

**SKILLS FRAMEWORK FOR FOOD MANUFACTURING  
TECHNICAL SKILLS & COMPETENCIES (TSC) REFERENCE DOCUMENT**

<b>TSC Category</b>	Quality Management					
<b>TSC</b>	Cleanliness Testing					
<b>TSC Description</b>	Perform tests to verify that residue and contaminant levels are at risk-free levels on manufacturing equipment and surfaces					
<b>TSC Proficiency Description</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Level 5</b>	<b>Level 6</b>
			<b>FMF-QUA-3030-1.1-14</b>	<b>FMF-QUA-4030-1.1-14</b>	<b>FMF-QUA-5030-1.1-14</b>	
			Perform tests to verify the cleanliness of manufacturing equipment and surfaces	Develop standard operating procedures (SOP) for cleanliness tests and monitor implementation	Establish cleanliness testing processes and activities	
<b>Knowledge</b>			<ul style="list-style-type: none"> <li>Regulations on cleaning in the food manufacturing industry</li> <li>Good manufacturing practices (GMPs) in cleanliness and sanitation in the food manufacturing facility</li> <li>Cleaning, sanitation and disinfection procedures</li> <li>Types and applications of disinfectants, detergents and other cleaning solutions</li> <li>Sampling procedures for cleanliness tests</li> <li>Indicators of acceptable cleanliness levels</li> <li>Importance of cleanliness testing and their limitations</li> <li>Process of reviewing and approving cleanliness test results</li> </ul>	<ul style="list-style-type: none"> <li>Types of contaminants and the effects on the product and human body</li> <li>Optimal environmental conditions for cleanliness testing</li> <li>Food manufacturing equipment and cleanliness requirements</li> <li>Parameters of cleanliness for food manufacturing equipment and surfaces</li> <li>Indicators of cleaning solutions' efficacy</li> </ul>	<ul style="list-style-type: none"> <li>Cleaning standards for various food manufacturing equipment and surfaces</li> <li>Industry standards and best practices in cleanliness testing</li> <li>Implication of contaminant type, facility and risks on acceptance criteria</li> <li>Emerging technologies and methods for cleanliness testing</li> </ul>	
<b>Abilities</b>			<ul style="list-style-type: none"> <li>Prepare equipment for cleanliness testing in accordance with standard operating procedures (SOP)</li> <li>Collect microbiological samples prior to and throughout the cleaning procedure</li> </ul>	<ul style="list-style-type: none"> <li>Develop SOP for cleanliness testing</li> <li>Specify suitable environmental conditions for performance of cleanliness testing</li> <li>Identify appropriate tests and procedures to be applied on various equipment and surfaces</li> </ul>	<ul style="list-style-type: none"> <li>Establish a cleanliness testing plan customised to different food product requirements</li> <li>Develop organisational guidelines for testing cleanliness of equipment and surfaces</li> <li>Introduce new methods for cleanliness and</li> </ul>	

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			<ul style="list-style-type: none"> <li>• Perform routine cleanliness tests according to SOP</li> <li>• Check for residues and contaminants left by manufacturing processes</li> <li>• Record cleanliness test results in accordance with SOP</li> <li>• Report cleanliness test findings and trends</li> </ul>	<ul style="list-style-type: none"> <li>• Specify measurable acceptance criteria for each cleanliness test or check being conducted</li> <li>• Review cleanliness test results to assess efficacy of cleaning solutions</li> <li>• Investigate lapses in cleanliness identified</li> <li>• Identify contaminants affecting a product or equipment</li> <li>• Analyse impact of particulates and contaminants left behind by manufacturing process</li> </ul>	<p>contaminant identification</p> <ul style="list-style-type: none"> <li>• Determine final acceptance criteria for equipment cleanliness levels</li> <li>• Lead investigations on non-conformity to cleanliness standards</li> <li>• Report overall results and key findings from cleanliness tests and their implications on product quality and business operations</li> <li>• Recommend process changes to remove sources of contamination within the manufacturing facility</li> </ul>	
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