SPECIFICATION

108-120081

BICAP and BICAP HW

High Shrink Ratio, Adhesive-Lined, Semi-rigid Polyolefin Caps

Adhesive-lined, heat-shrinkable bio-based BICAPs are specifically designed to provide mechanical and environmental protection of stub splices in electrical harnesses. Black BICAPs are flame-retardant, with a regular wall thickness or a heavy wall thickness. The radiation crosslinked polyolefin outer jacket is mechanically tough, providing abrasion protection. The cap's inner layer is a unique hotmelt adhesive, specially formulated to seal to most types of commercial wire insulation and to perform well at an extended temperature range. The thick adhesive forms an effective barrier against fluids and moisture, helping protect the harness from the effects of corrosion and water wicking. UL recognized.
RoHS and REACH compliant.
Continuous operating temperature: -40 to 125°C *(-40 to 257°F)*.

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1. SCOPE

This specification establishes the quality standard of pre-formed sleeving components whose dimensions will reduce to a pre-determined size upon the application of heat in excess of 135°C to provide mechanical and environmental protection on a range of stub splices.

2. REVISION HISTORY

Revision number	Change request	Date	Incorporated By
A	Initiate	06Feb2025	Yizhen Wang
A1	Specific gravity, add heat shock, add explanation on the routine test	27Feb2025	Yizhen Wang
A2	Revision level correction	11 Mar 2025	Yizhen Wang
A3	Drafting update	14 Mar 2025	Yizhen Wang
B	Operating Temperature update	07 Jul 2025	Yizhen Wang

3. RELATED DOCUMENTS

This specification takes precedence over the documents referenced herein. Unless otherwise specified, the latest issue of referenced documents applies. The following documents form a part of this specification to the extent specified herein.

3.1 AMERICAN SOCIETY FOR TESTING AND MATERIAL (ASTM)

ASTM D 2671 Testing Heat Shrinkable Sleeving.
ASTM D 3032 Method of Testing Hook Up Wire Insulation.
ASTM D471 Test Method for Rubber Properties -- Effects of Liquids
(Copies of ASTM publications may be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103 or via the ASTM website at http://www.astm.org).

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3.2 OTHER SPECIFICATIONS

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 6722/1 Unscreened Low Tension Cables - General Requirements and Test Methods
ISO 1817 Determination of the Effects of Liquids

(Copies of ISO publications may be obtained from the International Organization for Standardization, 1, rue de Varembé, CH-1211 Geneva 20, Switzerland or via the ISO website at http://www.iso.ch/iso/en/ISOOnline.frontpage)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE J1703 Motor Vehicle Brake Fluid

(Copies of SAE publications may be obtained from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, Pennsylvania 15096 or via the SAE website at https://www.sae.org/standards).

4. REQUIREMENTS

4.1 DIMENSIONS

The dimensions shall be in accordance with drawing in ***Table 4*** .

4.2 COMPOSITION AND APPEARANCE

The pre-formed components shall comprise of two parts**:**

a. The jacket shall be fabricated from a thermally stabilized, modified semi-rigid polyolefin and shall be cross-linked by irradiation.

b. The liner shall be a thermoplastic adhesive sealant which melts and flows at the shrink temperature of the jacket.

The components shall be essentially free from flaws, defects, pinholes, bubbles, seams, cracks and inclusions.

4.3 MATERIAL CHARACTERISTICS

The components can be supplied with ***black*** jacket material for regular and heavy wall. The adhesive liner shall be amber.

4.4 PROPERTIES

The components shall meet the requirements of ***Table 5.***

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5. QUALITY ASSURANCE PROVISIONS

5.1 CLASSIFICATION OF TESTS

Tests shall be carried out on a sample taken at random from each batch of finished tubing or cap. A batch of tubing or cap is defined as that quantity of tubing extruded at any one time. Testing frequency shall be Qualification, or Production Routine as detailed below:

5.1.1 Qualification Tests

Qualification tests are those performed on tubing submitted for Qualification as a satisfactory product and shall consist of all tests listed in this document, which shall be reviewed notionally every 3 years.

5.1.2 Production Routine Tests (Every Batch)

Sample preparation for production routine testing should be as section 6.1, with the exception of the relative humidity level which does not need to be considered.

Visual examination (Caps)
Dimensions (Caps)
Secant modulus at 2% strain (Tubing)
Specific gravity (Tubing)
Longitudinal change (Tubing)
Tensile strength (Tubing)
Ultimate elongation (Tubing)
Heat shock (Tubing)

5.2 SAMPLING INSTRUCTIONS

5.2.1 Qualification Test Samples

Qualification Test Samples shall consist of components and tubing from which the components are produced.

Qualification of BICAP-NO.1-40mm qualifies BICAP-NO.0 and BICAP-NO.1.

Qualification of BICAP-NO.3-40mm or 50mm, preferred 50mm length qualifies BICAP-NO.2, BICAP-NO.3, BICAP-No.2-HW, and BICAP-No.3-HW.

5.2.2 Production Routine Test Samples

Production routine test samples shall consist of 5 components selected at random from each batch. A batch shall consist of components of the same size from the same production run and offered for inspection at the same time.

6. TEST METHODS

| Indicates Change

6.1 MATERIAL PROPERTIES

Unless otherwise specified, the tests shall be performed on specimens which have been recovered by conditioning for 3 minutes at 200 ± 5°C *(392 ± 9°F)* in an air circulating oven.

Condition the test specimens (and measurement gauges when applicable) for 3 hours at 23 ± 3°C *(73 ± 5°F)* and 50 ± 5% relative humidity prior to all testing.

Use mechanical convection type ovens in which air passes the specimens at a velocity of 30 to 60 m *(100 to 200 ft)* per minute.

6.1.1 Dimensions (Caps)

Condition the specimens for 3 minutes in a 200 ± 5°C *(392 ± 9 °F)* oven, cool to 23 ± 3°C *(73 ± 5°F)* and then remeasure.
Prior to and after conditioning, the dimensions of the components shall be in accordance with the BICAP CD.

6.1.2 Longitudinal Change (Tubing only, expanded)

Note: Longitudinal change measurement shall be carried out on lengths of tubing.

Measure three 150 mm *(6 inch)* specimens of tubing, as supplied, for length ± 1 mm *(± 1/32 inch)* and inside diameter in accordance with ASTM D2671. Condition the specimens for 3 minutes in a 200 ± 5°C *(392 ± 9°F)* oven, cool to 23 ± 3°C *(73 ± 5°F)*, then remeasure. Prior to and after conditioning, the dimensions of the tubing shall be in accordance with BISS CD and the longitudinal change shall be in accordance with ***Table 5***. Calculate the longitudinal change as follows:

$$C = \frac{L_1 - L_0}{L_0} \times 100$$

Where: C = Longitudinal Change (percent)
L_0 = Length Before Conditioning [mm (inches)]
L_1 = Length After Conditioning [mm (inches)]

6.1.3 Tensile Strength and Ultimate Elongation (Tubing only)

The tensile strength and ultimate elongation of the tubing shall be determined in accordance with ASTM D 2671 using 25-mm *(1-inch)* benchmarks and a 50-mm *(2-inch)* initial jaw separation. The jaw separation speed shall be 50 ± 5 mm *(2 ± 0.2-inches)* per minute.

Calculate the tensile strength based on the wall thickness of the jacket only.

6.1.4 Secant Modulus at 2% Strain (Tubing only)

The secant modulus of the tubing shall be tested using tubing as supplied in accordance with ASTM D 2671.

| Indicates Change

6.1.5 Specific Gravity (Tubing Only)

The test method shall be as specified in Method A of ISO 1183 on expanded specimens. At least 3 specimens shall be tested.

6.1.6 Flammability (Tubing only, Jacket and Adhesive)

The test method shall be essentially in accordance with ISO6722.

Five lengths of tubing approximately 500mm long shall be recovered onto metal mandrels having a diameter 75 + 5% of the specified minimum expanded (as supplied) inside diameter of the tubing. This shall be conducted in a fan-assisted, air-circulating oven at a temperature of 200 ± 5°C *(392 ± 9 °F)* for 3 minutes.

Use a Bunsen burner with a 100mm *(4 inch)* tube. Adjust the burner to achieve a flame with an inner blue cone of approximately 50mm *(2 inches)*.

Suspend each specimen in a draught free environment in the configuration shown in **Figure *1***. The time of exposure to the test flame for each specimen shall be one 30 second application.

Record the time for each specimen to self-extinguish after removal of the flame. The result shall be expressed as the average burn time for the five specimens.

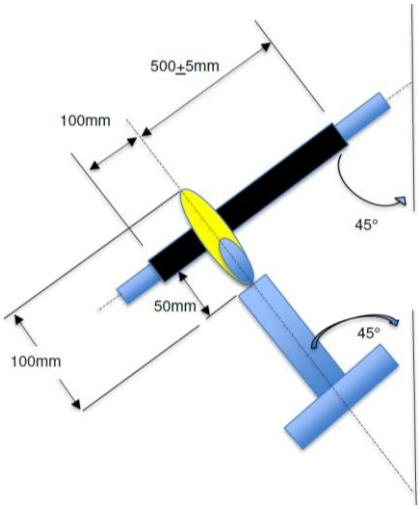


Figure 1 Flammability Test Configuration

6.1.7 Dynamic Cut-Through (Tubing only)

Perform the test in accordance with ASTM D 3032. Recover the specimens on a 1.6mm diameter steel rod (0.063 in), for NO.1; and 4.7mm *(0.185 in)* diameter steel rod for NO.3, and cool to room temperature. Use the optional cutting edge with a flat configuration of 0.127 mm *(0.005 in)*.

| Indicates Change

6.1.8 Scrape Abrasion (Tubing only)

The test method is essentially in accordance with that defined in ISO 6722 where a 0.125mm radius needle or profile is drawn back and forth over the splice material. The tests shall be carried out at an ambient temperature of 23 ± 3°C *(73 ± 5°F)* on five specimens of each size of tubing. The result shall be recorded as the average of the five determinations.

A length of splice tubing approximately 150mm long shall be installed onto the appropriate mandrel as specified in ***Table 1*** by conditioning in a fan-assisted, air circulating oven at 200°C ± 5°C *(392 ± 9 °F)* for 3 minutes.

Table 1 Mandrel Selection Guide

Product	Nominal Substrate Diameter	
	(mm)	(inches)
BICAP NO.1	4.8	*3/16*
BICAP NO.3 Regular and HW	9.5	*3/8*

The samples shall then be allowed to cool naturally to room temperature. Each specimen shall be subjected to the test conditions shown below in ***Table 2*** shall meet or exceed the cycle requirements given in ***Table 5***. A cycle is defined as one complete forward and backward reciprocation of the test probe and does not lift off at the end of each stroke. Refer to ***Figure 2***.

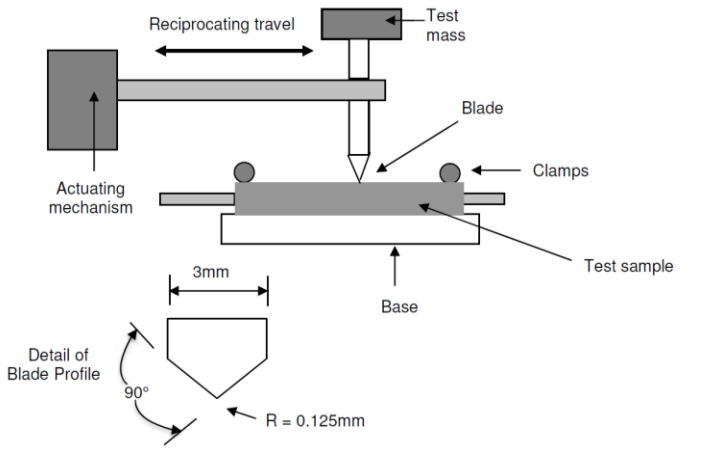


Figure 2 Scrape Abrasion Test Rig

Table 2 Scrape Abrasion Test Conditions

Test Temp	23±3℃
Test Mass	700g
Probe Radius	0.125mm
Cycle Rate	50-60 per minute
Cycle Length	10mm minimum

| Indicates Change

6.1.9 Dielectric Strength (Tubing only)

The test shall be carried out essentially in conformance with IEC 60243. Five 200mm lengths of tubing (jacket only) shall be shrunk onto mandrels as shown in ***Table 1***.

Guide by conditioning in a fan-assisted, air-circulating oven at 200°C ± 5°C *(392 ± 9 °F)* for 3 minutes. The average value of 5 measurements shall be taken.

Follow below the formula for calculating the dielectric strength of the tubing product:

$$E = \frac{\mathrm{V}}{\mathrm{r} \times \mathrm{In}(\frac{\mathrm{A}}{\mathrm{a}})}$$

Where r: radial difference between"a" & "A" (mm)
a: inside radius of the tubing (mm)
A: outside radius of the tubing (mm)
V: Voltage (Breakdown Voltage)(kV)
E: Dielectric Strength (kV/mm)

$\mathrm{a} = \frac{\text{mandrel diameter}}{2}$ $A = \frac{\text{mandrel diameter}}{2} + whole\ thickness\ of\ tubing$ r=a

6.1.10 Volume Resistivity (Tubing only)

Five specimens shall be shrunk onto the appropriate mandrels as specified in ***Table 1***.

Then the specimens shall be tested in accordance with ASTM D2671. The test shall be carried out using specimens recovered at 200 ± 5°C *(392 ± 9 °F)* for 3 minutes. The result shall be expressed as the average value of the five determinations.

6.1.11 Heat Shock (Tubing Only)

The test shall be as specified in ASTM D2671.
Three specimens shall be conditioned as specified in ***Table 5*** in a fan-assisted air circulating oven.
Use the following Mandrel diameter for bend tests – **Table 3**.

Table 3 Mandrel diameters utilized for heat shock in accordance with method detailed in ASTM D2671

Inside diameter of tubing (maximum recovered, for heat shrink tubing)		Mandrel diameter	
mm	**(in)**	**mm**	**(in)**
0.50-3.20	(0.020-0.125)	7.90±0.05	(5/16±0.002)
3.30-6.40	(0.126-0.250)	9.50±0.08	(3/8±0.003)
6.50-25.40	(0.251-1.000)	11.10±0.10	(7/16±0.004)
25.50-50.80	(1.001-2.000)	22.20±0.13	(7/8±0.005)

| Indicates Change

6.2 STUB SPLICE PERFORMANCE PROPERTIES

6.2.1 Splice Construction

BICAP-NO.1
Construct a wire stub splice having 2 x 1.0 mm^2 (# 17 AWG) thin wall insulated wires using conventional assembly techniques and wires approximately 300 mm *(12 in)* long. BICAP-NO.1 will be 40mm in length.

BICAP-NO.3
Construct a wire stub splice having 3 x 2.5 mm^2 (# 14 AWG) thin wall insulated wires using conventional assembly techniques and wires approximately 300 mm (12 in) long. BICAP-NO.3 will be 40mm or 50mm in length, preferred 50mm. BICAP-NO.3-HW will be 45mm in length.

Install component sizes onto the wire assembly using equipment with controllable parameters. For example, the equipment listed in Section 6.2.2. Product Application Equipment. The installation window and set temperature shall be identified in accordance with the Product Installation Procedure for BICAP (114-120038). After installation allow the samples to cool to room temperature before any testing is performed.

6.2.2 Product Application Equipment

TE RBK-ILS Processor
Belt heater
Air circulating oven

6.2.3 Air Leakage Sealing Test

Immerse the center section of the specimens in a distilled water bath. Connect both ends to a regulated air supply and apply 1 bar for 30 seconds. If no bubbles arise from the splice area sealing is considered acceptable. The test setup is shown in **Figure 3**.

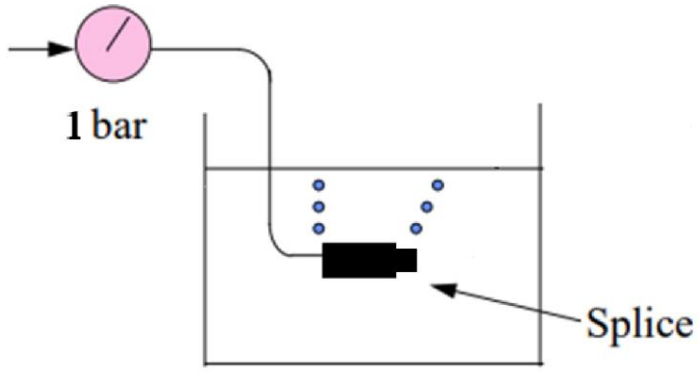


Figure 3 Air Leakage Sealing Test

| Indicates Change

6.2.4 Environmental Seal Tests

The cap and 50 mm *(2 in)* of wire shall be immersed in salt solution (5% by weight) at 23 ± 3°C *(73 ± 5°F)* for 24 ± 2 hours. The ends of the specimens shall be a minimum of 50 mm *(2 in)* above the surface of the water line. After environmental exposure (Sections 6.2.6. through 6.2.10.) the immersion period shall be 4 hours.

Either the Current Leakage Test or the Insulation Resistance Test may be used to confirm the environmental seal of the assemblies.

6.2.4.1 Current Leakage Test

After this conditioning period the current between each specimen and the 5% salt solution bath shall be measured by means of a suitable meter. The reading shall be taken 30 seconds after application of 50 Vdc.

6.2.4.2. Insulation Resistance Test

After this conditioning period the insulation resistance between each specimen and the 5% salt solution shall be measured by means of a suitable meter. The reading shall be taken 30 seconds after application of 100 Vdc.

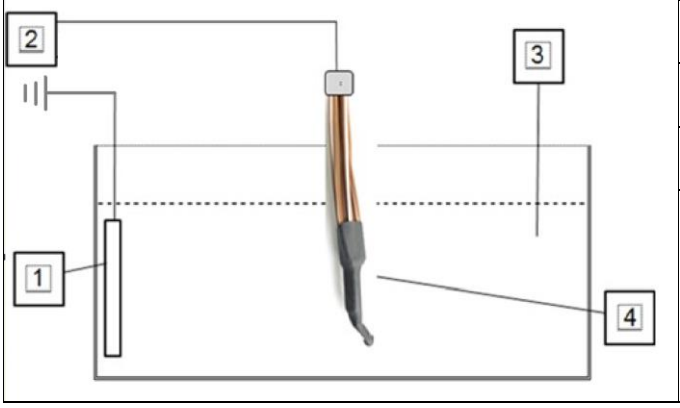
6.2.5 Electrical Test

Withstand Voltage

Three wire stub splice shall be kept in ambient temperature for 4 hours immersed in solution 5% by weight of NaCl in conformance with ISO6722. The wire ends must protrude at least 100mm free from the liquid surface. A test voltage of 1kV(a.c.) for 30 minutes for high-voltage applications is then created between the cable ends and the Cu electrode (>1cm^2). Then increase the voltage at a rate of 500V/s until the following value is reached. And hold the 3kV or 5kV for 5min.

-3kV (a.c.) for wires < 0.5 mm^2
-5kV (a.c.) for wires ≥0.5 mm^2

The test set-ups for sealed wire stubs is shown in **Figure *4***.



1	Cu Electrode (grounded)
2	High Voltage
3	3% NaCl Solution
4	Shrink Tubing for Connector

| Indicates Change

Figure 4 Test set-up connector

6.2.6 Flex Test

Three wire stub splices shall be flexed at room temperature through 180° for five cycles under a 1.5 kg *(3.3 pound)* load for NO.1 and a 3 kg *(6.6 pound)* load for NO.3 at a rate of 10-14 cycles per minute.

Each splice shall be centrally mounted on a face plate such that the weighted wire shall hang vertically about the rotational axis. (See ***Figure 5*** for typical setup).

After flexing all specimens shall be tested for environmental seal per section 6.2.4.

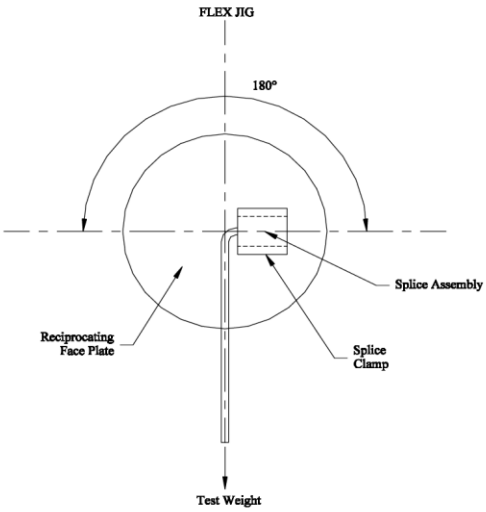


Figure 5 Flex Test

| Indicates Change

6.2.7 Thermal Shock

Suspend vertically 3 specimens in a circulating air oven for 30 minutes.
For XLPE Wires the temperature shall be 125 ± 3°C *(257 ± 5°F)*.
Note:
Fabric tape rated at an operating temperature of 125°C or higher is advised to secure the cap to the wire bundle for temperature exposures above 105°C. For PVC Wires the temperature shall be 105 ± 3°C *(221 ± 5°F)*. Remove the specimens from the oven and within 2 minutes, immerse the cap and 50 mm *(2 in)* of wire in a 5% saline solution at 5 ± 5°C *(41 ± 9°F)*. A minimum of 50 mm *(2 in)* of wire shall remain above the water surface. Remove them from the bath in 30 minutes. This shall be one cycle. Test the samples for 5 cycles and check for environmental seal in accordance with section 6.2.4.

6.2.8 Cold Impact

The test apparatus and method shall be based on ISO 6722/1. Three wire stub specimens shall be conditioned together with the test apparatus in a suitable cold chamber for a minimum of 4 hours at -40 ± 2°C *(-40 ± 3°F).* The apparatus shall be pre-conditioned for a minimum of 4 hours prior to commencement of testing.

Each specimen shall be subjected to a single drop of a 200 g *(0.44 pound)* weight from a height of 100 mm *(3.94 inches)* while remaining in the cold chamber ensuring the weight centrally impacts the splice area.

After the test the specimens shall be removed from the cold chamber, allowed to stabilize to room temperature and examined visually for signs of cracking of the outer jacket. Each specimen shall then be tested for environmental seal per section 6.2.4.

6.2.9 Heat Aging

Suspend the specimens vertically (sealed joint lower most) for 168 hours in a circulating air oven.

XLPE wire Heat Age at 125 ± 3°C *(257 ± 5°F)*
PVC wire Heat Age at 105 ± 3°C *(221 ± 5°F)*

Note:
Fabric tape rated at an operating temperature of 125°C or higher is advised to secure the cap to the wire bundle for temperature exposures above 105°C.

Remove the specimens from the oven and allow to cool to room temperature.
Check the environmental seal in accordance with section 6.2.4.

6.2.10 Fluid Immersion

6.2.10.1 Immerse 3 specimens of each wire type for 1 hour at 100 ± 3°C *(212 ± 5°F)* in each of the following fluids:

IRM 903 Oil.
Automatic Transmission Fluid (Dexron® II)

| Indicates Change

Engine Coolant (50/50 by volume)

6.2.10.2 Immerse 3 specimens of each wire type for 24 hours at 23 ± 3°C *(70 ± 5°F)* in each of the following fluids:

Diesel Fuel (ISO 1817 liquid F)
Windshield Washer Fluid
ASTM D471 Fuel C (XLPE wire only)

6.2.10.3 Immerse 3 specimens of each wire type for 10 seconds in each of the following fluids at intervals of 30 minutes for 16 hours at 23 ± 3°C *(70 ± 5°F)* to simulate a splash environment:

GUNK* Engine Cleaner
Brake Fluid (SAE J1703)

Allow the specimens to drain between immersions.

* Trademark of the Blumenthal Brands Integrated, LLC, NC

6.2.10.3.1 Lightly wipe all specimens to remove surplus fluid and visually inspect all specimens for splice insulation integrity. Within one hour check the environmental seal in accordance with section 6.2.4.

7 REJECTION AND RETEST

Failure of any tubing samples to conform to any of the requirements of this specification shall cause rejection of the lot represented. Tubing which has been rejected may be replaced or reworked to correct the defect and then resubmitted for acceptance. Before resubmitting, full particulars concerning the rejection and the action taken to correct the defect shall be furnished to the inspector.

8 PREPARATION FOR DELIVERY

8.1 FORM

The components shall be supplied in quantities in accordance with the customer or the MOQ.

8.2 PACKAGING

Packaging shall be in accordance with good commercial practice.

8.3 MARKING

Each container of components shall be permanently and legibly marked with the size, quantity, manufacturer's identification, part number and batch number.

| Indicates Change

Table 4 BICAP and BICAP-HW Drawing

BICAP
POLYOLEFIN, DUAL-WALL
SEMI-RIGID, HEAT-SHRINKABLE CAP

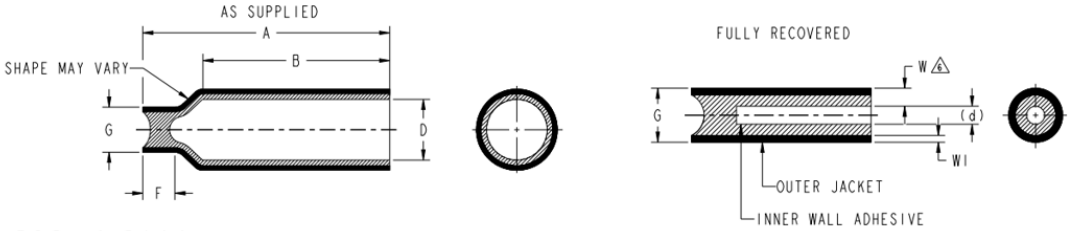


TABLE I: DIMENSIONS (mm / in)

CAP SIZE	A ±2.50 / 0.098		B (MIN.)		D (MIN.)		d REF ONLY ⚠1		F (MAX.)		G (MAX.)		W (MIN.) ⚠6		WI (MIN.)	
	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.
BICAP-NO.0-35mm	35.00	1.378	21.18	0.834	4.50	0.177	1.02	0.040	9.00	0.354	4.00	0.157	0.86	0.034	0.48	0.019
BICAP-NO.0-40mm	40.00	1.575	25.58	1.007	4.50	0.177	1.02	0.040	9.00	0.354	4.00	0.157	0.86	0.034	0.48	0.019
BICAP-NO.1-30mm	30.00	1.181	16.78	0.661	5.70	0.224	1.30	0.051	9.00	0.354	4.50	0.177	1.20	0.047	0.64	0.025
BICAP-NO.1-35mm	35.00	1.378	21.18	0.834	5.70	0.224	1.30	0.051	9.00	0.354	4.50	0.177	1.20	0.047	0.64	0.025
BICAP-NO.1-40mm	40.00	1.575	25.58	1.007	5.70	0.224	1.30	0.051	9.00	0.354	4.50	0.177	1.20	0.047	0.64	0.025
BICAP-NO.1-45mm	45.00	1.772	28.45	1.120	5.70	0.224	1.30	0.051	9.00	0.354	4.50	0.177	1.20	0.047	0.64	0.025
BICAP-NO.1-50mm	50.00	1.969	36.68	1.444	5.70	0.224	1.30	0.051	9.00	0.354	4.50	0.177	1.20	0.047	0.64	0.025
BICAP-NO.2-30mm	30.00	1.181	16.78	0.661	7.40	0.291	1.70	0.067	10.00	0.394	5.50	0.217	1.52	0.060	0.76	0.030
BICAP-NO.2-35mm	35.00	1.378	21.18	0.834	7.40	0.291	1.70	0.067	10.00	0.394	5.50	0.217	1.52	0.060	0.76	0.030
BICAP-NO.2-40mm	40.00	1.575	25.58	1.007	7.40	0.291	1.70	0.067	10.00	0.394	5.50	0.217	1.52	0.060	0.76	0.030
BICAP-NO.2-45mm	45.00	1.772	28.45	1.120	7.40	0.291	1.70	0.067	10.00	0.394	5.50	0.217	1.52	0.060	0.76	0.030
BICAP-NO.2-50mm	50.00	1.969	36.68	1.444	7.40	0.291	1.70	0.067	10.00	0.394	5.50	0.217	1.52	0.060	0.76	0.030
BICAP-NO.3-35mm	35.00	1.378	21.18	0.834	10.80	0.425	2.41	0.095	10.00	0.394	8.00	0.315	1.89	0.074	0.89	0.035
BICAP-NO.3-40mm	40.00	1.575	22.48	0.885	10.80	0.425	2.41	0.095	10.00	0.394	8.00	0.315	1.89	0.074	0.89	0.035
BICAP-NO.3-45mm	45.00	1.772	28.45	1.120	10.80	0.425	2.41	0.095	10.00	0.394	8.00	0.315	1.89	0.074	0.89	0.035
BICAP-NO.3-50mm	50.00	1.969	33.58	1.322	10.80	0.425	2.41	0.095	10.00	0.394	8.00	0.315	1.89	0.074	0.89	0.035

⚠6 AVERAGE OF MULTIPLE MEASUREMENTS ALONG THE CIRCUMFERENCE

⚠1 INDICATES MAX VALUE

BICAP-HW
POLYOLEFIN, DUAL-WALL
SEMI-RIGID, HEAT-SHRINKABLE CAP

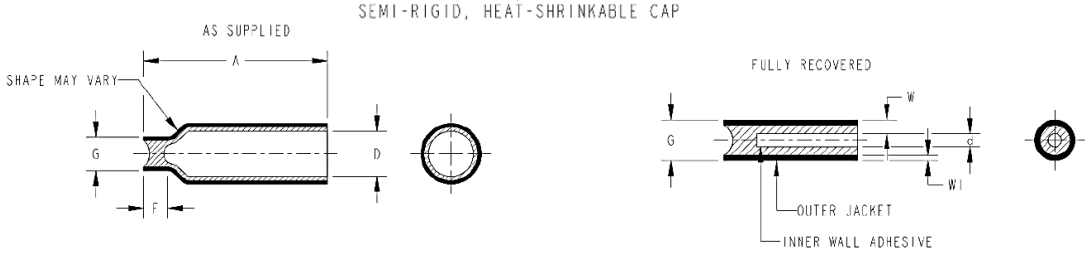


TABLE I: DIMENSIONS (mm / in)

CAP SIZE	AS SUPPLIED								AS RECOVERED					
	A		D (MIN.)		F		G		d (MAX.)		W (MIN.)		WI (MIN.)	
	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.
BICAP-HW-NO.2-0-35MM	35.00±2.50	1.378±0.098	7.44	0.293	6.90±1.90	0.272±0.075	5.69±0.50	0.224±0.020	1.65	0.065	1.84	0.072	1.20	0.047
BICAP-HW-NO.2-0-45MM	45.00±3.00	1.772±0.118	7.44	0.293	6.90±1.90	0.272±0.075	5.69±0.50	0.224±0.020	1.65	0.065	1.84	0.072	1.20	0.047
BICAP-HW-NO.3-0-45MM	45.00±3.00	1.772±0.118	10.80	0.425	6.90±1.90	0.272±0.075	7.05±0.35	0.278±0.014	2.41	0.095	2.16	0.085	1.20	0.047

| Indicates Change

Table 5 Requirements

PROPERTY	TEST METHOD	REQUIREMENT
Material Properties		
Dimensions	Section 6.1.1 ASTM D2671	In accordance with BICAP as per ***Table 4***
Longitudinal Change (Expanded)	Section 6.1.2 ASTM D2671	0 to -10%
Tensile Strength	Section 6.1.3 ASTM D2671	10.3 MPa (1500 psi) minimum
Ultimate Elongation	Section 6.1.3 ASTM D2671	250% minimum
Secant Modulus @ 2 % strain (expanded)	Section 6.1.4 ASTM D 2671	138 MPa minimum (2.0×10^4 psi)
Specific Gravity (Expanded)	Section 6.1.5 ISO 1183	1.4 maximum
Flammability	Section 6.1.6 ISO 6722	Self-extinguishing within 30 seconds
Dynamic Cut Through	Section 6.1.7 ASTM D3032	13.6 kg (30 pounds) minimum
Scrape Abrasion	Section 6.1.8 ISO 6722	No.1: 500 cycles min No.3: 5,000 cycles min
Dielectric Strength	Section 6.1.9 IEC 60243	19.7kV/mm min
Volume Resistivity	Section 6.1.10 ASTM D2671	1.0×10^{14} ohm • cm minimum
Heat Shock 4 hours at 225 ± 3ºC (437 ± 5ºF)	Section 6.1.11 ASTM D2671	No dripping, flowing or cracking of outer jacket, use mandrel diameters for bend tests in Table3
Stub Splice Sealing Properties		
Air Leakage Sealing Test	Section 6.2.3	No leakage
Current Leakage Test Insulation Resistance	Section 6.2.4.1 Section 6.2.4.2	0.25 maximum microamps $1X10^8$ min ohms
Voltage Withstand	Section 6.2.5	No Breakdown
Flex Test - Current Leakage Test - Insulation Resistance	 Section 6.2.4.1 Section 6.2.4.2	 0.25 maximum microamps $1X10^8$ min ohms
Thermal Shock - Current Leakage Test - Insulation Resistance	 Section 6.2.4.1 Section 6.2.4.2	 0.25 maximum microamps $1X10^8$ min ohms
Cold Impact - Visual - Current Leakage Test - Insulation Resistance	 Section 6.2.4.1 Section 6.2.4.2	 No cracking of outer jacket 0.25 maximum microamps $1X10^8$ min ohms
Heat Aging (168hrs) -Visual - Current Leakage Test - Insulation Resistance	 Section 6.2.4.1 Section 6.2.4.2	 0.25 maximum microamps $1X10^8$ min ohms
Fluid Immersion - Current Leakage Test - Insulation Resistance	 Section 6.2.4.1 Section 6.2.4.2	 0.25 maximum microamps $1X10^8$ min ohms

| Indicates Change