

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

**1. INTRODUCTION**

1.1. Purpose

Testing was performed on Tyco Electronics Mini-Universal MATE-N-LOK\* Splash Proof Seals to determine their conformance to the requirements of Product Specification 108-1542-2 Revision A.

1.2. Scope

This report covers the environmental performance of Mini-Universal MATE-N-LOK Splash Proof Seals. Testing was performed at the Engineering Assurance Product Test Laboratory between 25Mar02 and 08Apr02. The test file number for this testing is CTL 7167-001. This documentation is on file at and available from the Engineering Assurance Product Test Laboratory.

1.3. Conclusion

The Mini-Universal MATE-N-LOK Splash Proof Seals listed in paragraph 1.5., conformed to the environmental performance requirements of Product Specification 108-1542-2 Revision A.

1.4. Product Description

Splash proof Mini-Universal MATE-N-LOK connectors and seals provide a compact means of grouping multiple-lead connections in appliances and various types of commercial equipment where protection from dust and/or water is required.

1.5. Test Specimens

Test specimens were representative of normal production lots. Specimens identified with the following part numbers were used for test:

Test Group	Quantity	Part Number	Description
1	5	794805-1	4 position plug connector
	5	794939-1	4 position cap connector
	40	794758-1	Wire seal
	5	794772-4	Interfacial seal
	20	770902-1	Socket contact on .050 inch OD wire
	20	770901-1	Pin contact on .050 inch OD wire
	5	794781-1	10 position plug connector
	5	794942-1	10 position cap connector
	100	794758-1	Wire seal
	5	1-794772-0	Interfacial seal
	50	770904-1	Socket contact on .080 inch OD wire
	50	770903-1	Pin contact on .062 inch OD wire

Figure 1 (cont)

Test Group	Quantity	Part Number	Description
1	5	794805-1	4 position plug connector
	5	770968-1	4 position PCB header
	20	794758-1	Wire seal
	5	794772-4	Interfacial seal
	20	770902-1	Socket contact on .040 inch OD wire

Figure 1 (end)

1.6. Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

- Temperature: 15 to 35°C
- Relative Humidity: 25 to 75%

1.7. Qualification 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 1.5.
- (b) For wires with insulation diameters .040 through .083 inch.
- (c) Numbers indicate sequence in which tests are performed.

Figure 2

**2. SUMMARY OF TESTING**

2.1. Examination of Product

All specimens submitted for testing were representative of normal production lots. A Certificate of Conformance was issued by Product Assurance. Specimens were visually examined and no evidence of physical damage detrimental to product performance, ingress of dust, or ingress of water was observed.

2.2. Protection Against Access to Hazardous Parts, IP5X

All specimens prevented the intrusion of the specified access probe. There was no indication of continuity between the access probe and the conductive elements of the connector.

**2.3. Dust Protection, IP5X**

There was no visible evidence of dust ingress into the interior of the connector.

**2.4. Water Spray, IPX5**

There was no visible evidence of water ingress into the interior of the connector.

**2.5. Water Spray, IPX6**

There was no visible evidence of water ingress into the interior of the connector.

**2.6. Water Immersion, IPX7**

There was no visible evidence of water ingress into the interior of the connector.

**3. TEST METHODS****3.1. Examination of Product**

A Certificate of Conformance was issued stating that all specimens in this test package were produced, inspected, and accepted as conforming to product drawing requirements, and were manufactured using the same core manufacturing processes and technologies as production parts. Where specified, specimens were visually examined under 10X magnification for evidence of physical damage and ingress of dust or water.

**3.2. Protection Against Access to Hazardous Parts, IP5X**

A 1.0 + 0.05/- 0 mm rigid steel access probe was secured to a suitable force measurement gage. A continuity test set was connected between the probe and the conductive elements of the mated connector pair under test. The access probe was then pressed against all interfacial and wire seals with a force of  $1 \pm 10\%$  N in a manner that would tend to cause the probe to penetrate the seal. The continuity test set was monitored for any indication that the access probe had contacted the conductive elements of the mated connector pair.

**3.3. Dust Protection, IP5X**

Mated specimens were suspended in a dust chamber containing an amount of talcum powder equivalent to 2 kg per cubic meter of test chamber volume. The talcum powder was then placed into suspension within the test chamber by means of an air circulating blower system, and maintained in suspension for a period of 8 hours. Upon completion of the exposure, the talcum powder was allowed to settle, and the specimens were removed from the test chamber for further inspection.

**3.4. Water Spray, IPX5**

Mated specimens were placed on a mesh rack, and subjected to a  $12.5 \pm 5\%$  liter per minute water spray from a 6.3 mm diameter spray nozzle held 2.5 m above the specimens. The water spray was maintained for a period of 3 minutes, during which the specimens were sprayed from all practical directions.

**3.5. Water Spray, IPX6**

Mated specimens were placed on a mesh rack, and subjected to a  $100 \pm 5\%$  liter per minute water spray from a 12.5 mm diameter spray nozzle held 2.5 m above the specimens. The water spray was maintained for a period of 3 minutes, during which the specimens were sprayed from all practical directions.

### 3.6. Water Immersion, IPX7

Mated specimens were placed on the bottom of a container, and completely immersed in water to a depth of 1 m. The water immersion was maintained for a period of 30 minutes.