



NVC Packaging Professional I

Final Attainment Levels and Examination Requirements

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General information

There are no specific admission requirements for participation in the NVC Packaging Professional I exam. However, it is advised that the individual has successfully completed secondary technical and/or economic education. In addition, knowledge and understanding of the natural sciences at Higher General Secondary Education (HAVO) or pre-university education (VWO) level is presumed.

These final attainment levels (the subjects that should be tested) and examination requirements (the way of testing) apply to all NVC Packaging Professional II Exams. Changes to these final attainment levels and examination requirements are made in accordance with the Regulations and Appeals Procedure NVC Packaging Professional (see Additional Information).

The final attainment levels are arranged according to main and subtopics.

General comments on the examination requirements NVC Packaging Professional I

The graduated candidate has demonstrated a solid knowledge of the production, characteristics, and the possibilities and limitations of packaging materials and means. Taking packaging materials as the starting point, the candidate is able to identify, put in correct context, and solve all possible product-packaging problems at a middle management level in a co-directive or co-executive way.

This means a graduated candidate does not need to have the knowledge to choose the right packaging for a product, but should be able to explain why the packaging was chosen, based on packaging in combination with the packed product.

Based on this the graduated candidate fits the competence profile for an Packaging Technologist.

1. Packaging

1.1 General packaging knowledge

Knowledge

The examination candidate has knowledge of common packaging technology, such as primary, secondary, and tertiary packaging; cartoning; permeability; edge crush resistance; etc.

The examination candidate has knowledge of the structure of the supply chain of packaged products.

Insight

The examination candidate has insight into the way the supply chain of packaged products works and the different forces that work in this chain.

The examination candidate demonstrates insight into the complexity and nature of the regulations dealing with packaging.

The examination candidate has insight into the hierarchy and impact of environmental factors that are important for packaging materials and printing technologies.

Skills

The examination candidate has the skill to find information about the various rules and regulations applicable to packaging.

Attitude

The examination candidate realises the place of his/her own company in the supply chain and the field of influences it is in.

1.2 Packaging functionalities

1.2.1 Packaging in general

Knowledge

The examination candidate has knowledge of the various main functions from the functional model for packaging.

The examination candidate has knowledge of the functionalities of packaging and is able to use this to set up packaging requirements.

Insight

The examination candidate has insight into the way packaging functions are composed in order to make the packaging fulfil the functions.

The examination candidate has the insight to place a functionality of a package in a functional model under the main functions (conserve/protect, distribute, and inform).

The examination candidate has insight into the mutual relationship between the functionalities and the packaging.

The examination candidate has insight into methods of analysis and assessment of packaging functionalities.

Skills

The examination candidate has the skills to recognise the functionalities of the functional model and apply them in the various packaging matters.

The examination candidate has the skills to write out all the necessary packaging and user functionalities, based on the main functionalities.

The examination candidate has the skills to gather all the necessary information for setting up the requirements for a packaging to fulfil its functions.

The examination candidate has the skills to name the functionalities of a package with issues concerning the product-packaging combination.
The examination candidate has the skills to explain packaging solutions with his/her knowledge about the required packaging and user functionalities.

Attitude

The examination candidate is attentive to new combinations of the various packaging functions in daily practice.

The examination candidate is attentive to the functions of packaging that are used in his/her own company and looks for possible improvements.

1.2.2 Specific products

Knowledge

The examination candidate has knowledge of the existence of the various product groups.

The examination candidate has knowledge of the vulnerabilities of the various product groups.

The examination candidate has knowledge of the general requirements for packaging for the various product groups.

Insight

The examination candidate has insight into the vulnerabilities of the various product groups.

The examination candidate has insight into the biological, biochemical, chemical, physical, and mechanical processes that can lead to quality loss in the packaged product of the various product groups.

The examination candidate has insight into the assessment of the suitability of the chosen material considering the vulnerabilities of a product.

The examination candidate has insight into the level of vulnerability the various products have.

Skills

The examination candidate has the skills to set up functional requirements for packaging materials based on the vulnerabilities of products.

2. Packaging materials

2.1 In general

Knowledge

The examination candidate has general knowledge of the characteristics of packaging materials.

The examination candidate has knowledge of the production process of packaging materials at an operational level.

The examination candidate has knowledge of types and classifications of packaging materials: types and sorts.

The examination candidate has knowledge of the relationship between the composition and the characteristics of a material.

Insight

The examination candidate has insight into the material characteristics that are required for a certain application.

The examination candidate has insight into the molecular structure of packaging materials.

The examination candidate has insight into the opportunities regarding each material as packaging material and the corresponding critical factors at an operational level.

The examination candidate has insight into the way in which the most important characteristics are related to each other.

The examination candidate has insight into the hierarchy and impact of important environmental aspects.

The examination candidate has insight into the costs of materials.

The examination candidate has insight into the opportunities and restrictions of packaging materials at an operational level.

The examination candidate has insight into the composition of materials at the molecular level because of his/her knowledge of the characteristics of the various materials.

Skills

The examination candidate has the skills to acquire information about specific characteristics of materials.

The examination candidate has the skills to evaluate the suitability of materials for various applications because of his/her knowledge of material characteristics.

The examination candidate has the skills at an operational level to explain the characteristics of packaging materials.

The examination candidate has the skills to explain material choices based on the characteristics of the packaged product.

The examination candidate has the skills to recognise the main groups of materials and to give a reasonable indication based on the packaging and product.

The examination candidate has the skills to indicate how individual material characteristics can be influenced.

Attitude

The examination candidate is attentive to new developments in the field of packaging materials.

The examination candidate is attentive to the use of packaging materials in relation to the characteristics of these materials in practice.

The examination candidate is able to analyse the characteristics of the materials that are used in his/her own company in order to achieve optimal results.

The examination candidate is attentive to the use of each individual material in relation to the characteristics of the material.

The examination candidate is attentive to trends and developments in the application of each individual material in packaging.

2.2 Glass

Knowledge

The examination candidate has knowledge of the composition of packaging glass.

The examination candidate has knowledge of the composition of packaging glass in respect of the desired colour.

The examination candidate has knowledge of the composition of packaging glass in relation to the possibilities of using it under hot conditions.

The examination candidate has knowledge of hot end and cold end coatings.

The examination candidate has knowledge of the influence of defects in the shape of packaging on the processing possibilities (unroundness, labelling of non-flat or non-cylindrical surfaces).

Insight

The examination candidate has insight into the relation between shape and strength of a glass package.

The examination candidate has insight into the weaker parts of a glass package.

The examination candidate has insight into the possibilities for decorating a glass package and/or adding information to it.

Skills

The examination candidate has the skills to classify defects (cold folds/whittle marks, etc.).

The examination candidate has the skills to detect possible glass defects when there are processing problems.

The examination candidate has the skills to make improvement proposals in the field of glass production and processing.

Attitude

The examination candidate is attentive to new developments in the application of glass in packaging.

2.3 Cardboard

Knowledge

The examination candidate has knowledge of the common types of corrugated board and the various flute designations.

The examination candidate has knowledge of the common types of folding board (duplex) and solid board.

The examination candidate has knowledge of the characteristics of cardboard types (stiffness, modulus, layflatness, compression, etc.).

The examination candidate has knowledge of the most suitable printing technologies and supplementary printing technologies for meeting the requirements for the exterior of a cardboard package.

The examination candidate has knowledge of failure mechanisms of cardboard boxes.

The examination candidate has knowledge of processing characteristics related to material composition and construction of the types of cardboard.

The examination candidate has knowledge of the most important parameters for choosing a suitable cardboard package.

The examination candidate has knowledge of specific aspects of paper and cardboard, like fibre direction, coating, score lines, score channels, glue pockets, etc.

Insight

The examination candidate has insight into the raw materials and additives that have a strong influence on the price and characteristics of the various types of cardboard.

The examination candidate has insight into the various possibilities of execution of cardboard packages and the consequences for the required amount of material.

The examination candidate has insight into common constructions in the cardboard industry.

The examination candidate has insight into the manufacturing processes and the possibilities and restrictions of cardboard types.

The examination candidate has insight into the many possibilities for combining different layers in order to improve the various characteristics, such as strength, stiffness, and appearance.

Skills

The examination candidate has the skills to recognise mistakes that could have been prevented.

The examination candidate has the skills to recognise the various qualities of corrugated board (kraft, test liner, fluting, grey cardboard, the various flute designations, like B flute, E flute, F flute, etc.).

The examination candidate has the skills to distinguish the various types of folding board in general.

The examination candidate has the skills to direct producers in order to prevent mistakes.

2.4 Plastics

Knowledge

The examination candidate has knowledge of the plastics that are common in the world of packaging.

The examination candidate has knowledge of plastic film: the manufacturing technology and application of film extrusion, calendering, blown film extrusion, stretching, shrink film, and bubble wrap.

The examination candidate has knowledge of rigid and semi-rigid packaging: the technology and application of extrusion, extrusion blow moulding, stretch blow moulding, injection moulding, injection blow-moulding, rotation moulding, foaming, and the various types of thermoforming (like vacuum forming).

The examination candidate has knowledge of combinations of product and plastic that do not tolerate each other.

The examination candidate has knowledge of sealing properties of plastic films.

The examination candidate has knowledge of the role plastics play in laminates with other plastics, paper, aluminium, and combinations of materials.

Insight

The examination candidate has insight into the characteristics of the various plastics (e.g. density, E-modulus, tensile strength, melting temperature, polarity) and the possibilities of influencing these by choosing a different manufacturing technology of different additives.

The examination candidate has insight into the application possibilities of the various plastics.

The examination candidate has insight into the costs of the various plastics.

The examination candidate has insight into the manufacturing technologies that can be used to create rigid packaging forms.

Skills

The examination candidate has the skills to evaluate a plastic on its applicability as packaging material based on his/her (basic) knowledge of the chemical composition of the various plastics.

The examination candidate has the skills to evaluate a plastic on its applicability as packaging material based on his/her (basic) knowledge of mechanical and thermal characteristics of plastic film and rigid plastic.

The examination candidate has the skills to name the manufacturing technologies of rigid and semi-rigid packaging.

The examination candidate has the skills to identify (in general) the type of plastic and manufacturing technology at the hand of a package.

The examination candidate has the skills to make a proposal for the composition of a laminate based on the desired material characteristics.

2.5 Biopolymers

Knowledge

The examination candidate has knowledge of the raw materials that are used for the production of biopolymers.

Insight

The examination candidate has insight into the possibilities and limitations of biopolymers as packaging materials.

The examination candidate has insight into the various types of biopolymers and their raw materials.

The examination candidate has insight into the processing characteristics of biopolymers compared with competing materials such as plastics.

The examination candidate has insight into the cost price of biopolymers.

The examination candidate has insight into the environmental characteristics of biopolymers.

The examination candidate has insight into the possible application areas of biopolymers as packaging materials.

Skills

The examination candidate has the skills to explain the advantages and disadvantages of applying biopolymers in a certain situation.

2.6 Metal

Knowledge

The examination candidate has knowledge of the various metal types that are applied in packaging.

The examination candidate has knowledge of common metal plate thickness of the base materials and wall thickness of metal packaging.

The examination candidate has knowledge of the role of the packaging shape on the process the metal packaging goes through (sterilisation, stacking, etc.).

The examination candidate has knowledge of the types of coatings that are applied to metal packaging.

The examination candidate has knowledge of the processing and the surface coatings of metal packaging.

The examination candidate has knowledge of the types of cans.

The examination candidate has knowledge of deep drawing and wall ironing technologies.

The examination candidate has knowledge of joining technologies like welding and seaming.

Insight

The examination candidate has insight into the processing characteristics of steel and aluminium and the mutual differences.

The examination candidate has insight into the application areas of common metal packaging (steel and aluminium).

The examination candidate has insight into the role of beaded edges, ribs, flanges, etc. for the strength and stiffness of metal packaging.

The examination candidate has insight into the necessity of putting surface coatings on metal packaging and into the ways this is done.

The examination candidate has insight into the various ways of putting information on metal packaging (printing, labelling, sleeving, etc.).

The examination candidate has insight into the costs of metal packaging.

Skills

The examination candidate has the skills to recognise types of metal.

The examination candidate has the skills to identify the type of can of a given package.

2.7 Wood

Knowledge

The examination candidate has knowledge of the most common types and qualities of wood that are used in the packaging industry.

The examination candidate has knowledge of common wooden pallets.

Insight

The examination candidate has insight into the possible applications of wood as a packaging material.

The examination candidate has insight into the possibilities and restrictions of wooden packaging and packaging means.

Skills

The examination candidate has the skills to identify the various types of pallets.

3. Packaging technology

3.1 Packaging manufacturing

Knowledge

The examination candidate has knowledge of raw materials of extraction, production, and auxiliary materials.

The examination candidate has knowledge of the processing of raw material to semimanufacture and end product; the manufacturing process.

The examination candidate has knowledge at an operational level of packaging measurements and closures.

The examination candidate has knowledge of the critical points in packages concerning the processing, manufacturing and transportation.

The examination candidate has knowledge of environmental aspects in packaging manufacture.

Insight

The examination candidate has insight at an operational level in respect to the manufacturing of packaging in relation to packaging applications.

Skills

The examination candidate has the skills at an operational level to explain the relationship between packaging type and packaging requirements.

The examination candidate has the skills at an operational level to explain the choice for the construction of a package.

Attitude

The examination candidate is critical about the choice of the packaging type.

The examination candidate is attentive to new developments in packaging manufacturing.

The examination candidate is attentive to the causes of possible problems in packaging manufacturing.

3.2 Packaging converting

Knowledge

The examination candidate has knowledge at an operational level of the packaging converting processes.

The examination candidate has knowledge at an operational level of surface treatments.

3.3 Packaging processing

3.3.1 In general

Knowledge

The examination candidate has knowledge of the components of the packaging line.

The examination candidate has knowledge of the overall operating principles of the components of the packaging line.

The examination candidate has knowledge at an operational level of the general principles of mechanisation.

The examination candidate has knowledge at an operational level of the methods for dosing and weighing.

The examination candidate has general knowledge of the methods and operational principles of machines for forming, filling, and sealing.

The examination candidate has knowledge at an operational level of the various packaging systems.

Insight

The examination candidate has insight into the overall operational principles of the components of a packaging line.

The examination candidate has general insight into the common speeds of packaging lines.

Skills

The examination candidate has the skills to describe a packaging line and name the various sequences at an operational level.

Attitude

The examination candidate is attentive to the developments in the field of packaging lines.

3.3.2 Specific

Knowledge

The examination candidate has knowledge of labelling, printing, and coding.

The examination candidate has knowledge of welding, sealing, and gluing.

The examination candidate has knowledge at an operational level of incoming material control, quality aspects, tolerances, and specifications.

The examination candidate has knowledge at an operational level of the most common defects – critical points.

The examination candidate has knowledge of the printing technologies: relief printing, offset printing, gravure printing, and screen printing.

The examination candidate has knowledge of additional printing technologies like embossing, foil stamping, and applying varnish.

The examination candidate has knowledge of the criteria, guidelines, and considerations for the choice of a printing technology.

The examination candidate has knowledge of environmental aspects with regard to printing, types of ink, prepress, and printing quality.

The examination candidate has knowledge of the various types of adhesives and their characteristics.

The examination candidate has knowledge of the relation between the choice of glue and the force of adhesion.

The examination candidate has knowledge of dispensing systems for adhesives.

Insight

The examination candidate has insight into the possibilities of printing packaging materials/packages and the corresponding critical factors.

The examination candidate has insight into developments in the various printing technologies for packaging materials.

The examination candidate has insight at an operational level into the technical restrictions or processing problems that certain packaging types can have.

The examination candidate has insight into the various types of adhesives for the various packaging materials, products, and applications.

Skills

The examination candidate has the skills to recognise printing technologies on packages, judge prints, and indicate critical points.

The examination candidate has the skills to indicate which type of adhesive is suitable for the various packaging materials.

Attitude

The examination candidate is attentive to trends and developments in packaging printing.

The examination candidate is critical about the choice of printing technology.

4. Business administration

4.1 Marketing

Knowledge

The examination candidate has knowledge of the basic principles of marketing.
The examination candidate has knowledge of the terminology used in marketing.
The examination candidate has knowledge of the role of the communication value of packaging.
The examination candidate has knowledge of the importance of branding.

Insight

The examination candidate has insight into the basic principles of marketing.
The examination candidate has insight into the breadth of the field of marketing.
The examination candidate has insight into the policy, strategies, and objectives that are set by marketing.
The examination candidate has insight into the possibilities of using packaging for marketing objectives.

Skills

The examination candidate has the skills to translate the basic principles of marketing to packaging.
The examination candidate has the skills to function as a discussion partner for the marketer.

4.2 Operational management

4.2.1 Physical distribution

Knowledge

The examination candidate has knowledge at an operational level of transport units.
The examination candidate has knowledge at an operational level of methods of internal transport.
The examination candidate has knowledge at an operational level of methods of external transport.
The examination candidate has knowledge of the collo modular system.
The examination candidate has knowledge of measurements of means of transport in his/her home country and abroad.
The examination candidate has knowledge of types, sizes, and models of pallets and the corresponding advantages and disadvantages.

Insight

The examination candidate has insight at an operational level into the requirements for packaging based on the distribution channel.

Skills

The examination candidate has the skills to evaluate the consequences for distribution of new packaging.
The examination candidate has the skills to indicate the basic form of logistics for each package.
The examination candidate has the skills to indicate the information system a package requires for distribution and to work with this system.
The examination candidate has the skills to set up tracking and tracing for packaged products.

Attitude

The examination candidate is attentive to new developments in the field of distribution.

4.2.2 Product and packaging specifications and procurement

Knowledge

The examination candidate has knowledge at an operational level of the relationships and interdependencies among product, packaging, and marketing.

The examination candidate has knowledge of the basic principles of procurement.

The examination candidate has knowledge of specifications.

The examination candidate has knowledge of the main conditions specifications have to meet.

Insight

The examination candidate has insight into the consequences of product, production process, and means of preservation on packaging requirements.

The examination candidate has insight into the role of functional specifications.

The examination candidate has insight at an operational level into the complex relationship between product, production process, and packaging requirements.

The examination candidate has insight into the importance of good specifications.

Skills

The examination candidate has the skills to read and check specifications for (the procurement of) materials and packaging.

Attitude

The examination candidate is critical about formulating adequate specifications.

5. General skills

Insight

The examination candidate has insight into the importance of good communication.

The examination candidate has insight into improving personal presentation.

The examination candidate has insight into the position of packaging in the organisation and the consequences of this for his/her functioning.

Skills

The examination candidate has the skills to be convincing in attitude and behaviour.

Attitude

The examination candidate has a positive attitude towards group bonding.

The examination candidate is willing to work together in small and large groups in projects and amassing knowledge.

The examination candidate is conscious of his/her own attitude in practice.

6. Additional information

The Examination Requirement NVC Packaging Professional I are based on the Competence Profile Packaging Technologist. The Competence Profile Packaging Technologist can be obtained from Stichting NVC Examens, PO Box 164, 2800 AD, Gouda, the Netherlands.

The regulation and appeals procedure for the exams NVC Packaging Professional are given in the Regulation and Appeals Procedure NVC Packaging Professional.

Stichting NVC Examens is under supervision of Stichting Examenkamer, PO Box 3439, 7301 EK Apeldoorn, the Netherlands.