

OCCUPATIONAL QUALIFICATION STANDARD

Mining Engineer, EstQF Level 6

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)
Mining Engineer, EstQF Level 6	6

Possible specialisation and titles on occupational certificate	
Specialisation	Title on occupational qualification certificate
Opencast mining of mineral resources	Mining Engineer, EstQF Level 6 Opencast mining of mineral resources
Underground mining of mineral resources	Mining Engineer, EstQF Level 6 Underground mining of mineral resources
Mine surveying	Mine Surveyor

Part A DESCRIPTION OF WORK

A.1 Description of work
<p>The aim of a Mining Engineer, Level 6 is to ensure the safe, environmentally sustainable and efficient extraction and processing of mineral resources.</p> <p>A mining engineer is an experienced technical and/or technology specialist who plans and manages processes related to the extraction of mineral resources, including opencast mine survey measurements. Their task is to maintain existing technologies, share resources and take responsibility for the performance of their own work and that of others.</p> <p>They are prepared to assume the role of a leader, work in a team with engineers and specialists from connected fields (construction, geology and mechanics).</p>
A.2 Tasks
<p>A.2.1 Operation of technologies</p> <p>A.2.2 Management</p>
Specialised areas of work
<p>Opencast mining of mineral resources</p> <p>A.2.3 Opencast mining of mineral resources</p> <p>Underground mining of mineral resources</p> <p>A.2.4 Underground mining of mineral resources</p> <p>Mine surveying</p> <p>A.2.5 Mine surveying</p>
A.3 Work environment and specific nature of work
<p>The work is performed in indoor, outdoor and/or underground conditions. They may be exposed to noise, humidity, dust, exhaust and explosive gases, etc. The workload may be distributed unevenly.</p>

A.4 Tools
In addition to the usual office equipment and software, they use professional computer software and tools (marking and measuring tools, etc.) as well as a motor vehicle, if necessary.
A.5 Personal qualities required for work: abilities and characteristics
The work requires precision, analytical skills, decisiveness and adaptability, willingness to cooperate and communicate, spatial awareness and a way of thinking that supports environmentally friendly and sustainable development.
A.6 Professional preparation
Mining Engineer, Level 6 has obtained at least first-level professional higher education. They have professional work experience and have completed further professional training.
A.7 Most common occupational titles
Mining master, mining manager, mining engineer, head mine surveyor, mine surveyor.
A.8 Regulations governing profession
Having a Mining Engineer certificate entitles you to work as a specialist responsible for mineral extraction, or as a mine surveyor within the scope of your specialisation. Basis: Earth's Crust Act.

Part B COMPETENCY REQUIREMENTS

B.1 Structure of occupation
Competences B.2.1, B.2.2 and B.2.6 and at least one competence from options B.2.3-B.2.5 must be certified when applying for the qualification of Mining Engineer, Level 6
Competence B.2.3 must also be certified when applying for the qualification of a mining engineer specialising in the opencast mining of mineral resources.
Competence B.2.4 must also be certified when applying for the qualification of a mining engineer specialising in the underground mining of mineral resources.
Competence B.2.5 must also be certified when applying for the qualification of a mining engineer specialising in mine surveying.

B.2 Competences

MANDATORY COMPETENCES

B.2.1 Operation of technologies	EstQF Level 6
<p>Performance indicators:</p> <ol style="list-style-type: none"> 1. applies knowledge of science, engineering and the field for the use of existing technology: <ol style="list-style-type: none"> a) physics, mathematics, informatics, economics, foreign languages and philosophy; b) material engineering*, visual geometry, technical drawing, mechanical engineering* and hydraulics*; c) applied geology, rock mechanics, drilling and blasting*, mining operations, basics of engineering geodesy and geology, management of the environmental protection of mining and geological and mining risks; 2. selects the most suitable methods for performing a task based on the information available; 3. identifies the causes of deviations and takes more appropriate measures to reach solutions; 4. uses professional software for the intended purpose as well as suitable information and communication technology (ICT) tools and opportunities; 5. observes professional standards and regulations, including environmental protection requirements. <p>*optional for mine surveying specialisation</p>	

B.2.2 Management	EstQF Level 6
Performance indicators: 1. plans and manages the work of the team within their responsibility using appropriate management techniques; 2. maintains balance in the use of resources by ensuring that activities comply with legislation; 3. applies quality and environmental management principles; 4. prepares and adapts documents (reports, instructions, work programmes, etc.) according to the purpose and target audience of the documentation. 5. passes on professional skills and knowledge and coordinates the work of those supervised.	

COMPETENCES RELATED TO SPECIALISATION

Competence B.2.3 must also be certified when applying for the qualification of a mining engineer specialising in the opencast mining of mineral resources.

Competence B.2.4 must also be certified when applying for the qualification of a mining engineer specialising in the underground mining of mineral resources.

Competence B.2.5 must also be certified when applying for the qualification of a mining engineer specialising in mine surveying.

Opencast mining of mineral resources	
B.2.3 Opencast mining of mineral resources	EstQF Level 6
Performance indicators: 1. organises opencast mining and mine processing based on the requirements of the mineral resources and the selected methods and technique; 2. leads and guides land management within the mining claim during mining operations and maintenance based on the requirements of the mineral resources; 3. if necessary, organises the preparation of blasting operations in their company or its subdivision taking into account the specific nature of blasting operations and their impact on the working, natural and social environment; 4. checks compliance with procedures of technological processes, ensuring the operation, use and maintenance of the devices according to standards; 5. participates in mining and excavation field studies, following developments in the field; 6. controls the environmental impact of the mining and processing of mineral resources, guided by the principles of environmental impact management; 7. compiles technical documentation (mining passes, plans and diagrams) based on standard projects using appropriate software; 8. if necessary, participates in the preparation of projects studying mineral deposits, using appropriate software.	

Underground mining of mineral resources	
B.2.4 Underground mining of mineral resources	EstQF Level 6
Performance indicators: 1. organises underground mining based on the requirements of the mineral resources and the selected methods and technique; 2. organises the preparation of blasting operations in their company or its subdivision taking into account the specific nature of underground blasting operations and their impact on the working, natural and social environment; 3. organises ceiling handling, guided by safety requirements; 4. participates in mining and excavation field studies, guided by developments in the field; 5. checks compliance with procedures of technological processes and ensures the operation, use and maintenance of the devices according to standards; 6. compiles technical documentation (mining passes, plans and diagrams) based on standard projects using appropriate software.	

Mine surveying	
B.2.5 Mine surveying	EstQF Level 6
<p>Performance indicators:</p> <ol style="list-style-type: none"> 1. collects the basic data necessary for opencast surveying based on the given task; 2. selects the surveying equipment based on the task, checking their maintenance status; 3. measures the volume of extracted mineral matter and material covering mineral resources per array in accordance with the requirements established in legislation; 4. measures the volume of extracted and transplanted rocks and sediment by applying appropriate measurement techniques; 5. organises and guides the mine surveying carried out by subcontractors according to the task; 6. checks and analyses the conformity of measurement results with standards; 7. makes the necessary calculations and compiles drawings using the appropriate software; 8. documents measurement data and calculation results: completes, compiles and formalises the mine surveying report in accordance with the organisation of work and formatting requirements 	

RECURRING COMPETENCES

B.2.6 Recurring competences of Mining Engineer, Level 6	EstQF Level 6
<p>Performance indicators:</p> <ol style="list-style-type: none"> 1. is guided by the professional ethics and code of conduct of mining engineers (see Annex 1 "Mining engineer's code of ethics"). 2. complies with occupational safety and work environment requirements in their activities; 3. creates a positive environment for communication and selects the appropriate means of communication for the target group; 4. collaborates with specialists in related fields; 5. navigates the various aspects of the profession and keeps up with developments in the industry. 6. maintains and develops their professional skills, including professional communication skills; 7. provides information clearly, logically and in a manner understandable to the target audience; 8. uses a computer in their work according to the base modules and standard module 'Presentation' (see Annex 2 'Computer skills'). 	
<p>Assessment method(s):</p> <p>Recurring competences are evaluated as part of the assessment of the other competences listed in the occupational qualification standard.</p>	

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	07-26042017-2.2/4k
2. Occupational qualification standard compiled by:	Allan Viil, Enefit Heini Viilup, Lemminkäinen Eesti AS Ole Sein, OÜ Inseneribüroo STEIGER Allan Koger, OÜ Inseneribüroo STEIGER Jaan Viru, OÜ Viru Markšeideribüroo Jaan Kallandi, Eesti Geodeetide Ühing Margus Kuk, Mäebüroo Nord OÜ Enno Reinsalu, TTÜ Geoloogia instituut Arno Paikles, Tehnilise Järelevalve Amet Arvi Hamburg, Eesti Inseneride Liit Andrus Stimmer, Eesti Mäeselts

3. Occupational qualification standard approved by:	Energy, Mining and Chemical Industry
4. No. of decision of Sectoral Council	6
5. Date of decision of Sectoral Council	26.04.2017
6. Occupational qualification standard valid until	19.04.2022
7. Occupational qualification standard version no.	4
8. Reference to International Standard Classification of Occupations (ISCO 08)	2146 Mining Engineers, Metallurgists and Related Professionals
9. Reference to European Qualifications Framework (EQF)	6
C.2 Occupational title in foreign language	
English:	Mining Engineer, EstQF Level 6
Russian:	Горный инженер
C.3 Annexes	
Lisa 1 Mining Engineer's Code of Ethics	
Lisa 2 Computer Skills	