

 Eskom	Standard	Technology
--	-----------------	-------------------

Title: **MINIMUM REQUIREMENTS FOR
LIVE WORK RUBBER AND RIGID
COVER EQUIPMENT** Unique Identifier: **240-170000917**

Alternative Reference Number: **n/a**

Area of Applicability: **Engineering**

Documentation Type: **Standard**

Revision: **1**

Total Pages: **18**

Next Review Date: **April 2028**

Disclosure Classification: **Controlled
Disclosure**

Compiled by



Madri Louw
Live Work Engineer

Date: **04/01/2023**

Approved by



Mike Voudouris
Senior Consultant

Date: **03/03/2023**

Authorized by



Amelia Mtshali
**Senior Manager Design
Base Outage COE**

Date: **17/03/2023**

Supported by SCOT/SC



Andre Bekker
SCOT/SC Chairperson

Date: **13/03/2023**

Content

	Page
1. Introduction	4
2. Supporting clauses	4
2.1 Scope	4
2.1.1 Purpose	4
2.1.2 Applicability	4
2.2 Normative/informative references	4
2.2.1 Normative	4
2.2.2 Informative	5
2.3 Definitions	5
2.3.1 General	5
2.3.2 Disclosure classification	6
2.4 Abbreviations	6
2.5 Roles and responsibilities	6
2.6 Process for monitoring	7
2.7 Related/supporting documents	7
3. Requirements	7
3.1 Gloves	7
3.1.1 Specifications	7
3.1.2 Variations in appearance, sizes, and construction	7
3.1.3 Functional and performance requirements	7
3.1.4 Predelivery requirements	7
3.1.5 In-service requirements	8
3.1.6 Tender requirements / Evaluation requirements	9
3.2 Sleeves	9
3.2.1 Specifications	9
3.2.2 Variations in appearance, sizes, and construction	9
3.2.3 Functional and performance requirements	9
3.2.4 Pre-delivery requirements	10
3.2.5 In-service requirements	10
3.2.6 Tender requirements / Evaluation requirements	11
3.3 Blankets	11
3.3.1 Specifications	11
3.3.2 Variations in appearance, sizes, and construction	11
3.3.3 Functional and performance requirements	11
3.3.4 Pre-delivery requirements	12
3.3.5 In-service requirements	12
3.3.6 Tender requirements / Evaluation requirements	13
3.4 Line Hoses	13
3.4.1 Specifications	13
3.4.2 Variations in appearance, sizes, and construction	13
3.4.3 Functional and performance requirements	13
3.4.4 Pre-delivery requirements	13
3.4.5 In-service requirements	14
3.4.6 Tender requirements / Evaluation requirements	15
3.5 Rubber and Rigid covers	15

ESKOM COPYRIGHT PROTECTED

3.5.1	Specifications	15
3.5.2	Variations in appearance, sizes, and construction	15
3.5.3	Functional and performance requirements	15
3.5.4	Pre-delivery requirements	15
3.5.5	In-service requirements	16
3.5.6	Tender requirements / Evaluation requirements.....	16
4.	Authorization.....	17
5.	Revisions	17
6.	Development team	17
7.	Acknowledgements	17
	Annex A – Tender Technical Evaluation Strategy	18

1. Introduction

The purpose of this standard is to set the minimum requirements for rubber equipment to be utilised for live working.

2. Supporting clauses

2.1 Scope

This standard sets the minimum requirements for rubber equipment to be utilised for live working on networks 11-33kV (Gloving method).

2.1.1 Purpose

Not applicable.

2.1.2 Applicability

This document shall apply throughout Eskom Holdings Limited Distribution Division.

2.2 Normative/informative references

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] ISO 9001 Quality Management Systems.
- [2] 240-146738795: Distribution High Voltage Live Working.
- [3] 240-135661769: Live Work Equipment Testing Standard
- [4] 240-135663316: Care, Inspection, Maintenance and Testing of insulating Gloves, sleeves, hoses, blankets and covers for live working
- [5] IEC 61112 (2002): Blankets of insulating material for electrical purposes.
- [6] IEC 61229 (2002): Rigid protective covers for live working on AC installations.
- [7] SANS 60903 (2015): Electrical insulating gloves
- [8] SANS 60984 (2015): Electrical insulating sleeves
- [9] IEC 61479 (2002): Live Working – Flexible Conductor Covers (Line Hoses) Of Insulating Material
- [10] 240-154360594: Electrical Testing of Insulating Rubber Line Hoses
- [11] 240-170000081: Electrical Testing of Rubber Protective Covers
- [12] 240-170000085: Electrical Testing of Rigid Protective Covers
- [13] 240-154360528: Electrical Testing of Insulating Rubber Blankets
- [14] 240-154360596: Electrical Testing of Insulating Rubber Gloves
- [15] 240-154360598: Electrical Testing of Insulating Rubber Sleeves
- [16] 240-170000917_1: Rubber gloves evaluation
- [17] 240-170000917_2: Rubber sleeves evaluation
- [18] 240-170000917_3: Rubber blanket evaluation
- [19] 240-170000917_4: Rubber line hose evaluation

ESKOM COPYRIGHT PROTECTED

-
- [20] 240-170000917_5: Rubber and rigid covers evaluation
- [21] D-DT-12009: GLOVE, ELECTRICAL: POTENTIAL: 26500 V
- [22] D-DT-12011: GLOVE, ELECTRICAL: POTENTIAL: 36000 V
- [23] D-DT-12014: INSULATING LINE HOSE FOR LIVE WORK
- [24] D-DT-12015: INSULATING LINE HOSE FOR LIVE WORK
- [25] D-DT-12017: INSULATING LINE HOSE WITH COUPLER FOR LIVE WORK
- [26] D-DT-12018: INSULATING LINE HOSE FOR LIVE WORK
- [27] D-DT-12019: STYLE C INSULATING LINE HOSE COUPLER FOR LIVE WORK
- [28] D-DT-12020: INSULATING SLEEVE FOR LIVE WORK
- [29] D-DT-12021: INSULATING SLEEVE FOR LIVE WORK
- [30] D-DT-12022: INSULATING SLEEVE HARNESS FOR LIVE WORK
- [31] D-DT-12023: INSULATING SLEEVE STRAP FOR LIVE WORK
- [32] D-DT-12024: SLOTTED INSULATING BLANKET FOR LIVE WORK
- [33] D-DT-12025: SOLID INSULATING BLANKET FOR LIVE WORK
- [34] D-DT-12026: POLYETHYLENE CONDUCTOR COVER FOR LIVE WORK
- [35] D-DT-12027: POLYETHYLENE INSULATOR COVER FOR LIVE WORK
- [36] D-DT-12028: CUTOUT COVER FOR LIVE WORK
- [37] D-DT-12029: POLYETHYLENE INSULATOR COVER FOR LIVE WORK
- [38] D-DT-12031: INSULATING CROSSARM COVER FOR LIVE WORK

2.2.2 Informative

N/A

2.3 Definitions

2.3.1 General

Definition	Description
Acceptance test	A contractual test to prove to the customer that the device meets the requirements of its specification and conducted and supplied by supplier/manufacturer.
Cuff	Part of a glove from the wrist to the open part of the glove.
Cuff Role	The roll or reinforced edge of a glove or sleeve at the cuff.
Elastomer	A generic term that includes rubbers, latex and elastomeric compounds that may be natural or synthetic or a mixture or a combination of both.
Gloving method	A method whereby the worker is electrically protected by insulating gloves and other insulating equipment and carries out the work in direct contact with live parts.
Insulated	Separated from other conducting surfaces by a dielectric substance (including air space) offering a high resistance to the passage of current.

Definition	Description
Insulating Line Hose	Rigid or flexible cover made of insulating material used to cover energized and/or dead parts and/or adjacent earthed (grounded) parts in order to prevent contact. These covers can be either flexible or rigid. In general, they are commonly called "line hose" or "line guards".
Insulating Rubber	A dielectric material with insulating properties. Type I: Non-resistant to ozone, High-grade polyisoprene rubber compound of natural or synthetic origin, properly vulcanized. Type II: Ozone resistant, made of any elastomer or combination of elastomeric compounds.
Insulating Blanket Rubber	A blanket made of elastomer and has insulating properties as per the definition of insulated provided above.
Insulating Glove Rubber	Glove made of elastomer used for the protection of the worker against electrical shock.
Insulating Sleeve Rubber	A sleeve made of elastomer used in conjunction with an electrical insulating glove to extend protection against electric shock to the upper arm.
Proof test	An initial test conducted by an Eskom Live Work Test Facility on new equipment or repaired equipment prior to release for use.
Rigid covers Protective	Covers generally made of rigid insulating material, they are used to cover live or non-energized elements in order to avoid accidental contact.
Routine tests	A test to which each device is subjected during or after manufacture to ascertain whether the device complies with certain criteria.
Rubber Cover Protective	Type of insulating Live Work cover that can be bent or forced out of shape.
Type test	A test of one or more devices made to a certain design to show that the design meets certain specifications

2.3.2 Disclosure classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.4 Abbreviations

Abbreviation	Description
ASTM	American Society for Testing and Materials
Dx	Distribution
IEC	International Electro Technical Commission
OEM	Original Equipment Manufacturer
SANS	South African National Standard

2.5 Roles and responsibilities

Chairperson of the relevant SCOT SC shall ensure that this document is reviewed as required.

ESKOM COPYRIGHT PROTECTED

2.6 Process for monitoring

This document shall be monitored through SCOT structures, Live Work Care Group and Live Work Technical Committees.

2.7 Related/supporting documents

This is a new document.

3. Requirements

3.1 Gloves

Insulating rubber gloves and the material used to manufacture shall conform to SANS 60903, IEC 60903 and ASTM D120.

3.1.1 Specifications

This document must be read in conjunction with rubber gloves evaluation checklist as well as Buyers guide specifications.

3.1.1.1 Accessories

Accessories for gloves should include bags on first issue (newly authorised live worker) and when required thereafter.

3.1.2 Variations in appearance, sizes, and construction

- 1) Gloves made with elastomer, Type 1 natural insulating rubber
- 2) Classified as either class 3 or class 4
- 3) Sizes from 8 to 12 including half sizes
- 4) Gloves of length 408 mm (16") or 460 mm (18")
- 5) Gloves maximum length should be 460mm (+/- 15mm tolerance)
- 6) Straight rolled cuff
- 7) Contrasting inner and outer colours (e.g. Yellow - black)
- 8) Thickness shall not be more than 2.9 mm for class 3 and 3.6mm for class 4 gloves
- 9) Special Properties should include R- Acid, oil, ozone and C-Extremely low temperature

3.1.3 Functional and performance requirements

The glove must be able to interface well with other brand products. Glove and sleeve must fit adequately and be comfortable to typical average user. Glove must interface with Leather Protectors.

Glove shall be practically put to the test to ensure that manoeuvrability to perform tasks are possible.

3.1.4 Predelivery requirements

3.1.4.1 Marking and labels

Marking and/or label shall be adjacent to the cuff but not closer than 2,5 mm. Marking shall be on external surface of the glove and shall be clearly visible. Marking shall not impair the quality of the glove. Colour coding of markings shall correspond with class 3 – green and class 4 – orange.

Gloves shall be marked with the following:

- 1) Manufacturers trademark
- 2) Double triangle
- 3) IEC/SANS Standard to which manufactured
- 4) Marked with size
- 5) Marked with class
- 6) Marked with type
- 7) Month and year of manufacture

3.1.4.2 Packaging

Each pair of gloves shall be packaged in an individual container or package of sufficient strength to so far as is reasonably practicable, properly protect the gloves from damage when transported, handled and stored.

3.1.4.3 Documentation

Written instructions for use shall be provided with each packaging. The instructions for use shall include information on storage, handling, disposal, periodic inspection, periodic testing and reference to the standard with its date of publication.

3.1.4.4 Certification

Gloves shall be capable of withstanding the corresponding electrical stresses according to its electrical class as per SANS/IEC 60903. Gloves shall withstand the mechanical, climatic and environmental stresses as specified in this SANS/IEC 60903.

An acceptance test certificate shall be required for each rubber glove or batch purchased indicating compliance with IEC/SANS 60903.

Suppliers/Manufacturers shall ensure that such type tests were done before delivery to Eskom which include the following:

- 1) No harmful physical irregularities shall be present upon inspection
- 2) Subjected to di-electric testing
- 3) Subjected to mechanical testing
- 4) Subjected to ageing test
- 5) Subjected to thermal test

3.1.5 In-service requirements

3.1.5.1 Inspection and testing

An inspection and proof test must be conducted by an Eskom Live Work Test Facility within 2 months of delivery or a reasonable timeframe in conformance to contractual arrangements.

Routine tests will be conducted as per the requirements of 240-154360596: Electrical Testing of Insulating Rubber Gloves and 240-135661769: Live Work Equipment Testing Standard.

3.1.5.2 Care and Storage and transportation

Gloves shall be handled, stored and transported as per the requirements of 240-135663316: Care, Inspection, Maintenance and Testing of insulating Gloves, sleeves, hoses, blankets and covers for live working and 240-135661769: Live Work Equipment Testing Standard.

3.1.5.3 Warranty and Support

Gloves to be replaced by manufacturer, free of charge when unused gloves do not pass specific tests within a period of nine months of invoicing date. This warranty shall be binding only if gloves have been correctly stored and have not been submitted to more than one proof test and one routine test.

3.1.6 Tender requirements / Evaluation requirements

The evaluation criteria for gloves are as per 240-170000917_1.

A sample product to be provided by the supplier for the evaluation of product including practical aspects.

If the supplier is the official supplier agent for a particular OEM, a letter stating a such to be provided to the evaluation committee.

3.2 Sleeves

Insulating rubber sleeves and the material used to manufacture shall conform to SANS/IEC 60984 and ASTM D1051.

3.2.1 Specifications

This document must be read in conjunction with rubber sleeves evaluation checklist as well as Buyers guide specifications.

3.2.1.1 Accessories

Accessories for sleeves should include harness, straps, buttons or bags on first issue (newly authorised live worker) and when required thereafter.

3.2.2 Variations in appearance, sizes, and construction

- 1) Sleeves made with elastomer, Type 1 natural insulating rubber
- 2) Classified as either class 3 or class 4
- 3) Sizes from regular, large and extra large
- 4) The cuff, opening and holes must have non-metallic reinforcement
- 5) Straight or curved elbow
- 6) Dipped or moulded process
- 7) Dipped sleeve colour should be contrasting inner and outer (e.g. Yellow – black). Moulded sleeve colour may be single tone (e.g. maroon)
- 8) Thickness shall not be more than 2.9 mm for class 3 and 3.6mm for class 4 sleeves. Additional thickness of not more than 0,6mm may be required for special properties A, H and Z.
- 9) Special properties should include A- Acid H- oil, Z- ozone and C-Extremely low temperature

3.2.3 Functional and performance requirements

The sleeves must be able to interface well with other brand products. Sleeves and gloves must fit adequately and be comfortable to typical average user.

Sleeves shall be practically put to the test to ensure that manoeuvrability to perform tasks are possible.

3.2.4 Pre-delivery requirements

3.2.4.1 Marking and labels

Marking must be clearly visible and durable and shall not impair the quality of the sleeve.

Sleeves shall be marked with the following:

- 1) Manufacturer's trademark
- 2) Double triangle
- 3) IEC/SANS Standard to which manufactured
- 4) Marked with size
- 5) Marked with class
- 6) Marked with type
- 7) Marked with "left or "right"
- 8) Month and year of manufacture

3.2.4.2 Packaging

Each pair of sleeves shall be packaged in an individual container or package of sufficient strength to so far as is reasonably practicable, properly protect the sleeves from damage when transported, handled and stored.

3.2.4.3 Documentation

Written instructions for use shall be provided with each packaging. The instructions for use shall include information on storage, handling, disposal, periodic inspection, periodic testing and reference to the standard with its date of publication.

3.2.4.4 Certification

Sleeves shall be capable of withstanding the corresponding electrical stresses according to its electrical class as per SANS 60984. Sleeves shall withstand the mechanical, climatic and environmental stresses as specified in this SANS 60984.

An acceptance test certificate shall be required for each rubber sleeve or batch purchased indicating compliance with IEC/SANS 60984.

Suppliers shall ensure that such type tests were done before delivery to Eskom including the following:

- 1) No harmful physical irregularities shall be present upon inspection
- 2) Subjected to di-electric testing
- 3) Subjected to mechanical testing
- 4) Subjected to ageing test
- 5) Subjected to thermal test

3.2.5 In-service requirements

3.2.5.1 Inspection and testing

An inspection and proof test must be conducted by an Eskom Live Work Test Facility within 2 months of delivery or a reasonable timeframe in conformance to contractual arrangements.

Routine tests will be conducted as per the requirements of 240-154360598: Electrical Testing of Insulating Rubber Sleeves and 240-135661769: Live Work Equipment Testing Standard.

3.2.5.2 Care and Storage and transportation

Sleeves shall be handled, stored and transported as per the requirements of 240-135663316: Care, Inspection, Maintenance and Testing of insulating Gloves, sleeves, hoses, blankets and covers for live working and 240-135661769: Live Work Equipment Testing Standard.

3.2.5.3 Warranty and Support

Sleeves to be replaced by manufacturer, free of charge when unused sleeves do not pass specific tests within a period of nine months of invoicing date as per contractual arrangements. This warranty shall be binding only if sleeves have been correctly stored and have not been submitted to more than one proof test and one routine test.

Tests will be done utilising the hammock method within Eskom Distribution.

3.2.6 Tender requirements / Evaluation requirements

The evaluation criteria for sleeves are as per 240-170000917_2.

A sample product to be provided by the supplier for the evaluation of product including practical aspects.

If the supplier is the official supplier agent for a particular OEM, a letter stating a such to be provided to the evaluation committee.

3.3 Blankets

Insulating rubber blankets and the material used to manufacture shall conform to IEC 61112 and ASTM D1048.

3.3.1 Specifications

This document must be read in conjunction with rubber blanket evaluation checklist as well as Buyers guide specifications.

3.3.1.1 Accessories

Accessories may include blanket pegs.

3.3.2 Variations in appearance, sizes, and construction

- 1) Blankets made with elastomer, Type 2 natural insulating rubber
- 2) Classified as class 4
- 3) Split(slotted) or solid
- 4) Colour to preferably be Orange
- 5) Sizes 910mm x 910mm (+/-15mm variance)
- 6) Must be seamless; eyelets shall be non-conductive
- 7) Maximum elastomer thickness of 4.3mm
- 8) Special properties shall include A- Acid H- oil, Z- ozone and C-Extremely low temperature

3.3.3 Functional and performance requirements

The blankets shall be practically put to the test to ensure that manoeuvrability to perform tasks are possible.

3.3.4 Pre-delivery requirements

3.3.4.1 Marking and labels

Marking shall not impair the quality of the blanket. Colour coding of markings shall correspond with class 4 – orange.

Blankets shall be marked with the following:

- 1) Manufacturer's trademark
- 2) Double triangle
- 3) IEC Standard to which manufactured
- 4) Marked with size (length and width)
- 5) Marked with class
- 6) Month and year of manufacture

3.3.4.2 Packaging

Blankets shall be packaged in an individual container or package of sufficient strength to properly protect the blankets from damage.

3.3.4.3 Documentation

Written instructions for use shall be provided with each packaging. The instructions for use shall include information on storage, handling, disposal, periodic inspection, periodic testing and reference to the standard with its date of publication.

3.3.4.4 Certification

Blankets shall be capable of withstanding the corresponding electrical stresses according to its electrical class as per IEC 61112. Blankets shall withstand the mechanical, climatic, and environmental stresses as specified in this SANS 61112.

An acceptance test certificate shall be required for each rubber blanket purchased indicating compliance with IEC 61112.

Suppliers shall ensure that such type tests were done before delivery to Eskom including the following:

- 1) No harmful physical irregularities shall be present upon inspection
- 2) Subjected to di-electric testing
- 3) Subjected to mechanical testing
- 4) Subjected to ageing test
- 5) Subjected to thermal test

3.3.5 In-service requirements

3.3.5.1 Inspection and testing

An inspection and proof test must be conducted by an Eskom Live Work Test Facility within 2 months of delivery or a reasonable timeframe in conformance to contractual arrangements.

Routine tests will be conducted as per the requirements of 240-154360528: Electrical Testing of Insulating Rubber Blankets and 240-135661769: Live Work Equipment Testing Standard.

3.3.5.2 Care and Storage and transportation

Blankets shall be handled, stored and transported as per the requirements of 240-135663316: Care, Inspection, Maintenance and Testing of insulating Gloves, sleeves, hoses, blankets and covers for live working and 240-135661769: Live Work Equipment Testing Standard.

3.3.5.3 Warranty and Support

Blankets to be replaced by manufacturer, free of charge when unused blankets do not pass specific tests within a period of nine months of invoicing date. This warranty shall be binding only if blankets have been correctly stored and have not been submitted to more than one proof test and one routine test.

3.3.6 Tender requirements / Evaluation requirements

The evaluation criteria for blankets are as per 240-170000917_3.

A sample product to be provided by the supplier for the evaluation of product including practical aspects.

If the supplier is the official supplier agent for a particular OEM, a letter stating a such to be provided to the evaluation committee.

3.4 Line Hoses

Insulating line hoses and the material used to manufacture shall conform to IEC 61479.

3.4.1 Specifications

This document must be read in conjunction with rubber line hoses evaluation checklist as well as Buyers guide specifications.

3.4.2 Variations in appearance, sizes, and construction

- 1) Made with flexible insulating material (elastomer, plastic or blend of the two)
- 2) Classified as either class 3 or class 4
- 3) Style A, B, C or D
- 4) Length either 915 mm, 1375 mm or 1820 mm; +/-15mm variance
- 5) Connector to be minimum length of 150mm, +/- 15mm additional for connector end (if applicable)
- 6) Minimum thickness to pass electrical tests
- 7) Inside diameter of 22mm, +/- 2mm variance
- 8) Special properties shall include A- Acid H- oil, Z- ozone and C-Extremely low temperature

3.4.3 Functional and performance requirements

The line hoses must be compatible with other products and brand including couplers.

The Line hoses shall be practically put to the test to ensure that manoeuvrability to perform tasks are possible.

3.4.4 Pre-delivery requirements

3.4.4.1 Marking and labels

Marking shall not impair the quality of the line hose. Colour coding of markings shall correspond with IEC requirements.

Line hoses shall be marked with the following:

- 1) Manufacturer's trademark
- 2) Double triangle
- 3) IEC Standard to which manufactured
- 4) Marked with size (length and width)
- 5) Marked with class
- 6) Month and year of manufacture

3.4.4.2 Packaging

Line hoses shall be packaged in such a manner as to not be distorted mechanically while in transit. The outside of the container or package shall be marked with the name of the manufacturer or supplier, classification, category and size (diameter).

3.4.4.3 Documentation

Written instructions shall for use shall be provided with each packaging. The instructions for use shall include information on storage, handling, disposal, periodic inspection, periodic testing, and reference to the standard with its date of publication.

3.4.4.4 Certification

Line Hoses shall be capable of withstanding the corresponding electrical stresses according to its electrical class as per IEC 61479. Line Hoses shall withstand the mechanical, climatic, and environmental stresses as specified in this SANS 61479.

An acceptance test certificate shall be required for each rubber line hoses purchased indicating compliance with IEC 61479.

Suppliers shall ensure that such acceptance tests were done before delivery to Eskom.

- 1) No harmful physical irregularities shall be present upon inspection
- 2) Subjected to di-electric testing
- 3) Subjected to mechanical testing
- 4) Subjected to ageing test
- 5) Subjected to thermal test

3.4.5 In-service requirements

3.4.5.1 Inspection and testing

An inspection and proof test must be conducted by an Eskom Live Work Test Facility within 2 months of delivery or a reasonable timeframe in conformance to contractual arrangements.

Routine tests will be conducted as per the requirements of 240-154360594: Electrical Testing of Insulating Rubber Line Hoses and 240-135661769: Live Work Equipment Testing Standard.

3.4.5.2 Care and Storage and transportation

Blankets shall be handled, stored and transported as per the requirements of 240-135663316: Care, Inspection, Maintenance and Testing of insulating Gloves, sleeves, hoses, blankets and covers for live working and 240-135661769: Live Work Equipment Testing Standard.

3.4.5.3 Warranty and Support

Hoses to be replaced by manufacturer, free of charge when unused hoses do not pass specific tests within a period of nine months of invoicing date. This warranty shall be binding only if line hoses have been correctly stored and have not been submitted to more than one proof test and one routine test.

3.4.6 Tender requirements / Evaluation requirements

The evaluation criteria for line hoses are as per 240-170000917_4.

A sample product to be provided by the supplier for the evaluation of product including practical aspects.

If the supplier is the official supplier agent for a particular OEM, a letter stating a such to be provided to the evaluation committee.

3.5 Rubber and Rigid covers

Insulating rubber and rigid covers and the material used to manufacture shall conform to IEC 61229 and ASTM D1049.

3.5.1 Specifications

These specifications must be read in conjunction with rubber and rigid covers evaluation checklist as well as Buyers guide specifications.

3.5.2 Variations in appearance, sizes, and construction

- 1) Made with insulating material
- 2) Shape and sizes shall be designed to ensure that cover remains in position under all reasonably foreseeable environmental conditions.
- 3) Various types include conductor cover, tension cover, suspension cover, pin type insulator cover, composite insulator cover, pole cover, pole top cover, cross arm cover
- 4) Any incorporated conductive parts shall not affect electrical properties of the body
- 5) Classified as class 3, class 4 or class 5
- 6) Rigid covers shall be fitted with a handling adapter
- 7) Special properties shall include A- Acid H- oil, and C-Extremely low temperature

3.5.3 Functional and performance requirements

Covers shall be practically put to the test to ensure that manoeuvrability to perform tasks are possible. Covers of the same cover system shall be compatible and linkable together

3.5.4 Pre-delivery requirements

3.5.4.1 Marking and labels

Marking shall not impair the quality of the cover. Colour coding to correspond to class. Covers shall be marked with the following:

- 1) Manufacturer's trademark
- 2) Double triangle
- 3) IEC Standard to which manufactured
- 4) Marked with size (length and width)
- 5) Marked with class

- 6) Marked with category (if applicable)
- 7) Month and year of manufacture
- 8) Space for notation of inspection dates

3.5.4.2 Packaging

Rubber and rigid covers shall be packaged in an individual container or package of sufficient strength to properly protect the covers from damage.

3.5.4.3 Documentation

Written instructions shall for use shall be provided with each packaging. The instructions for use shall include information on storage, handling, disposal, periodic inspection, periodic testing, and reference to the standard with its date of publication.

3.5.4.4 Certification

Rubber and Rigid covers shall be capable of withstanding the corresponding electrical stresses according to its electrical class as per IEC 61229. Covers shall withstand the mechanical, climatic, and environmental stresses as specified in IEC 61229.

An acceptance test certificate shall be required for each rubber or rigid cover purchased indicating compliance with IEC 61229.

Suppliers shall ensure that such acceptance tests were done before delivery to Eskom including the following:

- 1) No harmful physical irregularities shall be present upon inspection
- 2) Subjected to di-electric testing
- 3) Subjected to mechanical testing
- 4) Subjected to ozone resistance testing

3.5.5 In-service requirements

3.5.5.1 Inspection and testing

An inspection and proof test must be conducted by an Eskom Live Work Test Facility within 2 months of delivery or a reasonable timeframe in conformance to contractual arrangements.

Routine tests will be conducted as per the requirements of 240-170000081: Electrical Testing of Rubber Protective Covers, 240-170000085: Electrical Testing of Rigid Protective Covers and 240-135661769: Live Work Equipment Testing Standard.

3.5.5.2 Care and Storage and transportation

Covers shall be handled, stored and transported as per the requirements of 240-135663316: Care, Inspection, Maintenance and Testing of insulating Gloves, sleeves, hoses, blankets and covers for live working and 240-135661769: Live Work Equipment Testing Standard.

3.5.5.3 Warranty and Support

Covers to be replaced by manufacturer, free of charge when unused covers do not pass specific tests within a period of nine months of invoicing date. This warranty shall be binding only if covers have been correctly stored and have not been submitted to more than one proof test and one routine test.

3.5.6 Tender requirements / Evaluation requirements

The evaluation criteria for rubber and rigid covers are as per 240-170000917_5.

A sample product to be provided by the supplier for the evaluation of product including practical aspects.

ESKOM COPYRIGHT PROTECTED

If the supplier is the official supplier agent for a particular OEM, a letter stating a such to be provided to the evaluation committee.

4. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Mike Voudouris	Senior Consultant
Andre Bekker	M&O COE Manager

5. Revisions

Date	Rev	Compiler	Remarks
April 2023	1	M Louw	This is a new document.

6. Development team

- Mike Voudouris
- Madri Louw
- Rakeen Bhoola
- Adesh Rambally
- Saliha Watson

7. Acknowledgements

Not applicable.

Annex A – Tender Technical Evaluation Strategy

A.1 Technical Evaluation Threshold

Mandatory and Non-mandatory criteria are as per Technical Evaluation checklists.

Non-mandatory – Double triangle marking

A.2 TET members

TET members should consist as a minimum of members from SCOT Live Work Care Group member and SCOT Live Work Test Facility workgroup

A.3 Mandatory Technical Evaluation Criteria

As per evaluation checklists

A.4 Foreseen Acceptable / Unacceptable Qualifications

A.4.1 Risks

Product does not meet any mandatory requirements.