

**SKILLS FRAMEWORK FOR SEA TRANSPORT
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT**

TSC Category	Marine Engineering					
TSC	Marine Equipment Material Selection					
TSC Description	Select appropriate materials to be used for marine equipment and components based on material property applications and industry requirements					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			STP-EPM-3043-1.1	STP-EPM-4043-1.1		
			Analyse equipment and system requirements, operating parameters, surroundings, applications of different material properties and suitability of use for each system in order to select appropriate materials for production	Review selection of proposed material properties and behaviours over a range of conditions to minimise maintenance upkeep and maximise life span of the final products		
Knowledge			<ul style="list-style-type: none"> • Properties of metallic and non-metallic materials • Concepts of stress and strain • Types of metallic and non-metallic material testing technologies • Applications of metallic and non-metallic materials • Types of equipment and system requirements for ships, rigs and conversions • Workflow processes and operating parameters • Types of metallic and non-metallic material treatment processes • Types of engineering and composite structure designs • Concepts, properties and performance 	<ul style="list-style-type: none"> • Properties of materials including optical, thermal, mechanical, chemical, microstructures and other properties of materials • Principles of the methods and instruments used in measuring and characterising the properties of metallic and non-metallic materials • Advanced material testing technologies such as mechanical testing, metallography, heat treatment and other testing technologies • Finite element analysis and other testing technologies 		

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			<p>characterisation of materials</p> <ul style="list-style-type: none"> • Relevant quality assurance and quality control (QA/QC) policies and procedures 			
Abilities			<ul style="list-style-type: none"> • Review the required properties of components to shortlist a range of appropriate materials • Identify different engineering metallic and non-metallic materials and their applications • Communicate with customers, colleagues and relevant teams to assist in establishing material selection schedules and requirements 	<ul style="list-style-type: none"> • Evaluate selection of proposed metallic and non-metallic materials as per operating requirements and parameters • Assess the suitability of metallic and non-metallic materials for marine components in accordance to functional and legislative requirements • Select appropriate instruments to measure and characterise properties of metallic and non-metallic materials • Evaluate properties of metallic and non-metallic materials using advanced material testing technologies • Review resources spent and accuracy of measurements and material assessments 		