
Mini-Universal MATE-N-LOK* Splash Proof Seals

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements to establish the degree of protection provided by the Mini-Universal MATE-N-LOK* splash proof seals.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Results

Successful qualification testing on the subject product line was completed on 08Apr02. The Qualification Test Report number for this testing is 501-532-2. This documentation is on file at and available from Engineering Practices and Standards (EPS).

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1. Tyco Electronics Documents

- 108-1542: Product Specification
- 108-1543: Product Specification
- 109-197: AMP Test Specifications vs EIA and IEC Test Methods
- 114-16017: Application Specification
- 114-16017-1: Application Specification
- 501-532-2: Qualification Test Report

2.2. Commercial Standards

- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications
- IEC 60529: Degrees of Protection Provided By Enclosures

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

3.3. Ratings

Temperature: -40 to 90°C

3.4. Performance and Test Description

Product is designed to meet the environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions per EIA-364. All tests shall be performed on the free hanging wire-to-wire and wire-to-PC Board configurations with little or no wire dress.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of product.	Meets requirements of product drawing.	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
ENVIRONMENTAL		
Protection against access to hazardous parts, IP5X.	No contact between access probe and conductive elements of connector.	IEC 60529, paragraph 12. Apply a 1 mm access probe to seals of mated specimens with a force of 1 N.
Dust protection, IP5X.	No ingress of dust.	IEC 60529, paragraph 13.4. Subject mated specimens to 8 hours of circulating talcum powder dust. 2 kg of powder per cubic meter of test chamber shall be used.
Water spray, IPX5.	No ingress of water.	IEC 60529, paragraph 14.2.5. Subject mated specimens to 3 minutes of water spray at a flow rate of 12.5 ± 5% liters per minute.
Water spray, IPX6.	No ingress of water.	IEC 60529, paragraph 14.2.6. Subject mated specimens to 3 minutes of water spray at a flow rate of 100 ± 5% liters per minute.
Water immersion, IPX7.	No ingress of water.	IEC 60529, paragraph 14.2.7. Immerse mated specimens in water for 30 minutes with the lowest point of the specimen 1 m below the surface. 20.32 cm minimum tank diameter.

Figure 1

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)
	1(b)
	Test Sequence (c)
Examination of product	1,3,5,7,9,11
Protection against access to hazardous parts, IP5X	2
Dust protection, IP5X	4
Water spray, IPX5	6
Water spray, IPX6	8
Water immersion, IPX7	10

NOTE (a) See paragraph 4.1.A.
 (b) For wires with insulation diameters .040 through .083 inch.
 (c) Numbers indicate sequence in which tests are performed.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. All test groups shall each consist of 5 mated specimens.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2. Test group 1 is equivalent to IEC 60529 IP ratings of 5/5, 5/6 and 5/7.

4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.