Annex II.4

Cool Chain Quality Indicator

CCQI Master Table

Short Term Storage / Distribution Center

Revision: 2.2

Date: 2009-07-28

Cool Chain Quality Indicator (CCQI) for Short Term Storage / Distribution Center

Guidance for correct use and completion of this master table, see 4.2.4

ID no.:	Operation / Location:				
CCQI Description	**Points**	**Explanatory Note**	**Comments**	**max. Points**	**Points awarded**
A. Organization					
A.1 Instructions and equipment for store keepers					
Dedicated instructions are available to store keepers concerning:					
- handling and storage of perishables and temperature sensitive products (PTSP)	No: 0 Yes: 2	Instructions should include compatibility of PTSP.		2	
- compatibility of PTSP concerning cross-contamination	No: 0 Yes: 2	Instructions for temperature checks allow the temperature readings to be analysed later on, i.e. locations for measurements need to be defined.		2	
- temperature checks on acceptance of PTSP	No: 0 Yes: 2			2	
Store keeper is equipped with a temperature measurement probe suitable to check cargo temperature on acceptance	No: 0 Yes: 6	No temperature checks possible without suitable probes.		6	
			Σ (subtotal) A1	12	
A.2 Availability of services					
Services are available		Opening hours of the facility should cover the actual demand of incoming and outgoing goods. Waiting times due to closed storage and handling facilities shall be avoided.		4	
- from time to time	0				
- during normal office hours.	2				
- as needed including acceptance of delayed deliveries.	4				

CCQI Description	Points	Explanatory Note	Comments	max. Points	Points awarded
A.3 Actions taken after refrigerant leakage or machinery breakdown					
In case of breakdown of refrigeration machinery or refrigerant leak, preventive action depends on store keeper's decision / experience	0	Emergency response plan shall include procedures covering – malfunction of cooling appliance – breakdown of electric power supply – refrigerant leaks – detection of cargo damage with the aim to minimize damage to the cargo		6	
Contact person for emergeny response assistance is available by phone / radio during operating hours.	3				
In case of breakdown of refrigeration machinery or refrigerant leak preventive action will be initiated according to an emergency response plan	6				
A.4 Training for cold store personnel involved in storage and handling of perishables and temperature sensitive products (PTSP)					
Management provides no PTSP-related training	0	Training is particularly important to store keepers.Training may be conducted by officially licensed organisations or by company internal trainers.Training to be conducted in line with the emergency response plans.		8	
Management provides training on PTSP related subjects occasionally	4				
Management provides PTSP related training according to a training plan including measures for emergency situations	8				
A.5 Technical maintenance of refrigerating installations and insulation					
Maintenance / repair is conducted in case of malfunctions	0	Maintenance schedule shall include scope and interval of maintenance including records of maintenance and repairs done.		6	
Maintenance is conducted to refrigerating installations on the basis of planned maintenance schedule.	6				
A.6 Hygienic maintenance					
Cleaning of cold store is conducted as deemed necessary by the store keeper.	0	Hygienic maintenance is mainly related to the internal surfaces of the cold store including surfaces exposed to the air flow such as evaporators and air ducting systems, and should be carried out on a regular basis.		4	
Cleaning of cold store is based on procedures or contractual agreements on hygienic maintenance. Interval / scope and method of cleaning shall reflect type of storage and commodity.	4				
			Σ (subtotal) A	**40**	

CCQI Description	Points	Explanatory Note	Comments	max. Points	Points awarded
B. Storage and handling facility					
B.1 Temperature zones for storage of goods					
Temperature controlled storage rooms for the following temperature ranges are available:					
+18 ... +22 °C	No: 0 Yes: 3	All commodities should be stored at their preferred temperature ranges. If facility handles only commodities of available storage temperature ranges, the maximum number of points (12) may be awarded.		3	
+10 ... +15 °C	No: 0 Yes: 3			3	
+0 ... +4 °C	No: 0 Yes: 3			3	
< -18 °C	No: 0 Yes: 3			3	
			Σ (subtotal) B1	12	
B.2 Special equipment for storage and handling					
In case that non-compatible commodities are handled within the same facility: Can they be stored / handled separately?		To prevent cross-contamination - foodstuffs for human consumption - foodstuffs for non-human consumption - dangerous goods - pharmaceuticals shall be treated separately.		2	
- No	0				
- Yes	2				
- not applicable	2				
In case that non-compatible fruit and vegetables are handled within the same facility: Can cross-contamination by ethylene be avoided?		Cross-contamination of non-compatible fruit and vegetable (e.g. apples and kiwis) by ethylene gas can be avoided either by - storing the products separately - intensive fresh air ventilation - ethylene absorption		2	
- No	0				
- Yes	2				
- not applicable	2				

CCQI Description	Points	Explanatory Note	Comments	max. Points	Points awarded
In case that iced products are handled: Can re-icing be carried out when required? - No - Yes - not applicable	 0 2 2	If products or packages are handled that require re-icing, this has to be carried out at the facility without delay.		2	
			Σ (subtotal) B2	6	
B.3 Spaces for commissioning / repacking					
Spaces used for commissioning / repacking are - not temperature controlled - temperature controlled	 0 10	Temperature deviations must be avoided during commisioning and repacking.		10	
B.4 Arrangements to protect cargoes during handling					
Access doors to storage rooms are - without additional means to prevent heat loss - automated and of quick acting type or equipped with door curtain	 0 2	Heat loss from cold store should be prevented during door openings.		2	
Loading / unloading operations are carried out via - open ramp - dock shelters	 0 2	Goods should be protected from ambient temperature conditions during loading of trucks or rail waggons.		2	
			Σ (subtotal) B4	4	

CCQI Description	Points	Explanatory Note	Comments	max. Points	Points awarded
B.5 Forklift operation					
Forklifts used within the storage / handling facility are					
- gas/diesel-driven without suitable exhaust gas filters	0	Contamination of PTSP by exhaust gas shall be avoided.		4	
- electric-driven or manually operated or gas/diesel-driven with suitable and certified exhaust gas filters / catalysators	4				
			Σ (subtotal) B	**36**	
C. Refrigeration System					
C.1 Redundant power supply					
Power supply for refrigeration machinery is by					
- one power line.	0	Electrical power supply is needed for the operation of the refrigeration machinery. Power supply could fail due to construction works or breakdown of energy supply.		4	
- at least two power lines	2				
- means of additional generator	4				
C.2 Type of refrigerant and refrigeration system					
- NH_3 (ammonia, R717) - Direct expansion	0	Depending on the type of refrigerant and the secondary cooling medium the goods may be subject to contamination by refrigerant gas in case of a leakage		4	
- NH_3 (ammonia, R717) - CO2 secondary system	1				
- NH_3 (ammonia, R717) - Indirect expansion (e.g. brine system)	2				
- Safety refrigerant (e.g. R134a, R404A, R22) - direct expansion	3				
- Safety refrigerant (e.g. R134a, R404A, R22) - indirect system (brine system)	4				
C.3 Location of components containing refrigerant					

CCQI Description	Points	Explanatory Note	Comments	max. Points	Points awarded
- Ammonia system with valves and fittings inside cold room	0				
- Ammonia system with valves and fittings outside cold room, but within adjacent spaces	1	Pipe, valves and fittings are potential leak sources. The nearer the potential leaks are in relation to the stored goods the higher the potential for contamination will be.		2	
- Ammonia system with valves and fittings in open air (e.g. on roof) outside of cold rooms	2				
- All other refrigerants in any arrangement	2				
C.4 Arrangement of refrigeration machinery room					
- Ammonia system with direct connection between reefer machinery room and cold room	0				
- Ammonia system where machinery room is adjacent to cold room, but without direct connection	1	The reefer machinery room is the location with the highest potential for large scale leaks. Direct connection means doors, unsealed pipe penetrations, ventilations duct etc.		2	
- Ammonia system where machinery room is far away from cold room	2				
- All other refrigerants in any arrangement	2				
C.5 Alarm system of refrigeration system					
In case of malfunctions or breakdown of electricity					
- no alarm is activated	0	Fast detection of a malfunction enables the operator to initiate appropriate emergency action in order to prevent damage to the goods.		2	
- on-site alarm is activated	2				

CCQI Description	Points	Explanatory Note	Comments	max. Points	Points awarded
C.6 Alarm system for cold rooms					
In case of temperature deviations		Fast detection of a temperature deviation enables the operator to initiate appropriate emergency action in order to prevent damage to the goods.		2	
- no alarm is activated	0				
- on-site alarm is activated	2				
C.7 Temperature recording					
Temperatures in refrigerated rooms are		Temperature recorders provide the best documentation of the temperature history. If thermoters are used manual recording is required at regular intervals.		8	
- not checked by using measurement devices	0				
- checked by handheld thermometer	2				
- monitored with fixed mounted thermometers	4				
- documented with temperature recorders	8				
			Σ (subtotal) C	**24**	
			Σ (total) A+B+C	**100**	