

SSBIO04 Prototyping and Testing Specialist Product Developer – Biomedical Textiles

1. Job role

TCF sub-sector	Biomedical Textiles
Functional area	Research and Product Development
Job role	SSBIO04 Prototyping and Testing Specialist Product Developer – Biomedical Textiles
Job role description	Leads the prototyping, testing and validation phases of biomedical textile product development, ensuring that new and modified products meet clinical, functional, manufacturing and regulatory requirements prior to commercialisation. In the Australian biomedical textiles sector, this role is critical in bridging design and production by translating product concepts into functional prototypes and rigorously testing them for performance, safety and usability. Products may include compression garments, surgical textiles, wound care systems, implantable textile materials and advanced functional fabrics used in acute and clinical care environments. The role involves developing prototypes using appropriate materials and construction methods, designing and executing testing protocols, analysing results and refining product designs. It requires a deep understanding of textile behaviour, biomaterials, manufacturing processes and clinical performance requirements. The Prototyping and Testing Specialist works within ISO 13485, TGA requirements and relevant international standards, collaborating closely with product developers, materials specialists, engineers, clinicians, quality assurance personnel and production teams to ensure products are validated, compliant and ready for scale-up.
Performance expectations	• Developing accurate and functional prototypes aligned with product specifications • Designing and executing comprehensive testing and validation protocols • Ensuring products meet clinical performance, safety and usability requirements • Identifying and resolving design and performance issues during development • Maintaining traceability and documentation of prototype and testing activities

	- Supporting efficient transition from prototype to production - Ensuring compliance with regulatory and quality frameworks - Minimising development risks, failures and delays - Supporting innovation and continuous improvement in product development
Specialisation	Prototype development, textile testing, validation protocols, performance analysis, clinical textile systems, product refinement
Application in other TCF sectors	- Medical device prototyping and testing - Apparel and performance product development - Technical and industrial textile development - Defence and protective equipment testing - Research and development environments

2. Key tasks and critical work functions

Key tasks	- Developing prototypes using selected materials and construction methods - Designing and conducting laboratory and field-based testing protocols - Evaluating product performance against specifications and requirements - Analysing test data and identifying areas for improvement - Refining designs based on testing outcomes - Ensuring compatibility with manufacturing and sterilisation processes - Maintaining prototype and testing documentation - Collaborating with cross-functional teams including QA, regulatory and production - Supporting product validation and approval processes
Critical work functions	- Ensuring prototypes accurately represent final product performance - Validating that products meet clinical and functional requirements - Identifying and mitigating design and performance risks early in development - Ensuring compliance with regulatory and quality frameworks - Maintaining traceability of development and testing activities - Supporting efficient and scalable production outcomes - Enabling innovation while maintaining safety and compliance - Supporting successful product approval and market entry

3. Technical skills

Prototype construction	Developing textile prototypes using appropriate techniques
Testing and validation	Designing and conducting performance and safety testing
Material evaluation	Assessing behaviour of fibres, fabrics and biomaterials
Data analysis	Interpreting test results and performance data
Manufacturing integration	Ensuring designs are compatible with production processes
Documentation	Maintaining detailed prototype and testing records

Regulatory compliance	Applying ISO 13485, TGA and relevant standards
Problem solving	Resolving design and performance issues

4. Generic Skills

Attention to detail	Ensuring precision in prototyping and testing
Analytical thinking	Evaluating complex data and performance outcomes
Communication	Working with technical, clinical and production teams
Problem solving	Identifying and resolving development challenges
Teamwork	Supporting cross-functional collaboration
Time management	Managing testing schedules and development timelines
Adaptability	Responding to evolving requirements and technologies
Professionalism	Maintaining compliance and documentation standards

5. Emerging skills

Emerging skills	- Advanced simulation and digital prototyping tools - Smart textile testing and wearable technology validation - Additive manufacturing and rapid prototyping techniques - Data-driven testing and predictive performance modelling - Advanced biomaterials and bioengineered textiles - Sustainable product development and lifecycle analysis
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6. VET Qualifications and Skill Sets

Entry-level preparation	MST40122 Certificate IV in Textile Design and Technology or equivalent in in product development or laboratory skills
Advanced development	MST50122 Diploma of Apparel, Fashion and Textiles or Bachelor's Degree in Textile Engineering, Biomedical Engineering, Materials Science or related field

7. Job progression

Possible job progression	Development Assistant → Prototyping and Testing Specialist → Senior Product Developer → Product Development Manager → Technical or Innovation Director
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8. Classification

Australian Qualifications Framework	Level 5-7
Australian Bureau of Statistics (ABS) Skill Levels	Skill Level 1-2
Open Source Classification of Occupations for Australia (OSCA)	Prototyping and Testing Specialist - Biomedical Textiles



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