

OCCUPATIONAL QUALIFICATION STANDARD

Mine Worker, EstQF Level 4

An occupational qualification standard is a document which describes the set of skills, knowledge and attitudes, i.e. competence requirements, needed to successfully accomplish duties. Occupational qualification standards are used for compiling curricula and awarding qualifications.

Occupational title	Level of Estonian Qualifications Framework (EstQF)
Mine Worker, EstQF Level 4	4

Possible specialisation and titles on occupational certificate	
Specialisation	Title on occupational qualification certificate
Underground tunnelling and cleaning	Mine Worker, EstQF Level 4 Underground tunnelling and cleaning
Quarry work	Mine Worker, EstQF Level 4 Quarry work

Part A DESCRIPTION OF WORK

A.1 Description of work
Miners are skilled workers who mine (extract), transport and process mineral resources, extracted mineral matter, soil, etc. using moving mechanisms, technical equipment and mining machinery in enrichment plants and loading complexes. Miners work underground and in quarries or in other similar activities, e.g. constructing underground facilities, foundations, roads and tunnels. The tasks of miners include drilling mountains, removing the material covering mineral resources, preparing blasting operations, combine extraction, propping up the mining area, moving extracted mineral matter and installing lighting equipment, power cables, water disposal pumps and ventilation pipes and/or barriers, if necessary. More specific tasks of miners depend on the technology used in the company. Miners specialise in: 1) underground tunnelling and cleaning in workings, shafts and tunnels; 2) mining areas open for quarry work. A miner specialising in underground work may perform underground electrical and locksmith work if they have acquired special skills through further training. Mine Worker, Level 4 Works independently or as a team member. Performs duties under normal circumstances and is responsible for the results of their work. Related standards: Mine Worker, Level 5 Blaster, Level 3 Blasting Master, Level 4
A.2 Tasks
A.2.1 Handling extracted mineral matter 1. Preparatory work. 2. Loading and transportation. 3. Working with moving mechanisms. A.2.2 Ancillary work for mining

1. Loading and transportation of materials and tools.
2. Construction work.
3. Cleaning up the mined area.

A.2.3 Assembling mining equipment

1. Preparatory work.
2. Assembly and disassembly.
3. Automation.
4. Testing equipment.

A.2.4 Maintenance and repair of mining equipment

1. Maintenance.
2. Identifying and resolving faults.
3. Documentation of maintenance results.

Specialised areas of work

A.2.5 Underground tunnelling and cleaning

1. Prop work and water removal.
2. Drilling blast holes.
3. Removal of extracted mineral matter.
4. Grooving.
5. Installation of ventilation.
6. Processing extracted mineral matter.

A.2.6 Quarry work

1. Drilling blast holes.
2. Removing material covering mineral resources.
3. Prop work.
4. Water removal.
5. Removal of extracted mineral matter.
6. Processing extracted mineral matter.

Elective areas of work

A.2.7 Underground electrical and locksmith work

1. Assembly and maintenance of electrical equipment and networks.
2. Detection and elimination of electrical and mechanical faults.

A.3 Work environment and specific nature of work

Miners work in outdoor and/or underground working conditions. The work environment may be subject to risk of explosion and exposure to noise, vibrations and exhaust and explosive gases is possible. The work environment for underground work may be dark, damp and restricted in size. Due to these hazards, workers must comply with occupational health and safety requirements (wearing special clothing, using personal protective equipment, etc.). Work takes place in shifts, including at night. The work can be physically strenuous, require forced positions and be fast-paced.

A.4 Tools

Mobile, manual and automatic mining equipment and machinery as well as stationary mining equipment.

A.5 Personal qualities required for work: abilities and characteristics

The work requires physical endurance and resilience, spatial awareness, logical thinking, conscientiousness, precision, adaptability, willingness to cooperate and communicate and independence.

A.6 Professional preparation

To become a miner, you can study at a vocational school, on the job or on a training course for adults. In order to perform underground electrical and locksmith work, you must complete further training in the course of which relevant special skills are acquired. People with prior electrician's training or those who have acquired the minimum qualification of Electrician, Level 3 are particularly welcome to participate in further training.

A.7 Most common occupational titles

Mine Worker, miner, quarry or process worker, cleaner, penetrator, underground locksmith/electrician, etc.

A.8 Regulations governing profession

- 1) medical examination, on the basis of the regulation of the Minister of Social Affairs 'Procedure for medical examinations of employees';
- 2) minimum age 18 years, on the basis of the Employment Contracts Act and 'List of occupational hazards and jobs for which the employment of a minor is prohibited';
- 3) driver's licence (category), basis: Traffic Act.

Part B COMPETENCY REQUIREMENTS

B.1 Structure of occupation

Competences B.2.1-B.2.4 and B.2.8 and at least one competence from options B.2.5 and B.2.6 must be certified when applying for the qualification.

Competence B.2.5 must also be certified when specialising in underground tunnelling and cleaning.

Competence B.2.6 must also be certified when specialising in quarry work.

Competence B.2.7 must also be certified when specialising in underground electrical and locksmith work.

B.2 Competences

MANDATORY COMPETENCES

B.2.1 Handling extracted mineral matter	EstQF Level 4
Performance indicators: 1) familiarises themselves with the task and ensures the safety of the work site; 2) drills blast holes with drilling equipment; 3) props up the mining area and removes water; 4) loads the extracted mineral matter onto a vehicle (conveyor, dump truck, etc.) with a loading device; 5) deposits the extracted mineral matter in the storage place based on the special nature of the storage place and the assortment of mineral matter extracted; 6) takes into account the quantity of the extracted mineral matter that has been loaded if the loading device allows; 7) uses sustainable working practices based on working environment and occupational safety requirements; 8) considers mine survey measurements (working area limits); 9) works with at least one of the following mechanisms: a) excavator b) bulldozer c) loader truck d) dumper truck e) drilling machine f) anchor mounting mechanism 10) maintains mechanisms and performs minor repairs.	
Knowledge: 1) types and uses of loading and transport devices; 2) principles of the functioning of the company's transport network; 3) principles of the main technological processes of mining; 4) design and working principles of the machinery and equipment used in the company; 5) principles of the drafting of work documents (quality standards, specifications, instructions, etc.).	
Assessment methods:	

Theory questions, workplace monitoring and conversations	
B.2.2 Ancillary work for mining	EstQF Level 4
Performance indicators: 1) transports materials (lumber and prop material, heating fuel and lubricants) and equipment (spare parts of equipment etc.) to the mining site using appropriate trucks; 2) transports large-gauge cargo, bulldozers, drilling machines and other equipment with trailers; 3) deposits lumber and prop materials following the principles of storage; 4) performs slinging operations; 5) builds wind and water barriers following general construction principles; 6) tidies and arranges the mined area/site.	
Knowledge 1) transport, storage and handling of hazardous substances (e.g. lubricants, oil and liquid fuels).	
Assessment methods: Theory questions, workplace monitoring and conversations	
B.2.3 Assembling mining equipment	EstQF Level 4
Performance indicators: 1) assembles equipment and materials; 2) assembles and disassembles mining machinery, assembly lines, forklifts, electric winches, receiving units, pumping stations, etc. related to the technology used according to the technical documentation. 3) builds cable routes, installs and marks the cables and connects system components. 4) uses and inspects automation and communication devices; 5) visually monitors the technical condition of the assembled equipment to detect and prevent faults.	
Knowledge: 1) principles of the main technological processes of mining; 2) design and working principles of the machinery and equipment used in the company; 3) principles of the drafting of work documents (quality standards, specifications, instructions, etc.); 4) fundamentals of mechanics and electrical engineering; 5) principles and application of automation locking devices, start and stop devices and fire safety automation devices; 6) working principles of automation control systems.	
Assessment methods: Theory questions, workplace monitoring and conversations	
B.2.4 Maintenance and repair of mining equipment	EstQF Level 4
Performance indicators: 1) maintains equipment on a daily basis according to technical documentation and norms; 2) identifies faults, determines their cause and notifies the responsible person; 3) eliminates faults within the limits of their competence; 4) in the event of an accident, deals with the consequences; 5) repairs equipment; 6) is guided by the work documents for equipment (work journals, schedule of planned repairs, reports, etc.); 7) documents the results of maintenance and repair activities in accordance with the company's procedures.	
Knowledge: 1) principles of the main technological processes of mining; 2) design and working principles of the machinery and equipment used in the company.	
Assessment methods: Theory questions, workplace monitoring and conversations	

COMPETENCES RELATED TO SPECIALISATION

Competence B.2.5 must also be certified when specialising in underground tunnelling and cleaning.
 Competence B.2.6 must also be certified when specialising in quarry work.

Underground tunnelling and cleaning

B.2.5 Underground tunnelling and cleaning

EstQF Level 4

Performance indicators:

- 1) penetrates shafts and drift mines;
- 2) extracts the mineral matter from the maintenance and preparation workings;
- 3) props up the workings;
- 4) installs temporary ventilation pipes,
- 5) drills boreholes into the workings with a drilling machine following drilling and blasting passes;
- 6) builds water disposal trenches and shafts;
- 7) grooves both horizontally and vertically;
- 8) works with moving mechanisms and mining machinery;

Assessment methods:

Theory questions, workplace monitoring and conversations

Quarry work

B.2.6 Quarry work

EstQF Level 4

Performance indicators:

- 1) drills blasting holes with a drilling machine into the material covering the mineral resources following drilling and blasting passes;
- 2) removes the blasted material with mining machinery (e.g. bulldozers, loaders and excavators);
- 3) builds trenches and water collectors based on passes and instructions and keeps the structures in working order;
- 4) extracts the mineral matter with moving mechanisms and mining machinery;
- 5) crushes and sorts the extracted mineral matter with mining machinery.

Assessment methods:

Theory questions, workplace monitoring and conversations

OPTIONAL COMPETENCES

Competence B.2.7 must also be certified when specialising in underground electrical and locksmith work.

B.2.7 Underground electrical and locksmith work

EstQF Level 4

Performance indicators:

- 1) installs up to 1000V alternating current and up to 1500V direct current electrical systems, machinery and equipment in underground workings according to current regulations and instructions;
- 2) performs automation work;
- 3) assembles/disassembles mechanical equipment and elements using welding and other connections;
- 4) monitors the technical condition of assembled and installed equipment and maintains equipment;
- 5) identifies faults, determines their cause and notifies the responsible person;
- 6) eliminates potential electrical and/or mechanical faults and the consequences of accidents, if necessary;
- 7) documents the results of maintenance and repair activities in accordance with established procedures;
- 8) complies with work documents (work journals, schedules of planned repairs, reports, etc.).

Knowledge:

- 1) principles of electrical engineering, electronics and automation;
- 2) working principles and application of electric welding, gas cutting and gas welding equipment;
- 3) rules for the use of gas generators and welding torches;
- 4) operation, maintenance and repair instructions of equipment and mechanisms.

Assessment methods:

Theory questions, workplace monitoring and conversations

RECURRING COMPETENCES

B.2.8 Recurring competences of Mine Worker, Level 4	EstQF Level 4
Performance indicators: 1) follows all occupational health and safety, environmental protection, occupational, fire and electrical safety requirements in every stage of their work; 2) uses safety and personal protective equipment (fire-extinguishing equipment, special clothing, etc.) to ensure safety; 3) organises a safe and convenient working site and keeps it clean and tidy; 4) prepares tools, accessories and personal protective equipment in accordance with applicable regulations and instructions; 5) documents the results of the work (e.g. recording the details in the maintenance book); 6) acts in the required manner in emergency situations: forwards information on an ongoing basis, provides first aid, etc.; 7) plans their time and work and observes deadlines; 8) complies with waste treatment requirements; 9) is familiar with legislation concerning the field of mining; 10) sets operational priorities and works effectively even in tense situations; analyses their activities; 11) takes into account principles of energy efficiency, sustainability and preservation of the environment; 12) reads technical documentation and uses professional terminology; 13) develops themselves professionally and keeps up to date with technological innovations; 14) perceives their role in the team and acts in the interests of the team.	
Assessment methods: Recurring competences are assessed in an integrated manner as part of the assessment of the other competences listed in the occupational qualification standard.	

Part C GENERAL INFORMATION AND ANNEXES

C.1 Information concerning compilation and certification of occupational qualification standard and reference to classification of occupations	
1. ID of occupational qualification standard in register of occupational qualifications	07-01112018-1.6.1/5k
2. Occupational qualification standard compiled by:	Sergei Ovsyannikov, Enefit Kaevandused Allan Viil, Enefit Kaevandused Merike Sirendi, Enefit Kaevandused Heini Viilup, Eesti Mäeselts Galina Trofimova, Ida-Virumaa Kutsehariduskeskus Nikolai Malõšev, VKG Oil AS Piret Lilover, SA Innove
3. Occupational qualification standard approved by:	Energy, Mining and Chemical Industry
4. No. of decision of Sectoral Council	12
5. Date of decision of Sectoral Council	01.11.2018
6. Occupational qualification standard valid until	18.10.2023
7. Occupational qualification standard version no.	5
8. Reference to International Standard Classification of Occupations (ISCO 08)	8111 Miners and Quarriers
9. Reference to European Qualifications Framework (EQF)	4
C.2 Occupational title in foreign language	

English:	Mine Worker, EstQF Level 4
English:	Mine worker, miner
Russian:	Горнорабочий
C.3 Annexes	