



NATIONAL OCCUPATIONAL STANDARD

**PRECAST CONCRETE PRODUCTION LINE OFFICER
LEVEL 4**

REFERENCE CODE / 12UMS0246-4

OFFICIAL GAZETTE DATE - NUMBER / 15.09.2012 – 28412 (Duplicated)

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| Occupation: | PRECAST CONCRETE PRODUCTION LINE OFFICER |
| Level: | 4 ¹ |
| Reference Code: | 12UMS0246-4 |
| Prepared by: | The Turkish Employers Association of Construction Industries (INTES) |
| Verified by: | VQA Construction Sector Committee |
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¹ Occupational Qualification Level is determined as Level 4 in the octal (8) level matrix.

TERMS, SYMBOLS and ABBREVIATIONS

PIPING (ENCASING): Means to place special pipes around the prestressing cable, in prestressed concrete components, during transfer of the tensile force to the concrete, in order to prevent the adherence in sections determined as a result of calculation and which the prestressing is not necessitated to be transferred to the concrete.

STEAM CURING: Means dry or wet application in order to provide early strength to the poured concrete,

GASKET: Means generally the rubber used to prevent the leakage of concrete grout at formwork joints,

EXTERIOR STOCK AREA: Means the open stock area, on which the products are stacked

REINFORCEMENT: Means the bonded status according to the project of the concrete reinforcing steel

FITTINGS: Means the connection element of the prestressing cable in order to prevent outage.

INSTRUCTION SHEET OF DAILY PRODUCTION: Means the document showing the products to be produced daily, prepared by the production engineer

ISCO: International Standard Classification of Occupations,

OHS: Occupational Health & Safety

LIFTING HOOKS: Means components left during the production to assist removing the product from the formwork, during transportation and mounting,

FORMWORK LUBRICATION: Means the application to prevent adhesion of the fresh concrete before pouring into the formwork,

PERSONAL PROTECTIVE EQUIPMENT (PPE): All kinds of tools, instruments, appliances and devices which are worn, put on or hold by the worker and which protect the worker from one or more hazards arising from the work and effect the health and safety of the worker, and which are designed to suit such purpose,

SUPPORTING: Means fixing of prefabricated components on the stock area and during the installation at the described distance,

PRESTRESSING: Means the internal stress, which occurs through the adherence and transfer of components between the reinforced bars and the concrete after hardening of the concrete, applied before pouring the concrete to the high quality reinforced bars, placed into the concrete,

RELEASING THE PRESTRESSING: Means releasing the stretched prestressing cable after pouring the concrete by reaching to a certain level of strength

PIN: Means connection element, placed into the product during production in order to assist the installation,

RISK: Means probability of occurrence of a hazardous event and combination of results.

FRESH CONCRETE: The state of shaping of a newly mixed concrete before hardening,

DANGER: Potential of damage or injury likely to affect the worker or work place and likely to exist in the workplace or to be caused externally,

WIRE ELONGATION: Means the amount of unit elongation in meter of the cables during the prestressing

WARNING SIGNAL: Means the audible or light warning, showing the performance of a dangerous work.

PRODUCTION HALL (INTERNAL HALL): Means the place of production

PRODUCTION PATTERNS (FORMWORK): The element, in which the concrete is poured, giving the necessary shape until the concrete reaches the necessary strength

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INTRODUCTION

National occupational standard titled Precast Concrete Production Line Officer (Level 4) was issued by the Turkish Employers Association of Construction Industries (İNTES) assigned as per the provisions of Occupational Qualifications Authority (VQA) Law No. 5544 and “Bylaw on Drawing up National Occupational Standards” and “Regulation on the Establishment, Duties and Operation Procedures and Principles of the Sector Committees of Occupational Qualification Authority” introduced pursuant to the aforementioned Law.

National occupational standard on precast concrete production line officer (level 4) is considered by asking opinions from relevant institutions and organizations in the sector and approved by Occupational Qualifications Agency Executive Board upon inspection by Turkish Employer’s Union of Construction Industry (İNTES).

INTRODUCTION OF THE OCCUPATION

Definition of the Occupation

The responsible employee for the Production Line of Precast Concrete (level 4), who takes measures regarding occupational health and safety and environment, carries out work organization relating his occupation, performing preparation works before production of precast concrete components, carries out production and after production processes and takes part in necessary activities for the occupational development.

Place of the Occupation in International Classification System

ISCO 08: 7114 (Concrete placers, concrete finishers and related workers)

Regulations on Health, Safety and Environment

Labor Law No. 4857

Social Security and General Health Insurance Law No.5510

Occupational Health and Safety Law No. 6331

By Law on Heavy and Dangerous Works

By Law on the Safety and Health Markings

By Law on the Health and Safety Conditions when using Business Equipment

Occupational Safety and Health Regulation

By Law on the Usage of Personal Protective Equipment in the Business Places

By Law on Occupational Health and Safety in Construction Works

By Law on Health and Safety in Construction Works

Regulation on Control of Hazardous Wastes

Furthermore, it is essential to obey laws, statutory rules and regulations on occupational health and safety and environment; and to perform risk analysis regarding this issue.

Other legislation relating to the occupation

TS EN 13198 Precast Concrete Products - Household furniture and garden products

TS EN 13369 Precast Concrete Products – General Rules

TSE K 118 Precast Reinforced Concrete Construction Elements – Quality Management Systems

Furthermore, it is essential to obey laws, statutory rules and regulations on occupation.

Working Environment and Conditions

The work environment of the employee for the Production Line of Precast Concrete (level 4) is usually hot, dangerous, dusty, relatively dirty and necessitate well- ventilated conditions. It may be necessary to work outdoors and in high places such as in the workshop. There are risks of accident and getting injured during performance of works and these require being taken of measures regarding occupational health and security.

Other Requirements Regarding the Occupation

The employee for the Production Line of Precast Concrete (level 4), shall not have height phobia and have the report of “employment and periodical inspection of heavy and dangerous works”

OCCUPATIONAL PROFILE

Duties, Tasks and Performance Criteria

| Duties | | Tasks | | Performance Criteria | |
|--------|--|-------|---|----------------------|---|
| Code | Name | Code | Name | Code | Description |
| A | Performing work organization (continues) | A.1 | To take measures towards occupational health and safety | A.1.1 | Has knowledge about risk factors in the work environment |
| | | | | A.1.2 | Uses necessary PPEs for occupational health and safety |
| | | | | A.1.3 | Informs the authorized person regarding the troubles, which could constitute problems |
| | | | | A.1.4 | Avoids behaviors, which could cause accident, pays attention to and complies with measures |
| | | | | A.1.5 | Ensures that only related persons are present at the worksite |
| | | | | A.1.6 | Keeps ready first aid kit and fire extinguisher |
| | | | | A.1.7 | Takes with the communication devices (wireless, telephone etc.) |
| | | | | A.1.8 | Does the necessary safety equipment control at the workplace according to the instructions of the work safety expert. |
| | | | | A.1.9 | Ensures keeping the work areas clean and tidy. |
| | | | | A.1.10 | Uses safety belts when working at high places and places where it is difficult to ensure stability |
| | | | | A.1.11 | Takes necessary measures against the danger of fire |
| | | | | A.1.12 | Provides keeping the dangerous materials at a safe place |
| | | | | A.1.13 | Appropriates materials of occupational health and safety and keeps in closed areas. |

| Duties | | Tasks | | Performance Criteria | |
|--------|------------------------------|-------|---|----------------------|--|
| Code | Name | Code | Name | Code | Description |
| A | Performing work organization | A.2 | To take information regarding the work to be done | A.2.1 | Takes information written or verbally from the related authorities regarding the work to be performed. |
| | | | | A.2.2 | Determines the program regarding the work |
| | | | | A.2.3 | Reports the daily works to the superiors |
| | | A.3 | Provides replacing missing materials for their stocks | A.3.1 | Informs the authorized persons regarding stock levels of the row material and auxiliary materials in the matter of purchase demand. |
| | | A.4 | To contribute decreasing of environmental risks | A.4.1 | Does the necessary separation and classification for recycling of recyclable materials |
| | | | | A.4.2 | Separates dangerous and hazardous materials from other materials according to the instructions and ensures storages by taking necessary precautions. |
| | | A.5 | To apply technical procedures to ensure quality | A.5.1 | Applies technical procedures to ensure quality according to the type of work |
| | | | | A.5.2 | Provides fulfillment of quality conditions during procedures. |

| Duties | | Tasks | | Performance Criteria | |
|--------|---|-------|---|----------------------|---|
| Code | Name | Code | Name | Code | Description |
| B | Doing precursory controls before production | B.1 | To perform necessary controls before starting of production | B.1.1 | Does visual controls of row materials and auxiliary materials |
| | | | | B.1.2 | Controls the appropriateness of the auxiliary materials from the production |
| | | | | B.1.3 | Controls the right amount of auxiliary materials to be used in the production of pieces. |
| | | | | B.1.4 | Controls the measurements of the auxiliary materials |
| | | B.2 | To ensure preparation of the formwork before starting of production | B.2.1 | Ensures cleaning of production formworks, lubrication and sealing according to the instructions of related work. |
| | | | | B.2.2 | Controls the appropriateness of the sizes of the production formworks to the project according to instructions. |
| | | | | B.2.3 | At the ends of the shifts, keeps the reinforced formwork of the standard components ready for continuous casting. |

| Duties | | Tasks | | Performance Criteria | |
|--------|---|-------|---|----------------------|---|
| Code | Name | Code | Name | Code | Description |
| C | Performing the production procedures (To be continued) | C.1 | Performs production according to instructions, procedures and quality plans. | C.1.1 | Does the production of products according to instructions, procedures and quality plans |
| | | | | C.1.2 | Informs the shift personnel in the night shift system regarding the appropriateness to the production instructions, ensures the continuity of the production without delay. |
| | | | | C.1.3 | Controls the appropriateness of the auxiliary materials with the instructions given |
| | | C.2 | Provides preparing of reinforcement according to the project | C.2.1 | Provides preparing of reinforcement according to the project |
| | | | | C.2.2 | Ensures correct placement of reinforcements, prepared according to the project to the formwork. |
| | | | | C.2.3 | Pours the concrete coming from plant according to related work instructions and regulations and does or ensures the vibration. |
| | | | | C.2.4 | Does the surface jiggling and glazing of the completed application. |
| | | | | C.2.5 | Ensures closing of curing blankets before curing as to prevent steam leakage. |
| | | C.3 | Ensures removing the personnel around from the areas when the warn signal is given during the prestressing procedure. | C.3.1 | Ensures removing the personnel around from the areas when the warn signal is given during the prestressing procedure. |
| | | | | C.3.2 | Controls whether the fixing parts are used correctly |
| | | | | C.3.3 | If there is piping (encasing) in the project, controls the placement and lengths. |
| | | | | C.3.4 | Finds out the strength of taking out of the prestressed components from the formwork and ensures cutting of prestressing wires |
| | | | | C.3.5 | Ensures procedures of prestressing release (transfer) after prestressing and curing at prestressed works. |

| Duties | | Tasks | | Performance Criteria | |
|--------|--------------------------------------|-------|--------------------------------------|----------------------|--|
| Code | Name | Code | Name | Code | Description |
| C | Performing the production procedures | C.4 | To do controls during the production | C.4.1 | Does the control of reinforcement according to the project |
| | | | | C.4.2 | Before and/or after pouring of concrete, controls the placement of anchorages mounted on the reinforcement according to the project |
| | | | | C.4.3 | Controls the vibration and placement of the concrete during pouring of the concrete |
| | | | | C.4.4 | Ensure correct covering of components in state of fresh concrete, placed in the formwork for steam curing. |
| | | | | C.4.5 | Ensures placement of lifting hoists and pins into the product according to the instructions. |
| | | | | C.4.6 | In extraordinary and emergency situations, takes all necessary precautions and informs the related persons. |
| | | | | C.4.7 | Informs the responsible persons about inappropriateness of the produced applications in time and does corrective actions with the work team. |

| Duties | | Tasks | | Performance Criteria | |
|--------|---|-------|---|----------------------|---|
| Code | Name | Code | Name | Code | Description |
| D | Performing the procedure after production | D.1 | To do controls of the produced components | D.1.1 | Does the marking of the produced components in described format. |
| | | | | D.1.2 | Does necessary repairs and corrections regarding the produced applications, together with the work team according to the instructions. |
| | | D.2 | To prepare reports regarding the works done | D.2.1 | Prepares daily production reports and submits to the superiors. |
| | | | | D.2.2 | Writes the amount of waste concrete of the previous shift, based on the line in the daily production report. |
| | | D.3 | To ensure cleaning of environment | D.3.1 | Ensures cleaning of production line and area |
| | | | | D.3.2 | Provides separation and collection of solid wastes according to their types at the stations and ensures sending to the waste disposal plants. |

| Duties | | Tasks | | Performance Criteria | |
|--------|---|-------|---|----------------------|---|
| Code | Name | Code | Name | Code | Description |
| E | Providing transfer of the products to the stock areas | E.1 | To prepare produced components for transport | E.1.1 | Ensures taking of the products, which are removed from the formwork in steady condition and timely to the stock area. |
| | | | | E.1.2 | Informs the responsible person about the defective production or components damaged during removing. |
| | | E.2 | Provides transfer of the construction components to the vehicle | E.2.1 | Determines the loading amount of the construction components according to their types and instructions. |
| | | | | E.2.2 | Ensures appropriate supporting of the produced components for the vehicle. |

| Duties | | Tasks | | Performance Criteria | |
|--------|--|-------|--|----------------------|---|
| Code | Name | Code | Name | Code | Description |
| F | Taking part in the occupational development activities | F.1 | to do activities in terms of individual occupational development | F.1.1 | Takes part in the trainings regarding basic features of machines, work benches and devices and keeps the certificates of these trainings. |
| | | | | F.1.2 | Follows up new technologies and developments related with the profession. |
| | | F.2 | To give Occupational training to his inferiors and other employees | F.2.1 | Shares his/her knowledge and experience with his/her colleagues. |
| | | | | F.2.2 | Instructs themes related with the profession according to the levels |

Tools, Appliances and Equipment Used

1. Open end wrench
2. Breakdown Report Form
3. Steam valves
4. Ratchet Wrench
5. Ropes in various sizes (steel)
6. Casting bucket
7. Casting monitoring form
8. Daily production report
9. Progress form
10. Air gun
11. Formwork scraping materials (scraper, barrow, etc)
12. Formwork cleaning materials (brushes, sponge, cloth, detergent, etc.)
13. Moulds
14. Chisel
15. Ashlar Stone Engine
16. Personal protective equipment (helmet, protective glove, ear protectors, steel toe shoes, luminous vest, safety belt, dust glasses, dust mask, protective clothes and etc.)
17. Convector
18. Shovel
19. Trowels
20. Locker
21. Leverage
22. Mechanical concrete crusher and bits
23. Measuring tools and equipment (rule, etc)
24. Bottle vibrator
25. Radio
26. Vibrating gauge
27. Torque wrench
28. Oil pump

Knowledge & Skills

1. Knowledge on emergency case
2. Knowledge on tools, apparatus and equipment
3. Basic first aid knowledge
4. Ability of working in a team or an organization
5. Knowledge on occupational health & safety
6. Knowledge on railway signs
7. Knowledge on the work site operation procedures
8. Knowledge on use of user's guide, handbook and maintenance book
9. Knowledge on curing
10. Knowledge on materials
11. Skill of estimating distance and weight
12. Knowledge on legal regulations regarding the occupation
13. Knowledge of Occupational terms
14. Skill of organization
15. Skill of learning and being able to share what he learned
16. Knowledge on precast
17. Knowledge on design reading
18. Skills of oral and written communication
19. Knowledge on standard materials
20. Knowledge of using carrying and lifting equipment in safely manner
21. Knowledge on basic Labor legislation
22. Knowledge on fire fighting techniques and use of fire-extinguisher

Attitudes and Behaviors

1. To be cold blooded and calm under emergency and stressful situation
2. To decide within the scope of his knowledge and experience
3. To use her/his time effectively and efficiently in accordance with work orders
4. To adopt regulations set forth in environmental, quality, and OHS legislation
5. To be open to change and to adapt to changing conditions
6. To be in harmony with the team
7. To take care of human relations
8. To have working discipline
9. To obey the working principles of the workplace
10. To pay attention to the usage of tools, appliances and equipments belonging to workplace
11. To pay attention to quality
12. To be willingful to improve himself/herself
13. To ensure his/her own safety and safety of other people
14. To have professional ethics
15. To be planned and organized
16. To be sensitive to issues of risk and hazard factors
17. To know his/her responsibilities and to fulfill the same
18. To learn instructions and guides and to comply them meticulously
19. To react effectively, rapidly and correctly within his area of work in cases of emergency
20. Taking care of cleanness, tidiness, and order of workplace
21. To share information effectively, openly and accurately in shift changes
22. To inform concerned people about the defects which are not under his/her authority

TESTING, ASSESSMENT and CERTIFICATION

Testing and assessment for certification with respect to national qualifications based on Precast Concrete Element Production Officer (Level 4) Occupational Standard shall be held in written and/or oral forms, theoretically and practically, in testing and assessment centers where required conditions are met.

Testing and assessment method and practice principles shall be detailed with national qualifications to be drawn up pursuant to this occupational standard. Activities regarding testing, assessment and certification shall be conducted within the framework of Occupational Qualification Authority, Testing and Certification Regulation.

ANNEX: Institutions Participated In the Occupational Standard Preparation Process

Professional Standards Team of Institution Preparing Professional Standard

| | |
|--------------------|---------------------------------|
| H.Necati ERSOY | İNTES – Secretary General |
| Dr. Aytekin AKAGÜN | İNTES – Civil Engineer MSC |
| Aslı KARATEKİN | İNTES – Project Manager |
| Gülesen BAL | İNTES – Operator |
| Sevil Buket ATAR | İNTES – Construction Technician |

Technical Work Group Members

| | |
|---------------|--|
| Alper Uçar | Turkish Prefabrication Union – Civil Engineer |
| Dolunay Çapan | Afaprefabrik A.Ş. – Civil Engineer |
| İlker Sezan | Kam Ankara Beton San. Inc. – Civil Engineer |
| Kenan Çelik | Kam Ankara Beton San. Inc. –Physics Engineer |
| Orhan Manzak | Yapı Merkezi Prefabrikasyon A.Ş. – Senior Civil Engineer |

People, Institutions, and Organizations Asked for Opinion:

Afaprefabrik Prefabrike Beton San. Tic.A. Ş.
Ankara Chamber of Industry
Ankara Chamber of Commerce
Concrete Agent Manufacturers Union
Bosphorus University, Faculty of Engineering, Department of Civil Engineering
Directorate General of State Hydraulic Works, Department of Project and Civil Works
Dokuz Eylül University, School of Engineering, Department of Civil Engineering
Gazi University, Faculty of Technology
Chamber of Civil Engineers, Ankara Branch
İstanbul Technical University, Faculty of Civil Engineering, Department of Civil Engineering
KAM Ankara Beton Sanayi A.Ş.
Karadeniz (Blacksea) Technical University, School of Engineering, Department of Civil Engineering
Foundation of Supporting Occupational Training and Small-Scale Industry
Middle East Technical University, Faculty of Engineering, Department of Civil Engineering
Ministry of Labor & Social Security, Center for Labor & Social Security Training and Research, ÇASGEM
Ministry of Labor and Social Security General Directorate of Occupational Health and Safety
Ministry of Labor & Social Security, Social Security Institution's Directorate of Construction and Property Affairs
Turkish State Railways, TCDD – Directorate of Construction and Property Affairs
Ministry of National Education, Directorate of Educational Research and Development
Ministry of National Education, General Directorate of Apprenticeship and Non-Formal Education
Ministry of National Education, General Directorate of Technical Education for Boys
Ministry of Transportation, General Directorate of Highways
Board of Higher Education (YOK)
Ministry of Public Works and Settlement, General Directorate of Construction
Turkish Accreditation Agency, TÜRKAK
Association of Turkish Consulting Engineers and Architects- TMMMB
Turkish Cement Manufacturers' Association
Confederation of Turkish Tradesmen and Craftsmen, TESK
Turkish Ready Mixed Concrete Association
Turkish Construction Contractors Union, TİM-SE
Confederation of Turkish Trade Unions, TÜRK-İŞ
Turkish Confederation of Employer Associations, TİSK
Turkish Contractors Association, TMB
Turkish Union of Chambers and Exchange Commodities, TOBB
Turkish Prefabrication Union
Turkish Official Sector of Construction Contractors Union, TÜRK-İNŞA
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Turkish Union of Road Construction and Building Workers, YOL-İŞ
Yapı Merkezi Prefabrikasyon A.Ş.
Federation of Building Products Manufacturers
Yıldız Technical University, School of Engineering, Department of Civil Engineering

Sector Committee Members and Experts

| | | |
|-----------------------|------------------------------------|---|
| Mustafa DEMİR, | President | Turkish Confederation of Employer Associations |
| Ekrem DİRİER, | Vice President | Ministry of National Education |
| Ahmet Emin YİĞİT, | Member | Member (Ministry of Environment and Urban Planning) |
| Kemal AYDOĞAN, | Member | Ministry of Labor and Social Security |
| Abdülkadir YILMAZ, | Member | Ministry of Communication |
| Can BALKAYA, | Member | Board of Higher Education (YOK) |
| H.Necati ERSOY, | Member | Turkish Union of Chambers and Exchange Commodities (TOBB) |
| TOBB) Mustafa ARSLAN, | Member | Confederation of Turkish Tradesmen and Craftsmen (TESK) |
| Hacı ÜSTÜNDAL, | Member | HAK Trade Unions Confederation |
| Aylin RAMANLI | Member | Occupational Qualification Authority |
| Firuzan SİLAHŞÖR, | Department Head | Occupational Qualification Authority |
| Sinan GERGİN, | Representative of Sector Committee | (Directorate Manager of the Disabled and Elder Services) |

Executive Board

| | | |
|------------------------------|----------------|--|
| Bayram AKBAŞ, | President | Representative of Ministry of Labor and Social Security |
| Prof. Dr. Oğuz BORAT, | Vice President | Representative of Ministry of Education |
| Ass. Prof. Dr. Ömer AÇIKGÖZ, | Member | Representative Board of Higher Education |
| Prof. Dr. Yücel ALTUNBAŞAK, | Member | Representative of Professional Organizations |
| Dr. Osman YILDIZ, | Member | Representative of Confederation of Turkish Trade Unions |
| Celal KOLOĞLU, | Member | Representative of Turkish Confederation of Employer Associations |