

Revised Application Documentation: Version 4 /28 May, 2015

QUALIFICATION FILE – CONTACT DETAILS OF SUBMITTING BODY

Name and address of submitting body:

Food Industry Capacity & Skill Initiative (FICSI)
Federation House
1, Tansen Marg
New Delhi - 110001

Name and contact details of individual dealing with the submission

Name: Ms. Mallika Verma

Position in the organisation: Chief Executive Officer

Address if different from above: Address same as above

Tel number(s): 9891272185

E-mail address: ceo.ficsi@ficci.com

List of documents submitted in support of the Qualifications File

1. Career Map of Cold Storage Technician - Annexure 1
2. Qualification Pack of Cold Storage Technician - Annexure 2
3. List of QP/NOS validating companies – Annexure 3
4. NSDC Human Resource and Skill Requirement study – Annexure 4

QUALIFICATION FILE SUMMARY

Qualification Title	Cold Storage Technician (FIC Q7004)		
Body/bodies which will assess candidates	Mettl, Stamp, IQAG, Skills Mantra, Aspiring Mind		
Body/bodies which will award the certificate for the qualification.	Food Industry Capacity & Skill Initiative (FICSI)		
Body which will accredit providers to offer the qualification.	Food Industry Capacity & Skill Initiative (FICSI)		
Occupation(s) to which the qualification gives access	Cold Storage Technician		
Proposed level of the qualification in the NSQF.	Level 4		
Anticipated volume of training/learning required to complete the qualification.	240 hours		
Entry requirements / recommendations.	Preferably Class 12/ Diploma /ITI with certification in refrigeration		
Progression from the qualification.	Supervisor (Cold Storage) (Level 5)		
Planned arrangements for RPL.	RPL arrangements and policies are under development.		
International Comparability	Not done as yet.		
Formal structure of the qualification			
Title of unit or other component (include any identification code used)	Mandatory/ Optional	Estimated size (learning hours)	Level
FIC/N7010 Prepare and maintain work area and refrigeration requirements	Mandatory	16	4
FIC/N7011 Handle cold storage facility for storing food	Mandatory	176	4
FIC/N7012 Complete documentation and record keeping related to the cold storage facility	Mandatory	16	4
FIC/N9003 Food safety, hygiene and sanitation for storage	Mandatory	32	Common across levels

Please attach any document giving further detail about the structure of the qualification – e.g. a Curriculum or Qualification Pack.

Give details of the document here:

1. Qualification Pack of Cold Storage Technician - Annexure 2

SECTION 1

ASSESSMENT

Name of assessment body:

If there will be more than one assessment body for this qualification, give details.

The assessment bodies include Mettl, Stamp, IQAG and Skills Mantra, Aspiring Mind

Will the assessment body be responsible for RPL assessment?

Yes

Give details of how RPL assessment for the qualification will be carried out and quality assured.

The RPL assessment will be based on the approved Qualification Pack and Assessment Criteria mentioned in the Qualification Pack.

Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, consistent and fair and show that these are in line with the requirements of the NSQF:

Assessment will be done through third parties who will be affiliated to FICSI as an Assessment Body.

The assessment plan will contain the following information:

- What will be assessed, i.e. the competency based on each NOS
- How assessment will occur i.e. methods of assessment
- When the assessment will occur
- Where the assessment will take place i.e. context of the assessment (workplace/simulation)
- Criteria for decision making i.e. those aspects that will guide judgements
- Where appropriate, any supplementary criteria would be used to make a judgement on the level of performance

The assessment would be conducted through theory, viva voce and practical.

Please attach any documents giving further information about assessment and/or RPL.

Give details of the document(s) here:

ASSESSMENT EVIDENCE

Complete the following grid for each grouping of NOS, assessment unit or other component as listed in the entry on the structure of the qualification on page 1.

<u>CRITERIA FOR ASSESSMENT OF TRAINEES</u>
Job Role: Cold Storage Technician
Qualification Pack: FIC/Q7004
Sector Skill Council: Food Industry Capacity & Skill Initiative (FICSI)

Guidelines for Assessment:

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5. To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

Assessable Outcomes	Assessment Criteria	Total Marks	Out Of	Theory	Skills Practical
1. FIC/N7010 (Prepare and maintain work area and refrigeration requirements)	PC1. Clean and maintain the cleanliness of the work area using approved sanitizers and keep it free from dust, waste, flies and pests		25	10	15
	PC2. Ensure that the work area is safe and hygienic for food processing		10	3	7
	PC3. Dispose waste materials as per defined SOP's and industry requirements		15	5	10
	PC4. Check the working and performance of all equipments used in storage facility such as		15	7	8

	compressor, condenser, evaporator, fans, sensors, thermostat, humidity meter, etc.				
	PC5. Clean the equipments used with approved sanitizers following SOP		20	5	15
	PC6. Attend minor repairs/faults of all equipments, if required		15	5	10
		Total	100	35	65
2. FIC/N7011 (Handle cold storage facility for storing food)	PC1. Interpret technical drawings, inspect the location for setting up refrigeration unit, install condensing unit, mount evaporation coil evaporator		3	1	2
	PC2. Install piping following industry refrigeration guidelines and applicable codes to ensure proper operation of the refrigeration system, check all wiring connections		3	1	2
	PC3. Calculate the number of temperature sensors required for the cold storage facility, identify location to place the sensors and place in relevant locations within the cold storage facility to obtain precise reading		3	1	2
	PC4. Charge refrigerant from supply tank to compressor determining charging level through weight and sight glass indication		3	1	2
	PC5. Perform pre-start up checks by verifying sufficient refrigerant is charged, electrical connections are tight, wiring and piping are properly routed and secured, compressor mounting bolts are proper, fan motors and mounting brackets are tight, condensing unit base and evaporator coil are properly secured		3	1	2
	PC6. Start the refrigeration system and check the compressor discharge and suction pressures to ensure		3	1	2

they are in the normal operating range, check the liquid line sight glass for proper refrigerant charge, monitor the compressor oil level and add oil if necessary to maintain required level			
PC7. Check the voltage and amperage at the compressor terminals, check the piping and electrical connections for vibration	3	1	2
PC8. Check fans on the evaporator coil and condensing unit (for air-cooled condenser) to ensure they are operational and turning in the correct direction, check cooling tower (for water-cooled condenser), ensure there is no refrigerant leakage	3	1	2
PC9. Set the defrost control/timer clock to required time and verify the defrost initiation settings, set temperature control to desired temperature range	3	1	2
PC10. Check the functioning and performance of sensors and temperature measuring device	3	1	2
PC11. Read and understand the work order from the supervisor	3	1	2
PC12. Check all the features of the cold storage facility, operation of the cooling equipment and ensure readiness	3	1	2
PC13. Calibrate temperature and humidity measuring instruments of the storage facility	3	1	2
PC14. Receive food for storage, check the quality of product to be stored in cold storage facility through physical parameters, check the packaging of the product	3	1.5	1.5
PC15. Adjust controls to set storage parameters such as temperature and humidity required for the food of the cold storage	5	2	3

room/chamber following the storage parameter chart, check readings to ensure set storage parameters has reached or make required adjustments or set controls in the plc and monitor system (in case of computerized cold storage units)				
PC16. Weigh and check the temperature of food, transfer it to the cold storage room and load in the racks either manually or using forklift following SOP		3	1	2
PC17. Check the temperature in cold storage room between the cartons on a pallet or between packages inside a carton to ensure proper air circulation		3	1	2
PC18. Observe temperature and humidity and adjusts controls to maintain storage parameters during the entire storage period		3	1	2
PC19. Check temperature of air and stored food periodically for conformance to specifications and standards		3	1	2
PC20. Inspect the storage products periodically for decay, mold growth, sprouting, shrivelling, etc.		3	1	2
PC21. Unload stored product immediately after specified storage period and check temperature and weight		3	1	2
PC22. Check the quality of the food from the storage facility through product temperature, and check for shrivelling of agricultural produce, freezer burns, mold growth, deterioration, etc.		3	1.5	1.5
PC23. Report any malfunction to the supervisor and implement the suggested corrective action immediately		2	1	1

PC24. Conduct periodic inspection of refrigeration system and components for correct operation, observe operating condition and need for repair or adjustment		3	1	2
PC25. Detect refrigerant leak through system pressure, temperature, recharge volume liquid level etc, to repair recover refrigerant, inspect, rectify and recharge the refrigerant		3	1	2
PC26. Identify malfunction of components, dismantle, repair and replace faulty components		3	1	2
PC27. Reassemble components, test for correct operation, charge system with correct refrigerant, ensure correct operation of the equipment		3	1	2
PC28. Ensure equipment is running efficiently and the required operating conditions are maintained in the cold store chambers for operational requirements		3	1.5	1.5
PC29. Ensure periodic maintenance of refrigeration system and components following SOP		1	0.5	0.5
PC30. Check the evaporators for ice accumulation/proper defrosting, wash evaporator coils to remove dust and foreign materials drawn into the fins		2	0.5	1.5
PC31. Check evaporator and condenser fan blades for fractures, clean the fan blades, replace worn blades and tighten the fan set screws, lubricate fan motors, replace fan motor if required		2	0.5	1.5
PC32. Check for the operation of defrost controls, ensure defrost heaters are in the correct position for maximum heat transfer to the evaporator coil, check the voltage at each heater terminal and		2	0.5	1.5

	ensure heater terminals are in good condition			
	PC33. Remove foreign materials from the drain pan, check the drain line heater (in case of maintaining freezing temperature)	1	0.5	0.5
	PC34. In compressor unit, replace worn condenser motor, check all electrical components and replace damaged wirings and tighten all electrical connections, check and ensure functioning of pressure controls and safety controls, check oil level, ensure working of solenoid valves, check operation of cold room temperature thermostat and clean condenser periodically	4	1	3
	PC35. Check condition of refrigerant line insulation and replace if necessary, check refrigerant level in the system, ensure no refrigerant leak	3	1	2
	Total	100	35	65
3.FIC/N7012 (Complete documentation and record keeping related to the cold storage facility)	PC1. Document and maintain records of all incoming food to the storage room/facility, types and varieties of food, weight of food, farmer/vendor details, grown area / geographical location, receiving date, label details such as date of manufacture, date of expiry, quality parameters, date of loading in cold storage facility, intended storage period, outgoing date, type of packaging, loading pattern, storage location within the cold storage unit, etc. following SOP	10	6	4
	PC2. Document and maintain records of all outgoing food from the cold storage facility such as type and varieties of food, weight of food, actual storage period, losses from incoming to outgoing period, quality of food during unloading from cold storage unit, packaging	5	3	2

condition, etc. following SOP			
PC3. Maintain record of observations (if any) related to storage	5	3	2
PC4. Load the details in ERP system for future reference	5	3	2
PC5. Verify the documents and track details in cases of concerns	10	6	4
PC6. Document and maintain records of parameters such as temperature, relative humidity of the food before loading in the cold storage facility, during storage period and during unloading from the storage facility for each food stored following SOP	15	9	6
PC7. Document and maintain records of parameters such as temperature, relative humidity of the cold storage room/facility before loading, during storage and during unloading following SOP	10	6	4
PC8. Maintain record of observations or deviations (if any) related to storage parameters	5	3	2
PC9. Load the details in ERP system for future reference	5	3	2
PC10. Verify the documents and track details in cases of concerns	5	3	2
PC11. Document and maintain records of the technical drawings of cold storage room/chamber, refrigeration system and components, electrical lines, etc.	3	2	1
PC12. Document and maintain records of refrigeration system such as type of refrigeration unit, type of refrigerant, quantity of refrigerant used, cooling system followed, component details such as type of compressor, condenser, evaporator, fans etc following SOP	7	4	3
PC13. Document and maintain records	5	3	2

	of operating conditions of cold storage room by recording temperature of food and air in the cold storage room/chamber, compressor pressure, ice formation etc				
	PC14. Document and maintain records of preventive maintenance, routine checks, inspections, faults identified, repairs, replacements, refrigerant leak, recharge, quantity and kind (new, reused or recycled etc of refrigeration system and components following SOP		4	2.5	1.5
	PC15. Maintain record of observations or deviations (if any)		2.5	1.5	1
	PC16. Load the details in ERP system followed by the organisation for future reference		2.5	1.5	1
	PC17. Verify the documents and track details in cases of concerns		1	0.5	0.5
		Total	100	60	40
4. FIC/N9003 (Food safety, hygiene and sanitation for storage)	PC1. Comply with food safety and hygiene procedures followed in the organisation		5	2	3
	PC2. Ensure personal hygiene by using of gloves, hairnets, masks, ear plugs, goggles, shoes, etc.		6	1	5
	PC3. Ensure hygienic production of food by inspecting raw materials, ingredients, finished products, etc. For compliance to physical, chemical and microbiological parameters		5	2	3
	PC4. Pack products in appropriate packaging materials, label and store them in designated area, free from pests, flies and infestations		10	4	6
	PC5. Clean, maintain and monitor food processing equipment periodically, using it only for the		5	2	3

specified purpose			
PC6. Use safety equipment such as fire extinguisher, first aid kit and eye-wash station when required	10	4	6
PC7. Follow housekeeping practices by having designated area for materials/tools	5	2	3
PC8. Follow industry standards such as GMP and HACCP and product recall process	10	4	6
PC9. Attend training on hazard management to understand types of hazards such as physical, chemical and biological hazards and measures to control and prevent them	5	1	4
PC10. Identify, document and report problems such as rodents and pests to management	5	1	4
PC11. Conduct workplace checklist audits before and after work to ensure safety and hygiene	5	1	4
PC12. Pc12. Document and maintain raw material, packaging material, process and finished products for the credibility and effectiveness of the food safety control system	4	1	3
PC13. Determine the quality of produce using criteria such as smell, appearance, taste and take immediate measures to prevent spoilage	5	2	3
PC14. Store different varieties of produce, chemicals, gases separately to prevent cross-contamination	5	2	3
PC15. Label produce, chemicals, gases and store in designated storage areas according to safe food practices	5	2	3
PC16. Follow stock rotation based of storage chemicals on first expiry first out (FEFO / first in first out	10	4	6

	(FIFO)				
		Total	100	35	65

SECTION 2

EVIDENCE OF NEED

What evidence is there that the qualification is needed?

During the industry interactions carried out while creating occupational maps and prioritization of job roles for Qualification Pack development, the mentioned qualification was indicated as a key requirement by the industry. Governing Council of FICSI shared the final approval for the development of the role. The qualification runs parallel across all sub sectors such as Fruits and Vegetables, Dairy Products, Fish and Seafood, Meat and Poultry, etc.

In addition, the NSDC Human Resource and Skill Requirement study has indicated that storage is an important function and runs across the value chain. Also, due to projected growth in the food processing industry, growth in storage capacity for various types of processed products becomes essential.

Evidence of the qualification is supported by 68 validations with representation from across sub sectors. The complete list of validating companies has been enclosed as an annexure to the Q file.

What is the estimated uptake of this qualification and what is the basis of this estimate?

As per the NSDC Human Resource and Skill Requirement study, the incremental human resource requirement (annual) in Storage function is expected to be 1,86,000 till 2022.

What steps were taken to ensure that the qualification(s) does/do not duplicate already existing or planned qualifications in the NSQF?

The qualification discussed above is checked for any duplication across sectors. Given the qualification is niche to Food Processing sector, there is no duplication or pre-existing similar qualifications.

What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated?

The comments, feedback and suggestions were collected through interaction with industry during December '14 to August'15. The same will be compiled and justifiable changes will be incorporated in the next/updated version of the QP. This QP is set to be revised post 15th September, 2016.

Please attach any documents giving further information about any of the topics above.

Give details of the document(s) here:

- List of QP NOS validating companies - Annexure 3
- NSDC Human Resource and Skill Requirement study – Annexure 4

SECTION 3

SUMMARY EVIDENCE OF LEVEL

Level of qualification: Level 4

Summary of Direct Evidence (from learning outcomes):

The job activities are exhaustively studied and their outcomes are evaluated to understand their mapping with the NSQF framework. The same had been reviewed and validated by sector skill council and industry representatives.

Summary of other evidence (if used):

Cold Storage Technician – QP FIC/Q 7004					
Process required	Professional Knowledge	Professional Skills	Core Skills	Responsibility	Level
The job holder is responsible for installation of refrigeration system and components. This involves working in familiar, predictable, routine, situation of clear choice such as prepare and maintain work area for refrigeration, install and maintain refrigeration system and components, handle the cold storage facility for storing food. Since it does not involve several choices to be made even in a familiar context, the	The job holder is expected to have factual knowledge of field of knowledge or study. For example, the job holder is expected to have knowledge of refrigeration principles, components of refrigeration system and their installation, types of food that can be stored in cold storage, methods to control temperature of cold storage facility, procedures for checking performance of refrigeration components, etc. Since all	The job holder is expected to carry out routine and repetitive activities in a narrow range of application, using appropriate rule and tool. For instance, the job holder has to install the refrigeration unit; start the refrigeration system, check functioning of all devices, receive food for cold storage, adjust controls to set storage parameters, check quality of food from storage facility, conduct periodic inspections, etc. All these	The job holder is expected to communicate with clarity, have basic arithmetic skills and a basic understanding of political and natural environment. For instance, s/he should be able to note the information communicate, note the readings of process parameters, write information documents to internal departments/ internal teams, read and interpret the process flow chart for products produced,	The job holder is responsible for only own work and learning. S/he is a skilled worker who carries out activities after reading and understanding the work order, such as checking all features of cold storage facility, conducting periodic inspections to detect malfunctions, ensure periodic maintenance of refrigeration system and components. The role does not comprise of any supervisory activities. Hence it	4

role does not qualify for Level 5.	the above mentioned areas are related to factual knowledge of field of knowledge, the role qualifies for Level 4.	activities are mostly repetitive and have a narrow range of application, hence qualifying the role for a Level 4.	effectively communicate with team members and cross department teams on the issues faced during process. Hence, this role qualifies for Level 4.	qualifies as a level 4 role.	
Level 4	Level 4	Level 4	Level 4	Level 4	Level 4

SECTION 4

EVIDENCE OF RECOGNITION OR PROGRESSION

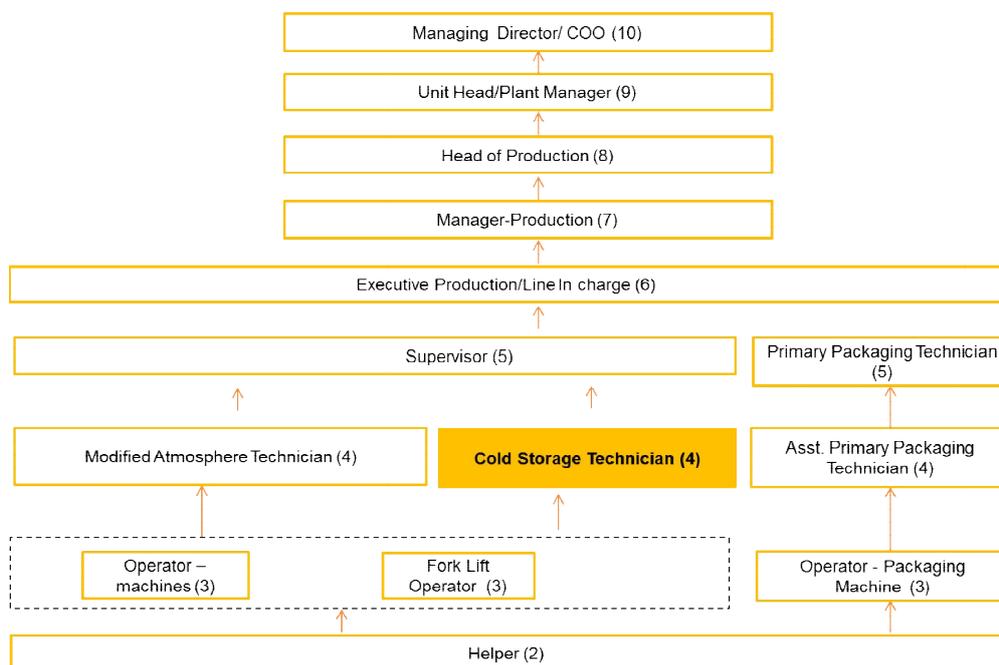
What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?

1. Discussing the growth trajectory within each occupation after studying organisational charts of various industry players across small, medium and large scale organizations.
2. Exploring various lateral career opportunities for the discussed qualification
3. Ensuring that there is a clear role up in terms of performance criteria qualification experience and skill requirement from lower NSQF Level to higher levels in the hierarchy.

Please refer to the career path as per Annexure 1 which clearly defines the career path.

Please attach any documents giving further information about any of the topics above. Give details of the document(s) here:

Annexure 1: Career Map of Cold Storage Technician



Annexure 2: Qualification Pack of Cold Storage Technician (separate file)

Annexure 3: List of QP/NOS validating companies (separate file)