaning is not being carried out properly
- swab tests are showing too many bacteria
- metal detection and visual checks are showing too many foreign bodies in the product

All these problems happen because the people carrying out the checks are not doing them properly.

Golden rules

When we are dealing with quality, we check the product at every stage, from receiving the ingredients to sending the finished product to the customer.

There are set standards that must be met, covering:

- what is in the product
- how much there is of each ingredient
- the method of manufacture
- the type of packing and labelling
- the way the product is stored

All these standards must be met at all times.

There are several ways to do this:

- sight
- smell
- taste
- touch

We can use:

- micro-bacterial testing in the laboratory
- metal detection
- temperature tests
- weight tests against a known weight

All tests must be done at regular intervals and the results must be recorded, timed, dated, and signed. These records must be stored safely for inspection and traceability of the product.

Quality is the responsibility of everyone.

If you are unsure — report to the proper person at once.

Reporting to others (K5 and K6)

In your work, you will normally communicate with your colleagues and report to your line leader/supervisor verbally. To avoid any misunderstanding and to communicate effectively, you must remember to:

- use clear, natural speech
- use a modulated tone
- use accurate pronunciation
- use correct grammar
- be polite

Knowing who to report to

Your employer should provide you with an organisational chart. It will map out who does what and who reports to whom.

Activity 3

Why is it important to communicate relevant information to the appropriate person?

Use the table below to list the individuals that you report to and what you report to them.

Name	What do you report to them?	How do you report to them?

Section 3: Sample questions and answers

This section of the support pack links directly to the knowledge requirements of the Unit and provides examples of the types of information assessors will be looking for to ensure full coverage of the knowledge requirements.

You need to ensure that you know and understand the following:

K1: What the required standards of health and safety, hygiene, and quality are and the possible consequences of not meeting them

The standards of health and safety, hygiene, and quality required are the following:

- You must ensure the health and safety of yourself and others at all times.
- You must ensure that tools and equipment are correctly guarded and safety systems are operational.
- You must minimise risk to product safety at all times by maintaining high standards of personal and workplace hygiene.
- You must follow the requirements of business HACCP procedures.
- You must ensure that product quality is maintained at all times by following business/customer specifications.

The consequences of not following the required standards are:

- contaminated food, leading to food poisoning
- loss of yield and profit
- waste
- complaints and dissatisfied customers
- loss of business

K2: How to carry out quality checks and why it is important to do so

Quality checks can be carried out by:

- visual checks — checking for colour, bruising, condition, burst packaging, physical contamination, use-by dates, prepared to required specification, and quantities
- smell — checking for foul odour
- touch — checking for sticky products, product texture, or consistency
- temperature checks — storage or intake, cooking, cooling, or hot hold
- weight checks

It is important to do quality checks to:

- maximise yield and profit
- minimise wastage
- achieve production targets
- maintain product quality and safety
- ensure customers are satisfied
- encourage return business

K3: What to do if quality checks show that there is a non-conformance with the required standard

If you identify that quality specifications have not been met, you should:

- report problems to your supervisor
- reject products
- rectify the problem if this is within the limits of your authority, ie further mixing or trimming, altering weights, extended cooking times, and transfer of stock to maintain its condition
- isolate products until a decision has been taken

K4: How to keep records safe and secure and why it is important to do so

Records should be kept safe and secure by:

- correctly completing and storing records in their designated places
- never discussing sensitive information with others

It is important to keep the records safe and secure to:

- maintain business integrity
- maintain traceability and due diligence
- comply with the law

K5: What the lines and methods of communication are within your organisation

The lines and methods of communication within your business may be:

- verbal or written communication
- reporting to or being reported to by an operative, a supervisor, a line manager, a shop/plant manager, an area manager, or an owner

K6: What the limits of your own authority and competence are and why it is important to work within them

The limits of your own authority and competence may include:

- reporting products outwith quality specifications to your supervisor
- rejecting products outwith quality specifications to your supervisor
- rectifying problems yourself

It is important to work within your own authority and competence to:

- meet targets
- ensure that product quality and safety are maintained at all times
- ensure that problems are dealt with effectively

Section 4: Evidence for this Unit

Performance evidence

In order to be assessed as competent you must demonstrate to your assessor that you can consistently perform to the requirements set out below. Your performance evidence must include at least one observation by your assessor. Your evidence must be work based.

Evidence of performance may use examples of the following types of assessment:

- observation
- written and oral questioning
- evidence from company systems (eg food safety management system)
- reviewing the outcomes of work
- checking any records of documents completed
- checking accounts of work that you or others have written about you

You must provide performance evidence of:

- maintaining quality checks in accordance with workplace procedures during high-level production
- reporting quality checks and actions in accordance with workplace procedures when production is impaired

Knowledge evidence

Your assessor may gather evidence of knowledge and understanding during observation of your performance in the workplace. Where it cannot be collected by observing performance, other assessment methods will be used, eg written and/or oral questioning.