



Australian Government

Department of Education, Employment and Workplace Relations

HLTOPT401C Perform technical procedures for the production of ophthalmic appliances

Release: 1

HLTOPT401C Perform technical procedures for the production of ophthalmic appliances

Modification History

HLT07 Version 4	HLT07 Version 5	Comments
HLTOPT401B Perform technical procedures for the production of ophthalmic appliances	HLTOPT401C - Perform technical procedures for the production of ophthalmic appliances	Unit updated in V5. ISC upgrade changes to remove legislation and replace with reference legislation. No change to competence

Unit Descriptor

Descriptor

This unit of competency describes the skills and knowledge required perform the required technical procedures to produce ophthalmic lenses

Application of the Unit

Application

The application of knowledge and skills described in this competency unit related to functions necessary for working within optical technology
Work at this level may be undertaken independently or under guidance and/or supervision

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

Employability Skills

This unit contains Employability Skills

Elements and Performance Criteria Pre-Content

Elements define the essential outcomes of a unit of competency.

The Performance Criteria specify the level of performance required to demonstrate achievement of the Element. Terms in italics are elaborated in the Range Statement.

Elements and Performance Criteria

ELEMENT

PERFORMANCE CRITERIA

- | | |
|--|--|
| 1. Interpret <i>prescription</i> details | 1.1 Perform lens calculations correctly
1.2 Check frames against order to ensure correct frame is used
1.3 Select appropriate lens blanks
1.4 Perform <i>basic mathematical operations</i> accurately |
| 2. Operate equipment correctly | 2.1 Verify lens specifications using a focimeter
2.2 Employ correct technique when using marker/blocker
2.3 Use surfacing equipment correctly and in accordance with the manufacturer's recommendations/instructions
2.4 Use hand held tools safely and effectively
2.5 Locate and organise equipment in a convenient, efficient and safe manner |
| 3. Select and/or produce prescribed lenses | 3.1 Perform layout functions effectively
3.2 Complete semi-finished lens surface protection
3.3 Complete blocking techniques accurately
3.4 Inspect surfacing
3.5 Generate lenses to correct curve, prism and thickness
3.6 Conduct surfacing procedures with precision |

ELEMENT

PERFORMANCE CRITERIA

- | | |
|--|--|
| 4. Perform <i>basic lens treatment</i> | 4.1 Prepare lens prior to treatment |
| | 4.2 Apply correct technique to lens treatment |
| | 4.3 Ensure lens treatment complies with Australian Standards |

ELEMENT

PERFORMANCE CRITERIA

- | | |
|---|--|
| 1. 5. Conduct final checking procedures | 5.1 Confirm the lens specification against the prescription prior to delivery |
| | 5.2 Check that the correct type and form of lens used in line with client requirements |
| | 5.3 Check lens treatments for quality |
| | 5.4 Confirm completion of job |

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level required for this unit.

Essential knowledge:

The candidate must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes knowledge of:

- Astigmatic lenses including:
 - how to perform calculations related to the application of astigmatic lenses in optical prescriptions
 - nature of astigmatism
 - the difference between cylindrical and astigmatic lenses
 - various forms of astigmatic lenses
- Drilled rimless frames including mounts and rimless types and equipment needed
- Filter and tinted lens processes including:
 - Australian Standards
 - plastic lens tinting including dyes and tint types, equipment, preparation, problems and solutions
 - transmission testing including equipment and instrumentation, equipment limitations and Australian Standards
- Frame measurement systems including boxing and datum
- Glazing techniques
- Impact resistant safety lenses including:
 - advantages and disadvantages
 - Australian Standards for both general purpose and industrial use

REQUIRED SKILLS AND KNOWLEDGE

- evaluation of materials including glass, CR39, higher index plastics, polycarbonate and laminates
- impact resistance
- impact testing requirements, conditions and procedures
- principles and processing of thermal and chemical toughening
- problems and special lens requirements
- Lens thickness including:
 - affect of prism on lens thickness
 - determining meridian thickness and oblique meridian thickness
 - how to perform calculations related to the application of lenses in optical prescriptions
 - nature of curve variation factor and sagittal thicknesses
 - the different affects of lens indices on thickness
- Light including:
 - calculation of angles of incidence, refraction, deviation and critical angles
 - contemporary theories of light
 - how light is propagated and explain how commonly observed effects may occur
 - various light-induced phenomena

continued ...

REQUIRED SKILLS AND KNOWLEDGE

Essential knowledge (contd):

- Multifocal and progressive lenses including:
 - appropriate formulae when performing calculations related to multifocal and progressive lenses
 - calculation of fused segment and thickness allowance for manufacturing
 - determining addition powers
 - determining powers from radii
 - determining the prismatic effect of multifocal and progressive lenses
 - differences between bifocals, trifocals progressives, and their methods of manufacturing
 - differences between fused and solid multifocals
 - differentiating styles and types of progressive lenses
 - the range of multifocal and progressive lenses available
- Ophthalmic prism including:
 - effects of ophthalmic prism upon the eyes, and the need for ophthalmic prism in prescriptions
 - solving by both calculation and graphical methods, a variety of prism problems
 - the relationship between lens power, decentration and prism
 - the use of a tangent scale to measure ophthalmic prism
- Relevant Australian Standards
- Scope of metal and plastic frame material including heating, manipulation, adjusting, handling and repair
- Spherical lenses including:
 - concepts of vergence and demonstration of its use in optical calculations
 - how to construct diagrams to illustrate image formation using simple ray-tracing techniques
 - refractive effects of a lens as the sum of its two surface powers
 - refractive properties of spherical lens surfaces
- The properties of lens
- The use of impact resistant protective lenses
- Types of ophthalmic lenses and spectacle frames and their performance characteristics
 - Vacuum coatings including:
 - absorptive (tinted) coatings
 - handling, cleaning and care of coatings
 - manufacturing processes
 - multiple layer AR coatings
 - single AR coating
 - surface reflections and ghost images

REQUIRED SKILLS AND KNOWLEDGE

Essential skills

It is critical that the candidate demonstrate the ability to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes the ability to:

- Calculate minimum size uncut (MSU):
 - MSU using centration chart and by calculation to allow for PD and decentration for prism
- Correctly and accurately use a focimeter (lensmeter) including:
 - correct neutralisation
 - determination of powers
 - determination of axes
 - determination of prism
 - determination of centration
 - determination of additions
- Complete semi-finished lens surface protection
- Generate lens surfaces
- Hand edge using both hand bevelling techniques and safety chamfering
- Handle glass and plastic lens material
- Handle metal and plastic frame material
- Interpret grind card calculations
- Take into account opportunities to address waste minimisation, environmental responsibility and sustainable practice issues
- Transpose a prescription
- Undertake a surface inspection
- Undertake digital frame tracing
- Undertake lay out and blocking
- Undertake material selection
- Undertake surface curve finishing
- Use appropriate techniques to inset lens and fit frames
- Use problem solving techniques:
 - reducing unwanted vertical and/or horizontal prism
 - rectifying off-axis lenses

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the

Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate this competency unit:

- The individual being assessed must provide evidence of specified essential knowledge as well as skills
- Observation of actual or simulated workplace performance is essential for assessment of this unit
- Consistency of performance should be demonstrated over the required range of situations relevant to the workplace
- Where, for reasons of safety, space, or access to equipment and resources, assessment takes place away from the workplace, the assessment environment should represent workplace conditions as closely as possible

Context of and specific resources for assessment:

- Resources essential for assessment include:
 - Access to an optical appliance manufacturing workplace

Method of assessment

- Observation in the work place (if possible)
- Written assignments/projects or questioning should be used to assess knowledge
- Case study and scenario as a basis for discussion of issues and strategies to contribute to best practice

Access and equity considerations:

- All workers in the health industry should be aware of access and equity issues in relation to their own area of work
- All workers should develop their ability to work in a culturally diverse environment
- In recognition of particular health issues facing Aboriginal and Torres Strait Islander communities, workers should be aware of cultural, historical and current issues impacting on health of Aboriginal and Torres Strait Islander people
- Assessors and trainers must take into account relevant access and equity issues, in particular relating to factors impacting on health of Aboriginal and/or Torres Strait Islander clients and communities

Related units:

It is recommended that this unit be delivered and assessed in conjunction with:

- HLTOPT406B Edge and fit ophthalmic appliances
- HLTOPT407C Apply surface coatings to ophthalmic lenses

Range Statement

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Prescriptions may include:

- Lens order including electronic, fax, telephone
- Optometrist prescription

Basic mathematical operations must include but is not limited to:

- Base curve
- Front curve
- Prism
- Lens power
- Thickness
- Cut out
- Minimum size uncut

Lens material includes:

- Mineral material
- Organic material

Frame material includes

- Metals
- Plastics

Manufacture of higher powered prescription lenses may include:

- Surfacing techniques for higher prescription lens surfaces
- Surfacing techniques for higher prisms, prescribed and decentered prisms

Routine maintenance may include:

- Regular checking of equipment
- Replacing consumables
- "in-house" cleaning and servicing of equipment according to manufacturer's guidelines
- Periodic servicing by qualified or manufacturer approved technician

Equipment faults or problems may be identified or anticipated by:

- Routine checking of equipment
- Preparation of a maintenance program
- Encouraging feedback from work colleagues
- Regular back-ups of data
- Keeping a log book of detected faults
- Regular occupational health and safety inspections
- Checking that repairs have been carried out

Basic lens treatment may include:

- Tinting including colour and UV
- Glass toughening

Unit Sector(s)

Not Applicable