



LEVEL 3 CERTIFICATE IN PACKAGING

PROGRAMME SPECIFICATION

OCTOBER 2010

This qualification has a credit value of SIXTEEN

Ofqual Qualification Number xxx/xxxx/xx

Description

The Level 3 Certificate in Packaging is a nationally recognised qualification which provides learners with a broad knowledge of the principles, materials, processes and other elements of packaging production and use. Those achieving the Level 3 Certificate will be able to apply this knowledge to solving problems and making decisions associated with the technical and aesthetic performance, cost, safety and legality of packaging materials and packed products.

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EXECUTIVE SUMMARY

Introduction

The Level 3 Certificate in Packaging is a nationally recognised qualification for those embarking on a career in the packaging industry, or for those who typically interface with some aspect of packaging handling or management. The qualification is broad, and provides an opportunity to study the principles of packaging, packaging materials and packaging processes. To achieve the full Level 3 Certificate, candidates need to successfully gain a minimum of 16 credits made up of the following:-

- Mandatory unit - The fundamental principles of packaging – 8 credits
- Optional units – to a minimum value of 8 credits from the table below

Title	Level	Credit value
Packaging legislation, standards and regulations	3	3
Packaging line operations	3	2
Packaging and the hazards of storage and distribution	3	2
The relationship between packaging design and marketing	3	2
The properties, manufacture and use of paper and carton board as packaging materials	3	3
The properties, manufacture and use of rigid plastic packaging	3	3
The properties, manufacture and use of flexible packaging materials	3	3
The use of printing and decoration for packaging	3	3
The use of labelling and coding for packaging materials	3	2
The properties, manufacture and use of corrugated board in packaging	3	3
The properties, manufacture and uses of rigid metal in packaging	3	3
The properties, manufacture and use of glass in packaging	3	3

The minimum of 8 credits can be made up of any combination of units, for example:

- 3 x 3 credits = 9 credits
- 4 x 2 credits = 8 credits
- 2 x 3 credits + 1 x 2 credits = 8 credits

Programmes leading to the Certificate can be organised and delivered by providers who have gained Centre and Award approval from PIABC. To achieve this they need to complete the PIABC Centre and Award Approval Procedures available from

www.piabc.org.uk. In completing the documentation and the approval visit centres need to demonstrate their ability to deliver high quality education leading to the qualification. Centres are expected to employ robust quality assurance processes. PIABC will appoint its own moderators to ensure the effective operation of these processes, and the maintenance of standards of quality.

As a guide for entry onto programmes, candidates will normally be expected to have a minimum of 5 GCSEs at grade A – C (or equivalent), plus the key skills of numeracy, communication and information technology. Alternatively, substantial relevant industrial experience may also be the basis for successful study. Overall, it is expected that units leading to the qualification will take approximately 64 taught hours. In addition, candidates will be expected to carry out additional reading and other work to complete each unit. It is likely that this will add up to a total of 160 hours of study for the qualification as a whole.

This specification contains a description of each of the units, including its intended learning outcomes, assessment criteria, content and method of assessment.

Within each of the units there are opportunities for the development of a range of key or functional skills and other learning opportunities, which can be devised by approved centres that offer the units leading to the qualification.

Success in this qualification prepares candidates for progression onto the Level 5 Diploma in Packaging Technology.

The Certificate can also provide a very useful complementary qualification for those on HNC/D, foundation degree or other higher education programmes in packaging design, food science/technology, materials science/engineering, and logistics.

CENTRE APPROVAL

Organisations wishing to offer the Level 3 Certificate in Packaging are required to be approved as a centre by PIABC in advance of starting delivery. An application for Centre Approval should be made on the appropriate form available from www.piabc.org.uk. This form and full details of the registration process and procedures are available from PIABC.

Centre Approval is concerned with the identification of a centre's ability to effectively manage and deliver high quality educational and training programmes. It is not concerned with programme specific issues. Staff from PIABC will visit a centre as part of the approvals process.

AWARD APPROVAL

PIABC approved centres wishing to run the Level 3 Certificate in Packaging must submit an application for Award Approval by completing the appropriate form available from PIABC www.piabc.org.uk.

Award approval is generally carried out at the same times as Centre Approval. Award Approval is concerned with programme specific issues such as staffing, resources and delivery patterns. Each submission will be forwarded to an external moderator who will

make arrangements for an approval visit, to verify the accuracy of that submission. At this stage the external moderator may request further documentation and advise the Centre of its next course of action.

GENERAL OUTCOMES

The general objectives of the Level 3 Certificate in Packaging are to:

1. Provide those employed in the Packaging and related industries with the skills, knowledge and understanding to underpin and enhance job experience.
2. Provide learners with a portable qualification to enable job movement throughout the industry.
3. Provide learners with a means of progression to higher level qualifications, e.g. Level 5 Diploma in Packaging Technology and other Level 4/5 qualifications
4. Provide employers throughout the Packaging and related industries with a firm basis for judging suitability of candidates
5. Raise the status of those employed in the Packaging and related industries.

TARGET GROUP

This Level 3 qualification is appropriate for those wanting to enhance their employment and progression opportunities in the packaging and related industries. For example, candidates may be:

- Key personnel who handle and use packaging e.g. line operators, supervisors, maintenance engineers
- Personnel who liaise with specifiers, users and handlers of packaging e.g. quality control and assurance personnel, designers, marketing personnel, sales executives
- Personnel who liaise with packaging suppliers, other than those with direct responsibility for specifications, e.g. buyers, production planners, warehousing and distribution personnel
- New recruits to the manufacturing and packaging industries, who need an introduction to the broad subject of Packaging
- Those looking for a broad qualification in packaging as a basis for career development

QUALIFICATION LEVEL

The Certificate in Packaging is a Level 3 qualification.

Candidates require the skills, knowledge and understanding in applying technical, aesthetic and commercial principles to a range of tasks.

Candidates are required to analyse problems, and suggest effective solutions.

This qualification requires the learner to understand various elements in the packaging process, for example packaging design, materials and production methods. It will prepare the learner to operate in selected parts of the packaging supply chain. The qualification also prepares candidates to make judgements about alternative solutions to packaging problems, and to identify the critical factors associated with them.

When work for this qualification is assessed, it is important to realise that evidence will be sought which demonstrates these features.

PROGRESSION

Success in this qualification prepares candidates for progression in the packaging industry to a position where they can assume extra responsibility in a company at any point in the supply chain. Success also provides the student with a qualification that enables them to progress on to the Level 5 Diploma in Packaging Technology and other higher level qualifications.

STAFFING

It is expected that staff involved with the delivery of the certificate will be appropriately qualified or experienced in packaging. The PIABC Centre and Award approval processes require prospective centres to provide details of the staff involved in delivery and assessment including their qualifications and relevant training/employment experience, plus staff development arrangements. Whilst these details are passed on to the external moderator appointed by the Awarding Organisation, it is the Centre's responsibility to ensure tutors' qualifications are both bona fide and appropriate to the level of the qualification.

QUALITY ASSURANCE

PIABC requires that each centre has a quality assurance and enhancement procedure in respect of the programme, and a means of monitoring its implementation.

There should be an award team that is responsible for preparing an annual self-assessment of the programme and for monitoring the improvement measures resulting from this.

This self-assessment process should use evidence from different sources including:

- Candidate self-evaluation
- The views of external individuals and organisations, for example those companies sending learners
- Staff working on the award

In addition, it is also expected that there will be an internal moderation procedure to ensure standardisation of unit delivery. This will include the following elements:

- Classroom observation
- Peer review of award materials
- Moderation of any internally assessed elements

There should be a named and appropriately qualified individual (Centre Co-ordinator) who has the necessary authority, with whom the awarding body can liaise directly on all matters of management, administration and quality assurance.

EXTERNAL MODERATION

PIABC will appoint external centre monitors to visit centres in order to ensure the maintenance of standards of quality. The role of the centre monitor includes:

- Liaison between the centre and PIABC to ensure standardisation in terms of the quality of award delivery
- Providing advice and support for the Centre in understanding and implementing the requirements of the units and the PIABC

Centre monitors will carry out at least one visit to each centre per year, and will formally report on the outcome of this visit to the Centre and PIABC. All items contained in the report will be discussed with the Centre during the visit, and any action that the Centre needs to take will be agreed at that stage.

Any visits in addition to the annual visit may incur an additional fee.

PROGRAMME ORGANISATION

It is anticipated that the qualification will require a minimum of 64 guided learning hours for satisfactory completion.

The organisation of the award is at the discretion of the Centre and will take into account the aims, aspirations and experience of the candidates.

Centres are encouraged to choose the most suitable curriculum model for their candidates. Whilst the sequential delivery of units is a possibility and may provide the most straightforward way of determining completion of individual units, it may be that some degree of integration of units will occur. It should be noted however that each unit will be individually assessed.

Centres must ensure that adequate arrangements are in place for supporting candidates. This could be either through separate tutorial sessions or through the use of time within structured study sessions. Centres using on-line or other forms of open learning must ensure that appropriate tutorial support is provided for candidates.

In relevant circumstances, centres are recommended to provide information and guidance to their candidates on the availability and type of employment the programme may lead to and on the progression routes available for further education and training in packaging.

PROGRAMME STRUCTURE

In designing the certificate, the QCF principles of unit design have been applied i.e. each unit has an informative title, a level, a credit value, learning outcomes and assessment criteria. The assessment process is based on those learning outcomes and assessment criteria. The learning and teaching strategy must be designed so that candidates have the opportunity to meet the learning outcomes in an effective manner by demonstrating that they can achieve the assessment criteria.

The certificate is divided into one mandatory unit (8 credits) and 12 option units, from which candidates must choose units giving a minimum of 8 credits. See page 1 for the list of units and credit values. All units offered are at level 3.

GUIDANCE ON LEARNING AND TEACHING STRATEGY AND METHODS – APPLICABLE TO ALL UNITS

Packaging is a practical subject, based on theoretical principles. As far as possible, it is important that the units are taught by relating the underlying theory to practical examples and applications. Two factors which will help in this regard are:

1. The use of lecturers with direct experience in the packaging and related industries. Specifically for the option units lecturers with experience in the relevant packaging sector are likely to offer the most appropriate level of practical knowledge. This must, of course, be balanced against a sound understanding of the theoretical principles, as anecdotal experience alone is unlikely to meet the requirements of the units.
2. Wherever possible, the use of case studies and illustrations of processes should be used as part of the teaching regime. A further and invaluable source of information is the Internet and there are many web sites which demonstrate important aspects of packaging manufacture and use. Lecturers should be encouraged to use this material, always making sure due acknowledgment is given to the source.

Those learners employed in the packaging and related industries, will come to the programme with varying levels of existing knowledge and/or practical experience of some parts of the syllabus. Lecturers should utilise this, through group work and other structured interactive activities, thus encouraging the sharing of knowledge which has the potential to lead to a high level of understanding.

MANDATORY UNIT A: The Fundamental Principles of Packaging

Level 3

Credit Value - 8 credits

Guided learning hours – 32

Overview

The Unit introduces candidates to the broad subject of packaging by examining its development over time and its main uses and purposes. It places packaging in its context as a means of protecting/preserving, enhancing and selling a product and delivering cost effective and environmentally acceptable goods into the marketplace.

Owing to the diversity of product types and the different requirements, almost every type of material is used in packaging. This includes wood, cork and fabrics of various types, but primarily the more conventional packaging materials of paper and board, glass, plastics and metals are reviewed in this Unit.

For each material, a list of typical uses should be given, followed by a review of the main raw materials used. For paper/board, glass and metal, the material's key performance properties and what factors influence those properties can be summarised. For plastics, notes on the properties and uses of the common packaging plastics should be given. On completion of the Unit, the key properties for each material can be compared, and used as a tool in developing ideas for packaging solutions for a given product. As this Unit aims to provide only an introduction to packaging materials, details on manufacturing processes are not given here, but can be studied in the Option Unit for each material. While wood is also widely used in packaging, most of this usage is in pallets and crates for transporting goods and these will be covered in Option Unit "Packaging and the Hazards of Storage and Distribution".

The factors which influence each property will provide useful information on what should be listed on a material specification and what aspects of the manufacturing process for the material require the most control. Packaging development clearly has a key role to play here and its management will therefore have a fairly high profile in the business, often with direct representation at senior management level. While there is no definitive blueprint for how packaging development should be conducted within a business, this part aims to present a logical approach which can be adapted to suit suppliers of industrial products and packaging converters, as well as packer/fillers in the fast moving consumer goods (FMCG) sector.

Successful companies recognise the importance of packaging and its influence on sales and therefore profit, both in the short and long term. In the FMCG sector, packaging influences immediate or short-term profit by attracting the first-time buyer to pick up the product and place it in the shopping trolley; it influences long-term profit by fulfilling expectations raised by this first attraction, building brands and encouraging repeat purchases. This Unit identifies the factors which affect the cost of a finished product, and examines how they can be managed. As quality plays a key role in managing cost, and quality systems aimed at defect prevention, i.e. getting it right first time are among the most basic of cost management tools, the subject of quality forms a significant part of this Unit.

What happens to a pack at the end of its life has become increasingly important in the public mind and these issues are also considered in this unit. As part of the consideration of environmental impact the tools and techniques used for assessment are covered.

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Understand the role and functions of packaging	1.1	Explain the role of packaging in terms of its functions
		1.2	Assess these functions relative to the different stages of the supply chain
		1.3	Summarise the role of packaging in mitigating the effects of hazards faced by packed products in the supply chain
2.	Understand the major packaging materials and how they are combined to form packaging components	2.1	Describe the performance characteristics of a major packaging material
		2.2	Explain how materials and components are combined to make up total packaging solutions
3.	Understand the packaging development processes	3.1	Describe the factors which must be considered when developing packaging for new and existing products
		3.2	For a given product, explain the process of packaging development, from concept to product launch and explain the importance of each step
		3.3	Describe the roles of different disciplines in the packaging development process
4.	Understand packaging costs and quality systems	4.1	Describe the factors affecting costs throughout the supply chain
		4.2	Explain the relationship between quality and cost
5.	Understand the relationship between packaging and the environment	5.1	Describe the positive and negative aspects of packaging in relation to the environment
		5.2	Identify the tools and techniques available to assess the impact of packaging on the environment

1. Understand the role and functions of packaging

1.1 Explain the role of packaging in terms of its functions

1.2 Assess these functions relative to the different stages of the supply chain

1.3 Summarise the role of packaging in mitigating the effects of hazards faced by

packed products in the supply chain

Indicative content:

- 1.1 The factors which influence the growth and uses of packaging; an understanding of the definition of packaging by explaining its role for a given product; review of packaging usage over time and reasons for growth in different geographic markets, related to social and economic development; an understanding of primary, secondary and tertiary packaging and their interdependence; food preservation: basic principles of spoilage and how packaging can contribute to extending shelf life; application to cosmetics, toiletries, chemicals and pharmaceuticals; packaging as a means of delivering convenience in handling, on the packaging line, and for the consumer; getting the right balance between consumer convenience and product protection: tamper evidence, child resistance
 - 1.2 The many uses and benefits of packaging in terms of containment/protection/preservation, convenience, information and selling; overview of hazards and requirements of the supply chain; knowledge of how packaging may be used to assist consumer convenience in the use of the product, e.g. dispensing of the product, and features which make the pack easy to open, easy and safe to hold, carry and store; how packaging is used to provide information, e.g. legislative requirements and to appeal to the intended market for the product.
 - 1.3 Knowledge of the major physical, chemical, biological and micro biological hazards faced by packaged products in the supply chain and their possible effects; how packing can be used to mitigate the effects.
- 2. Understand the major packaging materials and how they are combined to form packaging components**
- 2.1 Describe the performance characteristics of a major packaging material
 - 2.2 Explain how materials and components are combined to make up total packaging solutions

Indicative content:

- 2.1 Knowledge of the key performance properties of the major packaging materials: glass, paper/board, plastics, metal; an understanding of which of these materials would be the optimum choice for a given end use; overview of packaging material types and usages; glass packaging: pack types, raw materials, manufacturing processes, properties; plastics packaging: main materials used, introduction to properties; metal packaging: pack types, raw materials, properties.
- 2.2 An understanding of how these materials are brought together to make up total packaging solutions; Knowledge of outline packaging specifications for given components in each material sector, identifying the important criteria to be defined; typical information required on specification.

3. Understand the packaging development processes

- 3.1 Describe the factors which must be considered when developing packaging for new and existing products
- 3.2 For a given product, explain the process of packaging development, from concept to product launch and explain the importance of each step
- 3.3 Describe the roles of different disciplines in the packaging development process

Indicative content:

- 3.1 Knowledge of each of the factors which must be considered when developing packaging for new and existing products; factors which must be considered when developing and/or agreeing packaging specifications; reasons for change, what constitutes packaging development: minor graphic alterations through to development of a new pack for a new product; information required: product demands, market/consumer demands, demands of the packaging line and the storage, distribution and selling environment; defining requirements, proposing solutions, testing solutions.
- 3.2 Knowledge of the process of packaging development, from concept to product launch and explanation of the importance of each step; how these steps are inter-related and how they affect timescales; steps in the process: defining the objective, developing a packaging brief.
- 3.3 Knowledge of the functions/roles involved in packaging decision making processes; managing the process: who is involved, how decisions are made, how timescale is managed; steps required for different types of packaging development, e.g. a copy change, a pack size change, a flavour/fragrance range extension and a new product/new pack development; the role of specifications: defining requirements, drawing up specifications, information to be included; finalising specifications, completing trials, managing introduction, monitoring performance; review the process, review the pack performance.

4. Understand packaging costs and quality systems

- 4.1 Describe the factors affecting costs throughout the supply chain
- 4.2 Explain the relationship between quality and cost

Indicative content

- 4.1 Knowledge of the factors which contribute to the total packed cost of a product, from raw materials to delivery of finished goods; factors affecting cost throughout the supply chain; consideration of each stage, from packaging manufacturer through to sale of finished packed product; difference between variable costs and fixed costs; cost of stock, factors affecting stock holding, ways of reducing stock, how quality affects cost across all aspects of a business; role of packaging specifications in

managing cost; importance of agreement at key stages to control expenditure, especially when custom tooling and/or packaging machinery is required.

- 4.2 Quality and cost: control of cost of bought-in materials, efficient use of materials and labour, reducing wastage, producing consistent quality goods. Supplier management: approval processes, performance measurement, managing risk and how supplier management affects quality and cost; acceptability of goods: certificates of analysis, inspection regimes, agreeing standards and methods of testing.

5. Understand the relationship between packaging and the environment

- 5.1 Describe the positive and negative aspects of packaging in relation to the environment
- 5.2 Identify the tools and techniques available to assess the impact of packaging on the environment

Indicative content:

- 5.1 Positive aspects of packaging in terms of preservation, protection etc; requirement for environmentally acceptable packaging; issue of sustainability and its application to packaging; reducing product and packaging waste; packaging waste management: options available, advantages and disadvantages, practical applications; different methods of managing and reducing packaging waste; their environmental impact and cost; these methods as applied to the main packaging materials: paper and board, glass, plastics, metals, wood
- 5.2 Knowledge of what life cycle analysis, life cycle assessment, carbon foot-printing and similar approaches mean, and when they may be used.

Assessment and Grading

This unit is assessed by a written examination of 2 hours consisting questions written against the assessment criteria. Success in answering these questions allows candidates to demonstrate that they have achieved the learning outcomes.

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

Details of the marks will be shown on the examination paper. Examinations are offered twice a year in June and November

OPTIONAL UNIT B1: Packaging Legislation, Standards and Regulations

Credit Value - 3 credits

Guided learning hours – 10 hours

Overview

There is no separate branch of law which may be conveniently classified as the 'law of packaging', and yet most decisions taken during the packaging development process are influenced in some way by legislation, standards and regulations or similar factors. This means that as well as ensuring that packaging fulfils all of the functions discussed in the Mandatory Unit "The fundamental principles of packaging" (i.e. that it contains, protects/preserves, provides convenience and information and sells the product) all packaging materials, machinery and processes (including what happens to the pack after it has been used) are directly influenced by legislation, standards and regulation. This Unit identifies when and where these aspects must be considered, and gives an introduction to some of the most common examples.

The Unit is not intended to provide a definitive set of "do's and don'ts" and professional advice must always be sought in any matter regarding legislation. UK and, where applicable, EU laws are used as examples throughout this Unit and thus any specific laws referred to are not applicable to other countries. However, they provide a basis from which to consider the legal aspects of packaging and similar laws can be found outside of the UK and EU.

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Know legislation, standards and regulations with which packaging must comply	1.1	Explain why legislation, standards and regulation are needed in packaging
		1.2	Using an example explain the key elements of legislation, standards or regulations that relate to packaging
2.	Understand the impact of legislation, standard and regulation on packaging development	2.1	Evaluate the impact of legislation, standards or regulations on packaging development for a particular product
3.	Understand who is responsible for complying with packaging legislation	3.1	For each stage of the packaging life cycle identify who is responsible for ensuring regulatory compliance
		3.2	Describe the responsibilities for ensuring compliance with legislation throughout the packaging life cycle

1. Know legislation, standards and regulations with which packaging must comply

- 1.1 Explain why legislation, standards and regulation are needed in packaging
- 1.2 Using an example explain the key elements of legislation, standards or regulations that relate to packaging

Indicative content

- 1.1 Legislation, standards and regulations affecting packaging decisions; importance of specifying legal requirements, standards and regulation; stages in packaging development which are affected by legislation, standards and regulation; specific legislation, standards and regulation; how compliance can be compromised; defence of due diligence and how compliance can be demonstrated, for example through adherence to recognised packaging standards; impact of legal compliance on cost of a packed product and timescale to introduction; impact of EC94/62 on the packaging supply chain. Implementation and how compliance may be demonstrated; requirements of the European Directive on Packaging and Packaging Waste
- 1.2 Worked examples of a range of pack types; role of legislation, standards and regulation; need to consider these requirements at each stage of packaging development.

2. Understand the impact of legislation, standard and regulation on packaging development

- 2.1 Evaluate the impact of legislation, standards or regulations on packaging development for a particular product

Indicative content:

- 2.1 Knowledge of the impact on packaging manufacturers and packer/fillers of the following legislation: Food Safety Act, Materials and Articles in Contact with Food Regulations, Plastic Materials and Articles in Contact with Food Regulations, Food Labelling Regulations, Weights and Measures Acts, Producer Responsibility (Packaging Waste) Regulations, Packaging (Essential Requirements) Regulations; the BRC/IOP Global Standard for Packaging and Packaging Materials and other similar standards

3. Understand who is responsible for complying with packaging legislation

- 3.1 For each stage of the packaging life cycle identify who is responsible for ensuring regulatory compliance
- 3.2 Describe the responsibilities for ensuring compliance with legislation throughout the packaging life cycle

Indicative content:

- 3.1 Areas of responsibility throughout the supply chain; other environmental legislation which is applicable to packaging manufacturers, packer/fillers and sellers of packaged goods
- 3.2 Different categories of legislation, standards and regulation: product quality and health hazards, worker, consumer and environmental protection; overview of typical legislation in each category and relation to the packaging development process and each stage in the supply chain; differentiation between legislation, standards and regulation and company/sector good practice and recommendations; role of EU legislation and how it is taken into local legislation within the countries of Europe.

Assessment

Assessment and Grading

This unit is assessed through an assignment on packaging legislation, standards and regulations to meet the learning outcomes and assessment criteria.

In completing the assignment candidates must ensure that they meet all the assessment criteria shown above.

Suggested word count of 2,000 words (+10% or -10%)

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

The assignment for this unit is graded as **pass, merit and distinction**.

OPTIONAL UNIT B2: Level 3 Packaging Line Operations

Credit Value - 2 credits

Guided learning hours – 6 hours

Content overview

One of the important factors affecting the total cost of a product is the way in which that product is packed, e.g. is it packed by hand, or on a fully automatic packaging line. The decision to pack manually, semi-automatically or fully automatically, and the type of equipment purchased, will affect labour costs, capital investment, the length of time it takes to bring a new product to market and both pack and product quality. This Unit introduces candidates to the packaging line and its crucial importance in delivering acceptable quality goods into the market.

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Understand individual operations within a packaging line	1.1	Describe a complete packaging line and identify the individual operations within it and show how these are linked
		1.2	Assess the factors that may affect packed product quality and line efficiency
2.	Understand off-line activities	2.1	Describe the off-line activities associated with a packaging line and show how these relate to the line operations
		2.2	Explain how each off-line activity may affect pack quality and line efficiency
3.	Understand material and machine interface	3.1	Explain how material properties and machine settings interact

1. Understand individual operations within a packaging line

- 1.1 Describe a complete packaging line and identify the individual operations within it and show how these are linked
- 1.2 Assess the factors that may affect packed product quality and line efficiency

Indicative content:

- 1.1 Knowledge of the individual operations within a packaging line, from availability of packaging materials and product through to supply of finished stock to storage and distribution; principles of automation, advantages and disadvantages; typical packaging line activities, from delivering of packaging components and product, through to removal of finished stock.

1.2 An understanding of how each operation may affect the quality of the packed product and line efficiency.

2. Understand off-line activities

2.1 Describe the off-line activities associated with a packaging line and show how these relate to the line operations

2.2 Explain how each off-line activity may affect pack quality and line efficiency

Indicative content:

2.1 Knowledge of each of the off-line activities associated with the packaging line and how each may affect quality of the packed product and line efficiency.

2.2 Supporting or off-line activities, as related to the packaging lines; importance of quality, maintenance, training, services; line efficiency: definition, and how to calculate. Factors affecting line efficiency:- Description of each stage: cleaning, filling, closing, labeling, cartoning, coding, palletising etc. applied to solid, liquid and paste products. Applied to both rigid and flexible packs, e.g. form, fill and seal operations, requirements at each stage and identification of where product and pack quality, cost and environmental impact may be compromised, line performance and packaging material properties. Interaction of materials and machinery and defining key material performance properties on-line and off-line inspection: examples of each, advantages and disadvantages of 100% automatic on-line inspection vs. statistical sampling.

3. Understand material and machine interface.

3.1 Explain how material properties and machine settings interact

Indicative content:

3.1 Knowledge of the important material/machine interfaces on a packaging line, and the material properties and machine settings which affect quality of the packed product and line efficiency.

Assessment and Grading

This unit is assessed through an assignment on packaging legislation, standards and regulations to meet the learning outcomes and assessment criteria.

In completing the assignment candidates must ensure that they meet all the assessment criteria shown above.

Suggested word count of 2,000 words (+10% or -10%)

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

The assignment for this unit is graded as **pass, merit and distinction**.

OPTIONAL UNIT B3: Level 3 Packaging and the Hazards of Storage and Distribution

Credit Value - 2 credits

Guided learning hours – 6 hours

Overview

It is in the storage and distribution part of the supply chain where most physical damage happens, and this Unit examines the key hazards, their causes and effects, and how packaging can contribute to reducing damage. Damage to both packaging materials and product is considered, as a damaged pack, e.g. scuffed carton, will affect the selling function of the packaging as much as a damaged product.

Physical damage can happen during all stages of the life of the packed product: production and packaging in the factory, storage in warehouses, transport to the store for sale, display on the shelf in store, and being carried home by the purchaser. It also includes storage and use of the product, e.g. in a kitchen, and any other handling operations which the final consumer may be reasonably expected to use on the product.

Typical causes of damage are: dropping, (from pallets, and during order picking and transit) jolting, vibration (in vehicles) compression, (when stacked in warehouses) or puncturing, (due to use of poor quality pallets). Damage can also result from environmental factors such as dust, dirt, birds, insects and rodents. Pilferage and tampering by humans, which is most likely in the selling environment, also comes into the category of physical damage and concern about this has created a requirement to consider the use of tamper evidence and, in some cases, anti-counterfeit packaging.

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Understand the causes and effects of the typical hazards Understand how to use packaging to avoid or minimise damage	1.1	Using a named product/item assess the hazards and resultant damage that can occur during storage and distribution.
2.	Understand the causes and effects of the typical hazards Understand how to use packaging to avoid or minimise damage	2.1	Explain how packaging can be used to prevent and minimise damage
3.	Understand how to draw up a plan to evaluate the hazards	3.1	Using a specific example draw up a plan to evaluate the effectiveness of the packaging solution

		3.2	Describe a suitable test method to ensure a pack is capable of withstanding a specific hazard
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1. Understand the causes and effects of the typical hazards

- 1.1 Using a named product/item assess the hazards and resultant damage that can occur during storage and distribution.

Indicative content:

- 1.1 Knowledge of the causes and effects of the typical hazards encountered in storage and distribution; designing packaging for storage and distribution: the inherent ruggedness of the product plus the protection provided by the packaging must at least equal the hazards existing in the storage and distribution environment; defining the environment: map out a typical journey, identify areas of manual and automatic handling, list the likely hazards, their causes and effects, identify how much control can be exercised, identify human factors, e.g. level of expertise and training requirements; brief overview of requirements for Dangerous Goods.

2. Understand how to use packaging to avoid or minimise damage

- 2.1 Explain how packaging can be used to prevent and minimise damage

Indicative content:

- 2.1 Knowledge of packaging and systems that provide protection against the typical hazards; effect of pallet and palletisation specifications on the safe and cost effective movement of goods; pallet materials, pallet styles, using the pallet to minimise product damage.

3. Understand how to draw up a plan to evaluate the hazards

- 3.1 Using a specific example draw up a plan to evaluate the effectiveness of the packaging solution
- 3.2 Describe a suitable test method to ensure a pack is capable of withstanding a specific hazard

Indicative content:

- 3.1 Protective packaging materials: corrugated board, other cellulose-based materials (e.g. moulded pulp) polymeric materials: foams, bubble wrap, etc. key properties and the effectiveness of each; how to draw up a plan to evaluate these hazards; define the product: critical values, what will cause it to become damaged, unsaleable, how attractive is it to the pilferer or tamperer; defining product fragility.

3.2 Describe a suitable test method to ensure a pack is capable of withstanding a specific hazard

Testing programmes and their effect on cost and development time, alongside effectiveness and risk assessment.

Assessment and Grading

This unit is assessed through an assignment on packaging legislation, standards and regulations to meet the learning outcomes and assessment criteria.

In completing the assignment candidates must ensure that they meet all the assessment criteria shown above.

Suggested word count of 2,000 words (+10% or -10%)

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

The assignment for this unit is graded as **pass, merit and distinction**.

OPTIONAL UNIT B4: Level 3. The Relationship between Packaging Design and Marketing

Credit Value - 2 credits

Guided learning hours – 6 hours

Overview

The Chartered Institute of Marketing defines marketing as: 'The management process responsible for identifying, anticipating and satisfying customer requirements profitably'.

This Unit reviews how this process is executed and in particular, considers the importance of close interaction and co-operation between the packaging technology/development and marketing functions, in delivering a successful product into the marketplace.

Like packaging, marketing should not be viewed as a separate function, but as an integral part of the entire business. A business cannot succeed without marketing, although the precise role of the marketing professionals will vary from company to company and across different types of business.

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Understand how the functions of marketing interact with packaging design	1.1	Explain how the marketing department interacts with the various packaging development activities
		1.2	Describe the role of marketing during the pack development process
		1.3	Explain the influence of cost on the design/marketing decision making process
2.	Understand the importance of functional and graphic design for packed products	2.1	Using examples explain the meaning of functional and graphic design
		2.2	Analyse the role of packaging in the marketing mix
3.	Understand how brand identity is related to packaging	3.1	Evaluate the importance of packaging in defining a brand using an example
		3.2	Explain the use of market research during packaging design and development

1. Understand how the functions of marketing interact with packaging design

- 1.1 Explain how the marketing department interacts with the various packaging development activities
- 1.2 Describe the role of marketing during the pack development process
- 1.3 Explain the influence of cost on the design/marketing decision making process

Indicative content:

- 1.1 Knowledge of the basic functions of marketing and how it interacts with decision-making on packaging; knowledge of the information required in order to design a product/pack; the role of the marketer; what marketing is and how it is viewed and managed within different types of companies.
- 1.2 Marketing activities: understanding customer needs; differences between industrial and consumer marketing.
- 1.3 The costs of design and marketing, the balance with added product value and how this contributes to increased business.

2. Understand the importance of functional and graphic design for packed products

- 2.1 Using examples explain the meaning of functional and graphic design
- 2.2 Analyse the role of packaging in the marketing mix

Indicative content:

- 2.1 An understanding of the importance of both the functional (i.e. structural or technical) and graphic design of a pack
- 2.2 Developing a design brief: what information is required, how to brief the designer, importance of communication and managing the process.

3. Understand how brand identity is related to packaging

- 3.1 Evaluate the importance of packaging in defining a brand using an example
- 3.2 Explain the use of market research during packaging design and development

Indicative content:

- 3.1 An understanding of the importance of “branding” in packaging; the importance of branding. Defining the brand maintaining brand identity and awareness; the importance of colour, shape, texture.

3.2 Knowledge of the use of market research and ways of carrying out market research
market research: different types of research, stages at which market research may
be carried out.

Assessment and Grading

This unit is assessed through an assignment on packaging legislation, standards and regulations to meet the learning outcomes and assessment criteria.

In completing the assignment candidates must ensure that they meet all the assessment criteria shown above.

Suggested word count of 2,000 words (+10% or -10%)

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

The assignment for this unit is graded as **pass, merit and distinction**.

OPTIONAL UNIT B5: Level 3. The Properties, Manufacture and Use of Paper and Carton Board as Packaging Materials

Credit Value - 3 credits

Guided learning hours – 10 hours

Overview

By weight, paper and board accounts for the largest sector of materials used for packaging. By value, the usage of paper and board for packaging applications is now slightly less than plastics. Almost 90% of all paper and board packaging is cartons and cases. As a general rule, 'cartons' refers to primary packaging, i.e. the folding cartons which are typically delivered in a flat form and made up immediately prior to loading with the product. Using this rule, most cartons are made from solid board, although there is an increasing use of fine flute grades of corrugated board for primary packaging. 'Cases' refers to secondary packaging, used to transport the primary packs through the Supply Chain, and also used in many instances to display the product.

This Unit will deal with paper and solid board. Corrugated board is the subject of another unit.

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Understand which properties of paper and/or carton board make them ideal packaging materials	1.1	Describe the properties of paper and/or carton board
		1.2	Assess the importance of these properties for use with a particular pack format
		1.3	Evaluate the advantages and disadvantages of using paper and/or carton board as packaging materials for a specific product
2.	Understand the process of manufacturing and converting paper and/or carton board into packaging materials	2.1	Identify the raw materials used to manufacture different types of paper and/or carton board
		2.2	Describe a process used to make paper and/or carton board
		2.3	Describe a process to convert paper and/or carton board into packaging.
		2.4	Explain how the properties of paper and/or carton board can be changed during processing
		2.5	Summarise the methods used to test paper and/or carton board

3.	Understand the use of paper and carton board as a packaging material	3.1	Identify the main uses of paper and carton board in packaging
		3.2	Using a particular product as an example justify the use of paper and/or carton board as a packaging material
		3.3	Assess the factors that encourage or limit the use of paper and carton board packaging materials

1. Understand which properties of paper and/or carton board make them ideal packaging materials

- 1.1 Describe the properties of paper and/or carton board
- 1.2 Assess the importance of these properties for use with a particular pack format
- 1.3 Evaluate the advantages and disadvantages of using paper and/or carton board as packaging materials for a specific product

Indicative content:

- 1.1 Knowledge of the properties of paper and board in packaging applications and an understanding of how performance can be affected by manufacturing and conversion processes and storage conditions; performance properties of paper and board: identifying the important properties for a range of end uses, overview of how each property is tested, and information required on a specification. Tensile, tear and burst strength, folding characteristics, stiffness, water absorption, porosity, grease resistance, surface friction; printing characteristics: colour, opacity, absorbency surface strength; importance of grammage and density; differences in MD/CD; moisture level and conditioning of samples.
- 1.2 Overview of usage and markets. Overview of other paper and board packaging types: sacks, blister packs, drums, tubes.
- 1.3 An understanding of the applications of paper and board in packaging and the properties which encourage and/or limit its use, including factors such as cost and environmental impact; environmental overview, reuse and recycling of paper and board containers.

2. Understand the process of manufacturing and converting paper and/or carton board into packaging materials

- 2.1 Identify the raw materials used to manufacture different types of paper and/or carton board
- 2.2 Describe a process used to make paper and/or carton board
- 2.3 Describe a process to convert paper and/or carton board into packaging.
- 2.4 Explain how the properties of paper and/or carton board can be changed during processing

2.5 Summarise the methods used to test paper and/or carton board

Indicative content:

- 2.1 Knowledge of the manufacture of paper and board and its conversion into packaging formats, including any adhesive processes.
- 2.2 Manufacture of Paper and Board: raw materials used, treatments, processes and their effect on performance properties; carton manufacturing processes, from board and style selection to finished cartons ready for use by the packer/filler.
- 2.3 Knowledge of the ways of converting basic paper and board materials into packs that are ready for use
- 2.4 The ways in which the properties of paper and/or carton board can be changed during processing
- 2.5 Knowledge of the main test methods used to evaluate the properties of paper and board packaging and the extent to which these tests must be performed during manufacture and use.

3. Understand the use of paper and carton board as a packaging material

- 3.1 Identify the main uses of paper and carton board in packaging
- 3.2 Using a particular product as an example justify the use of paper and/or carton board as a packaging material
- 3.3 Assess the factors that encourage or limit the use of paper and carton board packaging materials

Indicative content:

- 3.1 Knowledge of the development of paper and board packaging and their common uses
- 3.2 The types of papers and boards: range of different types, from solid bleached sulphate to chipboard; emphasis on different properties and uses. Requirements for specifications.
- 3.3 An understanding of the properties which encourage and/or limit the use of paper and board, including factors such as cost and environmental impact; comparison of the different materials and processes in terms of cost and component properties and performance; environmental overview of paper and board containers

Assessment and Grading

This unit is assessed through an assignment on packaging legislation, standards and regulations to meet the learning outcomes and assessment criteria.

In completing the assignment candidates must ensure that they meet all the assessment criteria shown above.

Suggested word count of 2,000 words (+10% or -10%)

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

The assignment for this unit is graded as **pass, merit and distinction**.

OPTIONAL UNIT B6: Level 3. The Properties, Manufacture and Use of Rigid Plastic Packaging

Credit Value - 3 credits

Guided learning hours – 10 hours

Overview

The use of plastics in packaging has grown by over 50% in recent years and doubled since the 1990s. Hence, it is a very important subject area and there are very few packaging applications in which plastics are not used in some way.

This unit introduces polymer chemistry at a very basic level, to illustrate how and why plastics behave in the ways they do. It reviews the properties of the main packaging plastics, and how these can be improved. Rigid plastics packaging includes jars, bottles, tubs, pots, compacts, closures, drums, pails etc. and examines the manufacturing processes involved.

This Unit introduces candidates to this large and sometimes complex subject.

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Understand which properties of polymers make them ideal materials for rigid plastic packaging	1.1	Describe the properties of polymers used to make rigid plastics
		1.2	Assess the importance of these properties for use with a particular pack format
		1.3	Evaluate the advantages and disadvantages of using plastics as a rigid packaging material for a specific product
2.	Understand the processes of converting polymers into rigid plastic packaging components	2.1	Identify the materials used to manufacture different types of rigid plastic packaging
		2.2	Compare the processes used to make rigid plastic and describe one in detail
		2.3	Explain how the properties of plastic materials can be modified through the conversion process
		2.4	Summarise the methods used to test rigid plastic packaging
3.	Understand the use of rigid plastic as a packaging material	3.1	Identify the main uses of rigid plastic packaging
		3.2	Using a particular product as an example justify the use of rigid plastic as a packaging material

		3.3	Assess the factors that encourage or limit the use of rigid plastic packaging materials
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1. Understand which properties of polymers make them ideal materials for rigid plastic packaging

- 1.1 Describe the properties of polymers used to make rigid plastics
- 1.2 Assess the importance of these properties for use with a particular pack format
- 1.3 Evaluate the advantages and disadvantages of using plastics as a rigid packaging material for a specific product

Indicative content:

- 1.1 Knowledge of the properties and uses in packaging of the common packaging plastics (LDPE, HDPE, PP, PVC, PET, PS); key concepts: thermoplastics, thermosets and thermoplastic elastomers; homopolymers and copolymers; polymerisation and catalysts.
- 1.2 Understanding how performance can be improved, e.g. by material modifications, coating, combining with other materials; knowledge of the current developments in materials and processing of plastics for packaging; orientation and effect on properties, surface energy, polarity and requirements for surface treatment.
- 1.3 An understanding of the applications of rigid plastics in packaging and the properties which encourage and/or limit their use, including factors such as cost and environmental impact; environmental overview, reuse and recycling of rigid plastic containers.

2. Understand the processes of converting polymers into rigid plastic packaging components

- 2.1 Identify the materials used to manufacture different types of rigid plastic packaging
- 2.2 Compare the processes used to make rigid plastic and describe one in detail
- 2.3 Explain how the properties of plastic materials can be modified through the conversion process
- 2.4 Summarise the methods used to test rigid plastic packaging

Indicative content:

- 2.1 Comparison of the different materials and processes in terms of cost and component properties and performance. Environmental overview of rigid plastics packaging.

- 2.2 Rigid packaging manufacturing processes and thermoforming; different manufacturing processes in terms of the overall performance of the components produced; the manufacturing processes used in plastics packaging:-Injection moulding; Extrusion blow moulding; Injection blow moulding; Injection stretch blow moulding.
- 2.3 Overview of the common plastics used in rigid packaging, properties and end uses, limitations and how properties can be improved.
- 2.4 Knowledge of the main test methods used to evaluate the properties of plastics and discuss the extent to which these tests must be performed during manufacture and use.

3. Understand the use of rigid plastic as a packaging material

- 3.1 Identify the main uses of rigid plastic packaging
- 3.2 Using a particular product as an example justify the use of rigid plastic as a packaging material
- 3.3 Assess the factors that encourage or limit the use of rigid plastic packaging materials

Indicative content:

- 3.1 Defining rigid packaging, overview of usage and market.
- 3.2 Performance properties: strength properties, barrier, resistance to environmental stress cracking, product resistance. Extent to which properties are influenced by material selection and manufacturing process. Requirements for specifications.
- 3.3 An understanding of the properties which encourage and/or limit the use of rigid plastics, including factors such as cost and environmental impact.

Assessment and Grading

This unit is assessed through an assignment on packaging legislation, standards and regulations to meet the learning outcomes and assessment criteria.

In completing the assignment candidates must ensure that they meet all the assessment criteria shown above.

Suggested word count of 2,000 words (+10% or -10%)

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

The assignment for this unit is graded as **pass, merit** and **distinction**.

OPTIONAL UNIT B7: Level 3. The Properties, Manufacture and Use of Flexible Packaging Materials

Credit Value - 3 credits

Guided learning hours – 10 hours

Overview

Flexible packaging is defined as: “A pack or container made from flexible or easily yielding materials that, when filled and closed, can be readily changed in shape. Normally applies to bags, envelopes, sachets or wraps made of materials ranging in thickness from 10 to 75 microns, such as paper, plastic films, foils or combinations of these.”
(Fundamentals of Packaging Technology)

We can refine this definition into materials which are:

- Flexible, rather than rigid
- Single or multi-layer
- Usually delivered to the packer/filler in reel form, where they are used to make the product ‘container’ on the packaging line
- Require sealing in some way, commonly by heat and/or pressure, or by the application of adhesive

Examples of flexible packaging include:

- Sachets for dry and wet products
- Stand-up pouches used for pet food, soups, drinks, laundry liquids
- Wrappers for biscuits and confectionery
- Bags for confectionery and snack foods
- Thermoformed packs for bacon, cheese and meats
- Overwraps for cartons

Some 70% by weight of all flexible packaging is plastics, the balance being split between paper and aluminium foil, with a very small % of cellulose film. Plastics are used as single layers of film, or as multi-layers of all-plastic combinations, or combined with paper and/or aluminium foil.

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Understand which properties of flexible materials make them ideal packaging materials	1.1	Describe the properties of paper, metal and polymers used in the manufacture of flexible packaging materials
		1.2	Assess the importance of these properties for use with a particular pack format

		1.3	Evaluate the advantages and disadvantages of using flexible materials as packaging materials for a specific product
2.	Understand the process of manufacturing and converting single and combined materials into flexible packaging	2.1	Identify the materials used to manufacture different types of flexible packaging materials
		2.2	Describe a process used to make flexible packaging materials
		2.3	Explain how the properties of flexible materials can be modified through the conversion processes
		2.4	Summarise the methods used to test flexible packaging materials
3.	Understand the use of flexible packaging materials	3.1	Identify the main uses of flexible packaging materials
		3.2	Using a particular product as an example justify the use of flexible material for packaging
		3.3	Assess the factors that encourage or limit the use of flexible packaging materials

1. Understand which properties of flexible materials make them ideal packaging materials

- 1.1 Describe the properties of paper, metal and polymers used in the manufacture of flexible packaging materials
- 1.2 Assess the importance of these properties for use with a particular pack format
- 1.3 Evaluate the advantages and disadvantages of using flexible materials as packaging materials for a specific product

Indicative content:

- 1.1 Knowledge of the properties and uses in flexible packaging of paper, aluminium foil and the common packaging plastic films (LDPE, LLDPE, HDPE, PP, PVC, PET, PS, PA) including metallised films.
- 1.2 Understanding how performance can be improved, e.g. by material modifications, coating, combining with other materials; knowledge of the current developments in materials and processing; and surface treatment.
- 1.3 An understanding of the applications of flexible materials in packaging and the properties which encourage and/or limit their use, including factors such as cost and environmental impact; environmental overview, reuse and recycling of flexible material containers.

2. Understand the process of manufacturing and converting single and combined materials into flexible packaging

- 2.1 Identify the materials used to manufacture different types of flexible packaging materials
- 2.2 Describe a process used to make flexible packaging materials
- 2.3 Explain how the properties of flexible materials can be modified through the conversion processes
- 2.4 Summarise the methods used to test flexible packaging materials

Indicative content:

- 2.1 Raw materials used; processes by which the raw materials are converted into packaging materials and containers.
- 2.2 Knowledge of the different manufacturing processes in terms of the overall performance of the materials produced; plastic film manufacturing processes and thermoforming; how properties of finished packaging materials are influenced by manufacturing processes; manufacture of films and laminates, including thermoforming of semi-rigid packaging components:-Cast film and sheet extrusion; Blow film extrusion; Coextrusion; Adhesive lamination; Coating; Common thermoforming methods.
- 2.3 Overview of the common plastics used in flexible packaging; other flexible packaging materials: aluminium foil, paper, cellulose film. Differences between aluminium foil and metallised materials, as they are commonly confused, both by the consumer and by packaging personnel; combining materials: wet bond, dry bond (and solvent-free) and extrusion lamination, extrusion coating and coextrusion; advantages and disadvantages of each for specific end uses; effect of process on materials performance properties.
- 2.4 Knowledge of the main test methods used to evaluate the properties of flexible packaging and the extent to which these tests must be performed during manufacture and use.

3. Understand the use of flexible packaging materials

- 3.1 Identify the main uses of flexible packaging materials
- 3.2 Using a particular product as an example justify the use of flexible material for packaging
- 3.3 Assess the factors that encourage or limit the use of flexible packaging materials

Indicative content:

- 3.1 Define flexible packaging, overview of usage and market.
- 3.2 Choosing the optimum materials for given end uses; comparison of the different materials and processes in terms of cost and component properties and performance; environmental overview of flexible packaging; performance properties: tensile and tear strength, impact strength, surface friction, heat sealability, density and cost, barrier properties. Requirements for specifications.
- 3.3 An understanding of the properties which encourage and/or limit the use of flexible materials, including factors such as cost and environmental impact.

Assessment and Grading

This unit is assessed through an assignment on packaging legislation, standards and regulations to meet the learning outcomes and assessment criteria.

In completing the assignment candidates must ensure that they meet all the assessment criteria shown above.

Suggested word count of 2,000 words (+10% or -10%)

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

The assignment for this unit is graded as **pass, merit and distinction**.

OPTIONAL UNIT B8: Level 3 the Use of Printing and Decoration for Packaging

Credit Value - 3 credits

Guided learning hours – 10 hours

Overview

Printing and decoration are fundamental steps in meeting the information and selling functions of packaging). They are used to identify the product and to inform the handler/user about the product and give any special instructions for use. Printing and decoration are also used to create the desired image for the product, by design and finish thus helping to sell the product. This image can be achieved by a combination of colour, texture, illustration and copy, designed to respond to the needs of the purchaser of the product, as identified by market research. This Unit addresses the requirements for printing and decoration and compares the different printing and decoration processes.

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Understand the role of printing/decoration in packaging	1.1	Using examples explain why printing/decoration is used on packaging
2.	Understand how an image is achieved	2.1	Explain the factors that affect how colour is perceived
		2.2	Explain the relationship between design and print
		2.3	Explain how an image is achieved
		2.4	Describe the stages in preparing to print
3.	Understand the main printing and decoration processes used for packaging materials and components	3.1	Summarise the main printing and decoration processes used for packaging
		3.2	Describe in detail one of the main print processes
		3.3	Compare the effect of all the different print processes in terms of overall performance, cost and quality
		3.4	Describe how printed and decorated packaging materials are specified and tested

1. Understand the role of printing/decoration in packaging

- 1.1 Using examples explain why printing/decoration is used on packaging

Indicative content:

- 1.1 Understand the reasons for using printing/decoration on packaging and ways in which different effects can be achieved using a range of different packs, applications and contexts

2. Understand how an image is achieved

- 2.1 Explain the factors that affect how colour is perceived
- 2.2 Explain the relationship between design and print
- 2.3 Explain how an image is achieved
- 2.4 Describe the stages in preparing to print

Indicative content:

- 2.1 Knowledge of what factors affect how we see colour and what is required when evaluating colour.
- 2.2 Why printing is used, related to the functions of packaging; preparation for printing, approval processes before printing and what to look for; timescale for development.
- 2.3 Knowledge of how process colour printing works Print and decoration processes: requirements for each, explanation of process, important quality aspects.
- 2.4 Knowledge of the stages in preparing to print packaging; basics of colour: defining colour, how we see colour, factors affecting our perception of colour; requirements for colour matching.

3. Understand the main printing and decoration processes used for packaging materials and components

- 3.1 Summarise the main printing and decoration processes used for packaging
- 3.2 Describe in detail one of the main print processes
- 3.3 Compare the effect of all the different print processes in terms of overall performance, cost and quality
- 3.4 Describe how printed and decorated packaging materials are specified and tested

Indicative content:

- 3.1 Process colours for graphic illustrations. How colour is achieved in colour printing. Basics of CMYK, Hexachrome™ and others. Special colours. How to recognise process colours; specifying printed materials: key performance properties
- 3.2 Knowledge of the main printing and decorating processes used for packaging materials and components.
- 3.3 An understanding of the different processes in terms of the overall performance of the finished printed items.
- 3.4 Knowledge of the main methods of testing printed and decorated packaging and why these tests must be performed.

Assessment and Grading

This unit is assessed through an assignment on packaging legislation, standards and regulations to meet the learning outcomes and assessment criteria.

In completing the assignment candidates must ensure that they meet all the assessment criteria shown above.

Suggested word count of 2,000 words (+10% or -10%)

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

The assignment for this unit is graded as **pass, merit and distinction**.

OPTIONAL UNIT B9: Level 3. The Use of Labelling and Coding for Packaging Materials

Credit Value - 2 credits

Guided learning hours – 6 hours

Overview

Labels are perhaps best recognised as a way of decorating a pack, hence their important contribution to the selling function by helping to create the intended image for the product. The development of a wide range of label materials and printing techniques has led to a growth in their use, as a visit to almost any retail outlet will show. The use of labels in identifying the product and informing the user about weight, usage and storage instructions, hazardous warning etc., is increasingly important.

Labels are also used for bar codes and other important information on secondary packs and palletised loads. Coding is a vital component of product traceability and often contributes to legal compliance.

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Understand the use of labelling in packaging	1.1	Describe the characteristics, functions and typical applications of labels for packaging
		1.2	Justify the use of a particular label for a named product
		1.3	Demonstrate the relationship between labels and the functions of packaging
2.	Understand how labels are manufactured and applied	2.1	Compare the advantages and disadvantages of different types of labels
		2.2	Describe how a specific label is manufactured
		2.3	Describe the associated application method
		2.4	Explain the testing procedures for labels
3.	Understand the use of coding in packaging	3.1	Explain why coding is used in packaging
		3.2	Compare the different methods of coding

1. Understand the use of labeling in packaging

- 1.1 Describe the characteristics, functions and typical applications of labels for packaging
- 1.2 Justify the use of a particular label for a named product
- 1.3 Demonstrate the relationship between labels and the functions of packaging

Indicative content:

- 1.1 Knowledge of the different types of labels used in packaging and their development
- 1.2 An Overview of the label market and changes in types of labels used; reasons for changes and likely future trends; how to select the right label for a given end use; overview of label printing and coding.; coding methods, uses and applications.
- 1.3 Knowledge of the properties of different types of labels and how they are applied and used; label types and the uses and properties of adhesives: how labels are made, how they are applied, and mechanisms of adhesion.

2. Understand how labels are manufactured and applied

- 2.1 Compare the advantages and disadvantages of different types of labels
- 2.2 Describe how a specific label is manufactured
- 2.3 Describe the associated application method
- 2.4 Explain the testing procedures for labels

Indicative content:

- 2.1 Uses of labels in the context of and the functions of packaging.
- 2.2 Knowledge of how different types of labels are made
- 2.3 Knowledge of different ways in which labels and codes are attached to packs and the reasons for choosing a method for a particular application
- 2.4 Knowledge of how labels are tested; trouble shooting label problems; test requirements of labels and coded packaging; information to be included on a specification; setting and agreeing standards of acceptability.

3. Understand the use of coding in packaging

- 3.1 Explain why coding is used in packaging
- 3.2 Compare the different methods of coding

Indicative content:

- 3.1 An understanding of the importance of coding in meeting the requirements of providing information and conforming to legislation; common methods of coding packs, with examples to illustrate each method.
- 3.2 An understanding of the different methods in terms of the overall performance of the finished pack; trouble shooting label and coding problems.

Assessment and Grading

This unit is assessed through an assignment on packaging legislation, standards and regulations to meet the learning outcomes and assessment criteria.

In completing the assignment candidates must ensure that they meet all the assessment criteria shown above.

Suggested word count of 2,000 words (+10% or -10%)

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

The assignment for this unit is graded as **pass, merit and distinction**.

OPTIONAL UNIT B10: Level 3. The Properties, Manufacture and Use of Corrugated Board in Packaging

Credit Value - 3 credits

Guided learning hours – 10 hours

Overview

Developed in the 1800s, corrugated board uses over 50% of all paper used in packaging applications. In the United Kingdom alone, we use over 4.5 billion square metres, or about 2.5 million tonnes, worth about £1.4 billion. European usage is estimated at 29 billion square metres, or 16 million tonnes. (Source: UK data: www.corrugated.org.uk European data: www.fefco.org)

Corrugated board is available in a range of different types, but they all have one thing in common in that they have at least one layer which is fluted, and glued to at least one outer layer, known as a liner. The fluting medium itself is not particularly strong; it is the fluted formation which gives the corrugated board its strength and rigidity and allows it to be used for so many different packaging applications.

Corrugated board is an extremely versatile material, available in a range of flute sizes and grades of liner. Due to its inherent strength it is the workhorse material of the secondary (transit) packaging sector, where it is used as cases and fitments, primarily to provide protection for Fast Moving Consumer Goods (FMCG) such as food and drink, pharmaceuticals, toiletries and cosmetics, against the physical hazards of the supply chain. It is also used for heavy-duty applications, such as intermediate bulk containers (IBCs) for food ingredients, pallet boxes for exporting goods, and cases for engineering and machine parts.

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Understand which properties of corrugated board make it an ideal packaging material	1.1	Describe the properties of corrugated board
		1.2	Assess the importance of these properties for use with a particular pack format
		1.3	Evaluate the advantages and disadvantages of using corrugated board as a packaging material for a specific product
2.	Understand the process of manufacturing and converting corrugated board into packaging	2.1	Identify the raw materials used to manufacture different types of corrugated board

	materials	2.2	Classify different fluting mediums and liners and the relationship to packaging components and their uses
		2.3	Describe the process used to make corrugated board
		2.4	Describe a process used to convert corrugated board into packaging components
		2.5	Summarise the methods used to test corrugated board
3.	Understand the use of corrugated board as a packaging material	3.1	Identify the main uses of corrugate board in packaging
		3.2	Using a particular product as example justify the use of corrugated board as a packaging material
		3.3	Assess the factors that encourage or limit the use of corrugated board packaging materials

1. Understand which properties of corrugated board make it an ideal packaging material

- 1.1 Describe the properties of corrugated board
- 1.2 Assess the importance of these properties for use with a particular pack format
- 1.3 Evaluate the advantages and disadvantages of using corrugated board as a packaging material for a specific product

Indicative content:

- 1.1 Knowledge of the properties of corrugated board in packaging applications and an understanding of how performance can be affected by manufacturing and conversion processes and storage conditions; different types of corrugated and flute sizes, end uses.
- 1.2 Performance properties: identifying the important properties for a range of end uses, overview of how each property is tested, information required on a specification; compression and burst strength, ECT, water absorption, porosity, surface friction.; printing characteristics: colour, opacity, absorbency, surface strength, smoothness; moisture level and conditioning of samples.
- 1.3 An understanding of the applications of corrugated board in packaging and the properties which encourage and/or limit their use, including factors such as cost and environmental impact; environmental overview, reuse and recycling of corrugated board material containers.

2. Understand the process of manufacturing and converting corrugated board into packaging materials

- 2.1 Identify the raw materials used to manufacture different types of corrugated board

- 2.2 Classify different fluting mediums and liners and the relationship to packaging components and their uses
- 2.3 Describe the process used to make corrugated board
- 2.4 Describe a process used to convert corrugated board into packaging components
- 2.5 Summarise the methods used to test corrugated board

Indicative content:

- 2.1 Raw materials used; processes by which the raw materials are converted into packaging materials and containers.
- 2.2 An understanding of how the selection of flute sizes, fluting medium and liners affects the performance of the finished pack.
- 2.3 Knowledge of the manufacture of corrugated board; production of corrugated board and conversion into cases and trays; selection of materials and style, effect on cost.
- 2.4 Knowledge of the conversion of corrugated board into cases, trays etc.
- 2.5 Knowledge of the main test methods used to evaluate the properties of corrugated board packaging and the extent to which these tests must be performed during manufacture and use; requirements for specifications.

3. Understand the use of corrugated board as a packaging material

- 3.1 Identify the main uses of corrugate board in packaging
- 3.2 Using a particular product as example justify the use of corrugated board as a packaging material
- 3.3 Assess the factors that encourage or limit the use of corrugated board packaging materials

Indicative content:

- 3.1 Knowledge of the common uses of corrugated board in packaging and their development; overview of market uses.
- 3.2 Choice of papers: liners and fluting (refer to CPA Guidelines); choice of adhesive and the advantages when applied to specific products.
- 3.3 Comparison of the different materials and processes in terms of cost and component properties and performance; environmental overview of corrugated board packaging; properties which encourage and/or limit the use of corrugated board, including factors such as cost and environmental impact.

Assessment and Grading

This unit is assessed through an assignment on packaging legislation, standards and regulations to meet the learning outcomes and assessment criteria.

In completing the assignment candidates must ensure that they meet all the assessment criteria shown above.

Suggested word count of 2,000 words (+10% or -10%)

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

The assignment for this unit is graded as **pass, merit and distinction**.

OPTIONAL UNIT B11: Level 3 the Properties, Manufacture and Uses of Rigid Metal in Packaging

Credit Value - 3 credits

Guided learning hours – 10 hours

Overview

Metals are an example of traditional packaging materials that are still in use to-day. Tinplate was first used as a packaging material by the Dutch and British navies in the early 1800's for meat preservation during long ocean journeys. The excellent barrier properties for gases, moisture and light, combined with rigidity and strength in use mean that today metals such as steel and aluminium are used in a wide variety of applications as with 2 and 3 piece containers for food and drink products, personal care items such as aerosols and the household and industrial cans and giftware. The ability to easily recycle these materials can allow for high recycling rates to be achieved.

This Unit will deal with rigid metals such as steel and aluminium. Aluminium foils will be covered in Flexible Packaging

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Understand which properties of metals makes them ideal materials for rigid metal packaging Understand the use of rigid metal as a packaging material and the importance of coatings	1.1	Identify the materials used to manufacture different types of rigid metal packaging
		1.2	Describe the properties of metals
		1.3	Assess the importance of these properties for use with a particular pack format
		1.4	Evaluate the advantages and disadvantages of using rigid metal packaging for a specific product
2.	Understand the processes of converting metals into rigid metal packaging	2.1	Compare the processes used to make rigid metal and describe one in detail
		2.2	Evaluate the methods used to test rigid metal packaging
3.	Understand the use of rigid metal as a packaging material and the importance of coatings	3.1	Identify the main uses of rigid metal in packaging
		3.2	Using a particular product as an example justify the use of rigid metal as a packaging material
		3.3	Explain the role of coatings in metal packaging

1. Understand which properties of metals makes them ideal materials for rigid metal packaging

- 1.1 Identify the materials used to manufacture different types of rigid metal packaging
- 1.2 Describe the properties of metals
- 1.3 Assess the importance of these properties for use with a particular pack format
- 1.4 Evaluate the advantages and disadvantages of using rigid metal packaging for a specific product

Indicative content:

- 1.1 Comparison of the different materials and processes in terms of cost and component properties and performance.
- 1.2 Properties of steel and aluminum in rigid metal packaging: advantages and disadvantages; uses in different markets, threats and opportunities.
- 1.3 Performance properties: identifying the important properties for a range of end uses, overview of how each property is tested, information required on a specification
- 1.4 An understanding of the applications of rigid metals in packaging and the properties which encourage and/or limit the use of rigid metals, including factors such as cost and environmental impact; environmental overview, reuse and recycling of rigid metal containers.

2. Understand the processes of converting metals into rigid metal packaging

- 2.1 Compare the processes used to make rigid metal and describe one in detail
- 2.2 Evaluate the methods used to test rigid metal packaging

Indicative content:

- 2.1 Knowledge of the processes by which metals are converted into packaging materials and containers; manufacture of rigid metal packaging:-Built up construction; Drawn construction; Drawn and redrawn construction; Drawn and wall-ironed construction; Impact extrusion; Can ends and seaming processes.
- 2.2 Knowledge of the main test methods used to evaluate metal packaging and how they are applied.

3. Understand the use of rigid metal as a packaging material and the importance of coatings

- 3.1 Identify the main uses of rigid metal in packaging
- 3.2 Using a particular product as an example justify the use of rigid metal as a packaging material
- 3.3 Explain the role of coatings in metal packaging

Indicative content:

- 3.1 The development of rigid metal packaging; common uses of metal in packaging, how they have developed.
- 3.2 Choosing the optimum metallic material(s) for given end uses; comparison of the different materials and processes in terms of cost and component properties and performance; environmental overview of metal packaging; performance properties. Requirements for specifications.
- 3.3 Coatings (including decoration) and their uses. Product/pack compatibility and product shelf life.

Assessment and Grading

This unit is assessed through an assignment on packaging legislation, standards and regulations to meet the learning outcomes and assessment criteria.

In completing the assignment candidates must ensure that they meet all the assessment criteria shown above.

Suggested word count of 2,000 words (+10% or -10%)

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

The assignment for this unit is graded as **pass, merit and distinction**.

OPTIONAL UNIT B12: Level 3 the Properties, Manufacture and Use of Glass in Packaging

Credit Value - 3 credits

Guided learning hours – 10 hours

Overview

Glass is a highly versatile material that can be formed into virtually any shape and with a suitable closure, is ideal for packaging most foods and liquids. Glass is inert to most chemicals and is impermeable to gases and moisture vapour. These qualities make it an excellent material to contain foods that are subject to volatile loss, oxidation or spoilage due to loss or gain of moisture.

The raw materials used to manufacture glass are plentiful and the material is easy to identify and can be recycled indefinitely without any loss of its properties.

This Unit will deal with glass, how it is made and converted into packaging components, its properties and uses.

In order to gain this unit the candidates must meet the following learning outcomes by being able to demonstrate that they can carry out the tasks listed in the assessment criteria.

Learning Outcomes: what you need to know/understand		Assessment criteria: what you need to do	
1.	Understand which properties of glass make it an ideal packaging material	1.1	Describe the properties of glass
		1.2	Assess the importance of these properties for use with a particular application
		1.3	Evaluate the advantages and disadvantages of using glass as a packaging material
2.	Understand the main processes for manufacturing and converting glass into packaging materials	2.1	Identify the raw materials used to manufacture different types of glass
		2.2	Compare the processes used to make glass and describe one in detail
		2.3	Explain how the use of additives and treatments alter the characteristics of glass
		2.4	Summarise the methods used to test glass
3.	Understand the use glass as a packaging material	3.1	Identify the main uses of glass in packaging
		3.2	Using a particular product as an example justify the use of glass as a packaging materials
		3.3	Assess the factors that encourage or limit the use of glass packaging materials

1. Understand which properties of glass make it an ideal packaging material

- 1.1 Describe the properties of glass
- 1.2 Assess the importance of these properties for use with a particular application
- 1.3 Evaluate the advantages and disadvantages of using glass as a packaging material

Indicative content:

- 1.1 An understanding of the applications of glass in packaging and the properties which encourage and/or limit the use of glass, including factors such as cost and environmental impact; properties of glass in packaging: advantages and disadvantages; uses in different markets, threats and opportunities. Material and process developments.
- 1.2 Performance properties: identifying the important properties for a range of end uses, overview of how each property is tested, information required on a specification.
- 1.3 An understanding of the applications of glass in packaging and the properties which encourage and/or limit their use, including factors such as cost and environmental impact; environmental overview, reuse and recycling of glass containers.

2. Understand the main processes for manufacturing and converting glass into packaging materials

- 2.1 Identify the raw materials used to manufacture different types of glass
- 2.2 Compare the processes used to make glass and describe one in detail
- 2.3 Explain how the use of additives and treatments alter the characteristics of glass
- 2.4 Summarise the methods used to test glass

Indicative content:

- 2.1 Raw materials used; processes by which the raw materials of glass are converted into packaging materials and containers.
- 2.2 Comparison of the different material types and processes in terms of cost and component properties and performance; environmental overview, reuse and recycling of glass containers; manufacture of glass packaging from raw materials to finished components:- Melting of raw materials, refining, gob forming, tooling requirements; Forming - blow and blow, press and blow, narrow neck press and blow process; Annealing, coating, typical defects, on-line and off-line inspection processes; .packing, labelling and traceability of batches; decoration processes available.

2.3 Knowledge of a selection of different additives, e.g. decolourisers, lead/boron compounds, colourants and processing additives, their uses and how they alter the characteristics of glass.

2.4 Knowledge of the main test methods used to evaluate glass packaging.

3. Understand the use glass as a packaging material

3.1	Identify the main uses of glass in packaging
3.2	Using a particular product as an example justify the use of glass as a packaging materials
3.3	Assess the factors that encourage or limit the use of glass packaging materials

Indicative content:

3.1 Knowledge of the common uses of glass in packaging, how they have developed; development of glass packaging.

3.2 Choosing glass for given end uses; comparison of the different types of glass in terms of cost and component properties; environmental overview of glass packaging; performance properties. Requirements for specifications.

3.3 Comparison of the different materials and processes in terms of cost and component properties and performance; environmental overview of glass packaging; properties which encourage and/or limit the use of glass, including factors such as cost and environmental impact.

Assessment and Grading

This unit is assessed through an assignment on packaging legislation, standards and regulations to meet the learning outcomes and assessment criteria.

In completing the assignment candidates must ensure that they meet all the assessment criteria shown above.

Suggested word count of 2,000 words (+10% or -10%)

This is a graded unit with pass, merit and distinction being available.

In order to gain a **pass** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **50-59%**.

In order to gain a **merit** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **60-69%**.

In order to gain a **distinction** in the unit candidates must meet all the assessment criteria and achieve an overall mark of **70%+**.

The assignment for this unit is graded as **pass, merit and distinction**.

QUALIFICATION CERTIFICATION

Level 3 Certificate in Packaging

The full award is available at *Pass*, *Merit* or *Distinction* to candidates who successfully complete all the units.

The final qualification grade is worked out as follows:

- For all units achieved at a **Pass** level, 5 points are awarded towards the final Certificate grade.
- For all units achieved at the **Merit** level, 10 points are awarded towards the final Certificate grade.
- For all units achieved at the **Distinction** level, 15 points are awarded towards the final Certificate grade.

When all points are aggregated, the following will determine the overall qualification grade:

For programmes comprising 4 units		For programmes comprising 5 units	
• Pass	20 – 34 points	• Pass	25 – 42 points
• Merit	35 – 49 points	• Merit	43 – 61 points
• Distinction	49 + points	• Distinction	62 + points

Examples:

- **Candidate 1:** 5 units in total. Mandatory Unit – pass; Units B1, B2, B3 and B4 – all merits. 1 pass x 5 points; plus 4 merits x 10 points = 5 + 40 = 45. Therefore overall **merit**.
- **Candidate 2:** 4 units in total. Mandatory Unit – merit; Units B10, B11 – distinction; Unit B12 – pass. 1 pass x 5 points; plus 1 merit x 10 points; plus 2 distinctions x 15 points = 5 + 10 + 30 = 45. Therefore overall **merit**.
- **Candidate 3:** 5 units in total. Mandatory Unit – distinction; Units B6, B7 and B8 – all passes; Unit 9 – merit. 3 pass x 5 points ; plus 1 merit x 10 points; plus 1 distinction x 15 points = 5 + 40 = 40. Therefore overall **pass**.
- **Candidate 4:** 4 units in total. Mandatory Unit – distinction; Unit B7– pass; Units B 8 and B10 – distinction. 1 pass x 5; plus 3 distinctions x 15 points = 5 + 45 = 50. Therefore overall **distinction**.

Unit Certification: Unit certification is available to candidates who successfully complete full individual units, but who do not wish to complete the full award.

SUGGESTED SOURCE MATERIAL

A comprehensive list of source materials and references that may be used to support learning for the Certificate in Packaging is available on PIABC's website (www.piabc.org.uk)