

BSF Technician Competencies: Body


Instructions

This competency assessment tool was designed by CAWST to measure and guide the professional development of BSF Technicians. The tool contains a scale from 1-3, representing competencies in foundation, intermediate, and specialist skill levels. Level 1 is for technicians that build biosand filters (BSF). The specialist level is for people training or providing consulting support on the BSF. Technicians should complete the levels within the competencies groups that are relevant to their work. A specialist must complete all competency groups.

Each competency level contains multiple bullets that describe expected behaviours or knowledge at that level. To have these competencies validated they must be physically demonstrated or verified with knowledge or theory-based questions in a discussion. Further instructions for this assessment are described below and within the framework guide.



Sample Table

This section will list a specific competency group


	Foundation	Intermediate	Specialist
1	This section describes a basic level of competency for a technician.	This section describes an intermediate level of competency for a supervisor	This section describes a high level of competency. It is for people providing training or consulting support on the BSF
Competency group			
Competencies verified through observation are unmarked. Competencies verified through knowledge questions are marked with the following book symbol  .			

Before using the tool, ensure you understand the competency process overall. In conducting the assessment, select the competency level which can be verified and mark it complete. Once all competency groups are completed, revisit them and select specific areas to improve. Competencies a candidate wishes to identify for improvement can be prioritized within this document and then carried over to their *Learning Plan*. The *Competency Development Activities* document will help you select ways to improve your priority competencies. Once a candidate has demonstrated all competencies within a particular level they can be validated at that level and receive a certificate for their achievement.

Competency Group: Workplace Safety

	Foundation	Intermediate	Specialist
1 Workplace Safety	<ul style="list-style-type: none"> <input type="checkbox"/> Follows workplace safety procedures <input type="checkbox"/> Uses personal protective equipment properly <input type="checkbox"/> Identifies the location of first aid and safety equipment <input type="checkbox"/> Identifies the person to call in an emergency 	<ul style="list-style-type: none"> <input type="checkbox"/>  Describes safety concerns during the production <input type="checkbox"/>  Explains how workplace safety procedures reduce the risk of injuries 	<ul style="list-style-type: none"> <input type="checkbox"/> Identifies gaps in workplace safety procedures <input type="checkbox"/> Recommends way to improve workplace safety

Competency Group: Monitoring

	Foundation	Intermediate	Specialist
2 Monitoring	<ul style="list-style-type: none"> <input type="checkbox"/> Demonstrates how to use monitoring forms 	<ul style="list-style-type: none"> <input type="checkbox"/>  Explains the importance of using monitoring forms for filter production <input type="checkbox"/> Consistently uses monitoring forms <input type="checkbox"/> Uses monitoring forms to identify problems with filter production 	<ul style="list-style-type: none"> <input type="checkbox"/> Recommends changes to improve production processes based on monitoring forms

Competency Group: Sourcing Materials

	Foundation	Intermediate	Specialist
3 Sourcing the Mold		<ul style="list-style-type: none"> <input type="checkbox"/> Interprets mold blueprints <input type="checkbox"/> Explains why steel thickness is important to the integrity of the mold <input type="checkbox"/> Explains how each property of a high quality mold affects the quality of the concrete body <input type="checkbox"/> Determines if there are any problems with the mold, using the Tips for Checking the Quality of a BSF Mold 	<ul style="list-style-type: none"> <input type="checkbox"/> Explains why molds may not produce high quality concrete bodies <input type="checkbox"/> Suggests methods to repair the molds to ensure that high quality concrete bodies are consistently being produced
4 Maintaining the mold	<ul style="list-style-type: none"> <input type="checkbox"/> Cleans the mold before storage 	<ul style="list-style-type: none"> <input type="checkbox"/> Takes steps to prevent rusting of the mold 	<ul style="list-style-type: none"> <input type="checkbox"/> Determines whether a mold has reached the end of its lifespan <input type="checkbox"/> Identifies problems with mold maintenance <input type="checkbox"/> Recommends ways to improve the maintenance of the mold
5 Sourcing cement		<ul style="list-style-type: none"> <input type="checkbox"/> Determines what type of cement to buy for the BSF body <input type="checkbox"/> Determines whether the cement may have been in contact with moisture 	<ul style="list-style-type: none"> <input type="checkbox"/> Identifies problems with cement sourcing <input type="checkbox"/> Recommends changes to cement sourcing to improve the quality of a BSF body

<p>6</p> <p>Sourcing and preparing sand and gravel for concrete.</p>	<ul style="list-style-type: none"><input type="checkbox"/> Inspects a sieve to determine whether larger pieces could pass through<input type="checkbox"/> Sieves the sand using the appropriate sieve for the appropriate media<input type="checkbox"/> Keeps sieved and unsieved materials separate from other materials and free from contamination	<ul style="list-style-type: none"><input type="checkbox"/> Discusses the pros and cons of different sand and gravel sources for concrete<input type="checkbox"/> Selects sand and gravel from an appropriate source<input type="checkbox"/> Constructs a sieve correctly<input type="checkbox"/> Inspects and repairs sieves as required	<ul style="list-style-type: none"><input type="checkbox"/> Explains why it is important to have a wide range of sand and gravel aggregate grain sizes<input type="checkbox"/> Identifies problems with sand and gravel aggregate sourcing and preparation<input type="checkbox"/> Recommends changes in sand and gravel aggregate sourcing and preparation to improve quality of concrete body
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Competency Group: Constructing the Concrete Body

	Foundation	Intermediate	Specialist
<p>7</p> <p>Preparing the mold and tube</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Explains why to use food grade oil to oil the mold <input type="checkbox"/> Oils the mold in the correct places with food oil <input type="checkbox"/> Prepares and places the tubing correctly 	<ul style="list-style-type: none"> <input type="checkbox"/> Sources the correct type of tubing <input type="checkbox"/> Explains why it is important to use tubing that meets with specifications <input type="checkbox"/> Explains what happens if there are kinks in the tube, or if the ends of the tube are left open <input type="checkbox"/> Identifies potential problems with the placement and preparation of the tubing 	<ul style="list-style-type: none"> <input type="checkbox"/> Determines if repeated problems with the concrete body is due to incorrect mold or tube preparation. <input type="checkbox"/> Recommends changes to mold and tube preparation
<p>8</p> <p>Mixing the concrete</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Uses the appropriate ratios of gravel, sand, water and cement <input type="checkbox"/> Produces a concrete mix that is uniform 	<ul style="list-style-type: none"> <input type="checkbox"/> Determines whether an appropriate amount of water has been added to the mix <input type="checkbox"/> Executes a slump test <input type="checkbox"/> Interprets the results of a slump test <input type="checkbox"/> Explains the relationship between the quantity of water added and concrete strength 	<ul style="list-style-type: none"> <input type="checkbox"/> Determines if repeated problems with the concrete bodies are due to incorrect concrete preparation <input type="checkbox"/> Recommends changes to the concrete preparation <input type="checkbox"/> Explains what factors could affect the quantity of water added.

<p style="text-align: center;">9</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Pouring the concrete body</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Removes air bubbles through pouring and vibrating technique <input type="checkbox"/> Mounds and trowels the base of the BSF body <input type="checkbox"/> Ensures that the filter base remains moist for 24 hours 	<ul style="list-style-type: none"> <input type="checkbox"/> Explains why it's important to vibrate the mold during pouring <input type="checkbox"/> Describes different ways to vibrate the mold <input type="checkbox"/> Explains the purpose of mounding and troweling the base of the body <input type="checkbox"/> Explains why concrete should remain moist while it is curing <input type="checkbox"/> Describes different ways to keep the base of the body moist 	<ul style="list-style-type: none"> <input type="checkbox"/> Determines if repeated problems with cracks and leaking are due to incorrect pouring technique <input type="checkbox"/> Recommends changes to the concrete preparation
<p style="text-align: center;">10</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Demolding and Finishing</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Minimizes the risk of damaging the concrete body when flipping the mold <input type="checkbox"/> Removes the mold from the body without causing damage <input type="checkbox"/> Cuts the outlet tubing to an appropriate length <input type="checkbox"/> Cures the concrete body according to instructions <input type="checkbox"/> Patches a concrete body if necessary <input type="checkbox"/> Cleans the inside of concrete body after curing 	<ul style="list-style-type: none"> <input type="checkbox"/> Identify potential problems with the concrete body using the BSF Body Test <input type="checkbox"/> Implement remedial actions when required <input type="checkbox"/> Explains the relationship between strength of concrete and curing time <input type="checkbox"/> Explains why the concrete body needs to be wetted during curing 	<ul style="list-style-type: none"> <input type="checkbox"/> Identifies if there are problems related to demolding or finishing <input type="checkbox"/> Recommends remedial actions based on BSF body test and monitoring

Competency Group: Providing diffuser, lid, and safe storage container

	Foundation	Intermediate	Specialist
11 Producing the Diffuser	<input type="checkbox"/> Make holes in the diffuser that are uniform, evenly distributed and of the correct size and spacing <input type="checkbox"/> Determines that the diffuser fits correctly into the concrete body, and that there are no gaps between the diffuser and the concrete walls	<input type="checkbox"/> Determines what material to use for diffuser <input type="checkbox"/> Determines whether a diffuser is built correctly <input type="checkbox"/> Explains why it is important to have a correct diffuser	<input type="checkbox"/> Identifies problems with diffuser production <input type="checkbox"/> Recommends changes to the production process
12 Producing the Lid	<input type="checkbox"/> Constructs the lid according to instructions	<input type="checkbox"/> Explains the role of the lid <input type="checkbox"/> Determines whether the lid is built correctly	<input type="checkbox"/> Identifies problems with lid production <input type="checkbox"/> Recommends changes to the production process
13 Selecting a safe storage container	<input type="checkbox"/> Identifies the qualities of a safe storage container <input type="checkbox"/> Explains the role of the safe storage container in the BSF <input type="checkbox"/> Installs a tap in a container	<input type="checkbox"/> Selects an appropriate safe storage container <input type="checkbox"/> Determines if there are problems with a safe storage container <input type="checkbox"/>	<input type="checkbox"/> Identifies problems with the selection or production of safe storage containers <input type="checkbox"/> Recommends options for addressing the problem