

Title: **TECHNICAL EVALUATION
CRITERIA FOR MV AND LV
CABLES**

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1. Introduction

This document has been developed to set the standard technical evaluation criteria to be used when evaluating the tender submissions. This covers the technical evaluation on the medium voltage cables and low voltage cables for Eskom. It has clauses developed to address various aspects required to perform the technical evaluation. It has been developed based on the Eskom cable equipment specifications.

This document contains both the evaluation criteria used for the documentation evaluation and factory evaluation. In addition, it contains the questions which are required for technical evaluation purposes.

2. Supporting clauses

2.1 Scope

The document covers the criteria for the evaluation of the medium voltage cables and low voltage cables within Eskom Holdings SOC (Ltd).

2.1.1 Purpose

The document addresses the standard documented technical evaluation criteria to be used when evaluating the tender submissions for the cables in line with the Eskom Holdings SOC (Ltd) requirements and it is applicable to all the technical evaluations for the related tender submissions.

2.1.2 Applicability

This document shall apply for Eskom Holdings Limited, Distribution, Transmission and Generation division wherein Eskom has a controlling interest.

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] SANS 1339: Cross-linked polyethylene (XLPE) – insulated cables for voltages from 3,8/6,6 kV to 19/33 kV.
- [2] SANS 1507-3: Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300 V).
- [3] 240-56063792: Specification for medium voltage impregnated paper and XLPE –insulated cables.
- [4] 240-56063805: Specification for LV power and control cable with rated voltage 600/1000V.
- [5] D-DT-3128: CABLE, 1 kV 1C, 2C, 3C, 4C, 7C, 12C, 19C, CU LV cables.
- [6] D-DT-8001: Cable, 11 kV, 22 kV and 33kV XLPE-insulated.
- [7] D-DT-2801: Cable, 11 kV, 22 kV and 33kV XLPE-insulated.
- [8] D-DT-2128: CABLE, 1 kV, Cu and Al LV cables

2.2.2 Informative

- [9] 32-9: Definition of Eskom documents.
- [10] 32-644: Eskom documentation management standard.
- [11] 474-65: Operating manual of the Steering Committee of Technologies (SCOT).

2.3 Definitions

2.3.1 General

Definition	Description
Eskom Evaluating Representative(s)	The person(s) appointed by Eskom to perform the evaluation of tender submission(s) in line with the Eskom requirements.

2.3.2 Disclosure classification

Confidential: the classification given to information that may be used by malicious/opposing/hostile elements to harm the objectives and functions of Eskom Holdings Limited.

2.4 Abbreviations

Abbreviation	Description
LV	Low Voltage
MV	Medium Voltage
PILC	Paper Insulated Lead Covered
XLPE	Cross-Linked Polyethylene

2.5 Roles and responsibilities

All Eskom employees and/or appointed bodies involved in the procurement of the MV and LV cables shall ensure that the project deliverable meet the requirements of these technical evaluation criteria. Any deviation from these requirements shall constitute non-conformance, unless it was in advance agreed to by a delegated Cable Systems Specialist and is based on sound engineering judgement.

All suppliers (of the MV and LV Cables) to Eskom must be conversant with the requirements of this standard, and shall comply with the requirements. No deviations will be accepted and suppliers shall ensure that they obtain clarity where required and obtain all supporting information or documents necessary to comply with this document.

2.6 Process for monitoring

The MV and LV cables acceptance shall be based on fully compliant submission of documents, the factory testing of the cables, and proving manufacturing capability and capacity during factory evaluations.

2.7 Related/supporting documents

Refer to clause/ section 2.2.

3. Requirements

This document contains the technical evaluation criteria for MV and LV cables. The three phases of the technical evaluation criteria are specific to each of the cable equipment types evaluated. The evaluation methodology will include three main stages, namely the documentation evaluation, factory evaluations and factory sample evaluations.

3.1 Documentation Evaluation

The documentation evaluation exercise is performed by the Eskom evaluating representatives. This initial part of the evaluation starts when submissions are opened and assessed for the first time. The submitted documents will be evaluated against the evaluation criteria as stated in clause 3.4 to clause 3.6.

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During the documentation evaluation; fully compliant type tested MV and LV cables in accordance SANS 1339 (for MV XLPE) and SANS 1507-3 (for LV) will be required. Failure to submit and comply with the type test requirements specified in these documents will lead to immediate disqualification.

The documentation evaluations are meant for establishing if all the key tender deliverables are met with regard to the cables offered. The documentation evaluation will be performed in two levels: 1) the mandatory technical evaluation requirements and deliverables (Level 1: mandatory), and 2) the scoring phase (level 2: submission requirements).

The Level 1 mandatory technical evaluation requirements and deliverables constitute a total of 80 points of the technical evaluation documentation score, while the level 2 submission requirements constitute 20 points of the technical evaluation documentation score. If all stages of the complete technical evaluation (i.e. documentation, factory and factory sample evaluations) were successfully completed and found compliant per product range offered, the technical evaluation documentation score achieved will by default be the final technical evaluation score outcome.

The documentation tender submission must meet all the level 1 gate-keeper mandatory technical evaluation requirements. Failure to meet all the mandatory requirements will result to a score of 0 points achieved for the 80 points scoring weight allowed and immediate disqualification; thus, a tenderer can only obtain 0 points or 80 points, and nothing in between for level 1 mandatory gate-keeper requirements. Equation 1 shows how the technical evaluation score will be calculated.

Technical evaluation score = 80 (level 1 mandatory gate-keeper requirements) + 20 (level 2 submission requirements) (1)

Immediate disqualification during the level 1 gate-keepers mandatory technical evaluation stage will mean that Eskom will be allowed to stop the technical evaluations without concluding the review of all the level 1 gate-keeper mandatory technical evaluation requirements not yet reviewed. Any further review of the level 1 gate-keeper mandatory technical evaluation requirements will be at the discretion of Eskom.

Note: Only a 100% combined score achieved for the level 1 mandatory gate-keeper requirements and the level 2 scoring phase will proof 100% product compliance. If all level 1 requirements are met and a final combined score lower than 100% is achieved. The tenderer will be required to ensure all non-compliant aspects are met as part of possible contract award.

3.2 Factory Evaluation

The factory evaluations shall only be performed on the submissions that have met all the mandatory technical evaluation requirements in level 1: mandatory gate-keeper requirements as stated in this document. Eskom Commercial shall make the arrangements for factory visits and ensure the technical representatives are invited in time.

At the factory: the Eskom evaluating representative(s) conducts the evaluation through the use of checklists. The checklists are used to verify factory capability and manufacturing method compliance to the type tested cables offered.

The factory evaluation will consist of the cable manufacturing plant evaluation (i.e design capability, type tested compounds, extrusion lines, manufacturing plant, processes, sample and routine testing, etc).

The following areas shall be assessed during the manufacturing evaluation:

Table 1: Factory evaluation Check list

Item Nr	Item description	Clause	Weight	Score
1.	Design and software design capability.	240-56063805 Clause 3.2	10	
2.	Machinery capability.	240-56063805 Clause 3.2	20	
3.	Plant setup.		10	

Item Nr	Item description	Clause	Weight	Score
4.	Material handling and storage.	240-56063805 Clause 3.10	10	
5	Production process and critical checkpoints.	240-56063805 Clause 3.9	10	
6	Testing facilities including certification and calibration of testing equipment.	240-56063805 Clause 3.8.4	10	
7	Sample and routine testing and procedures.	240-56063805 Clause 3.8.4	10	
8	Cable, conductor and cable outer sheath marking.	240-56063805 Clause 3.4 to 3.6	10	
9	Packaging of materials and cable drums.	240-56063805 Clause 3.7	10	
Tenderers will be required to score a minimum of 80/100 to proceed to the next phase of evaluation (SDL&I, Finance and Commercial).				/100

At the end of this exercise, the Eskom evaluating representative(s) lists all the deviations and identified risks if any. The representative conducts a formal discussion of the deviations and risks in line with Eskom's requirements.

One of the following conditions will have to be met for the factory evaluation i.e condition for factories to which Eskom has previously performed factory evaluations within the last seven years, or condition for factories to which Eskom has never performed factory evaluations or factory evaluations were performed more than seven years ago.

3.2.1 Condition where Eskom has previously performed factory evaluations within the last seven (7) years:

Factory evaluations will not be performed if an open tender evaluation was performed on the product or products offered within the last seven (7) years. If a published report was compiled and is available for the previously completed factory evaluations, then the information available from that report shall be used and there would be no need to re-evaluate the factory as per clause 3.2 of this document.

If however there has been changes either on the design, or manufacturing process or raw material (including change of the location of the manufacturing plant or change of main component suppliers from the previous evaluation) then it might be required to perform the factory evaluation depending on a decision made by the Eskom evaluation team. If the Eskom evaluation team deem it necessary to perform the factory evaluation, such will be communicated once the desktop evaluation is concluded. Any changes done on the previously evaluated submission (if applicable) must be clearly stated in the submission.

3.2.2 Eskom has previously performed factory evaluations more than seven (7) years ago, or no factory evaluation has been previously performed

Full factory evaluation in accordance with clause 3.2 above shall be performed for these kinds of submissions.

3.3 Factory Sample Evaluation

The factory sample evaluations will be the evaluation of the exact replica product that is offered to Eskom during tender. A product sample will be required; whereby each tenderer is required to prepare only one exact replica sample per cable type offered for factory sample evaluations.

The factory sample evaluations shall only be performed on the submissions that have met all the documentation mandatory technical evaluation requirements in level 1 and were found compliant for the factory evaluations concluded, in accordance with this document.

It is required that the tenderer ensure that the required exact replica samples in accordance with the Eskom specifications and technical evaluation criteria are manufactured, tested and ready for evaluation within one month after Eskom notified the tenderer that Eskom will proceed with factory evaluations and factory sample evaluations. The Eskom notification will include a list of the product ranges that was successful to advance to the factory evaluations and factory sample evaluations stages.

Eskom Commercial shall make the necessary arrangements for the exact replica factory sample evaluations, by ensuring the companies are notified and the technical representatives are invited in time.

The factory sample evaluations shall be performed in accordance with SANS 1339 and or SANS 1507-3 at the cable manufacturing plant in South Africa.

One of the following conditions will have to be met for the factory sample evaluation i.e condition for factories to which Eskom has previously performed factory sample evaluations within the last seven years, or condition for factories to which Eskom has never performed factory sample evaluations or factory sample evaluations were performed more than seven years ago.

3.3.1 Condition where Eskom has previously performed factory sample evaluations within the last seven (7) years:

Factory sample evaluations will not be performed if an open tender evaluation was performed on the product or products offered within the last seven (7) years. If a published report was compiled and is available for the previously completed factory sample evaluations, then the information available from that report shall be used and there would be no need to re-evaluate the factory sample as per clause 3.3 of this document.

If however there has been changes either on the design, or manufacturing process or raw material (including change of the location of the manufacturing plant or change of main component suppliers from the previous evaluation) then it might be required to perform the factory sample evaluation depending on a decision done by the Eskom evaluation team. If the Eskom evaluation team deem it necessary to perform the factory sample evaluation, such will be communicated once the desktop evaluation is concluded. Any changes done on the previously evaluated submission (if applicable) must be clearly stated in the submission.

3.3.2 Eskom has previously performed factory sample evaluations more than seven (7) years ago, or no factory sample evaluation has been previously performed

Full factory sample evaluation in accordance with clause 3.3 above shall be performed for these kinds of submissions.

3.4 Technical Evaluation Gate Keepers for MV XLPE Cables**3.4.1 Technical Evaluation Criteria MV XLPE Cables: Mandatory Technical Evaluation Requirements**

MV XLPE Cable technical evaluation criteria for the documentation exercise		
TASK / MEASURE		
Criteria	Clause	Acceptance: Yes/ No
Is a full list as well as complete English copies of type test reports as per the specification requirements submitted?	240-56063792 Clause 3.3 & 3.3.1.3	
Is summary of tests schedule submitted in the provided excel format?	240-56063792 Clause 3.3.1.1	
Are completed technical schedules B submitted in the provided excel format?	Technical Schedules A and B	
Are cable construction drawings submitted?	240-56063792 Clause 3.3.1.2	
Are cable dimensional data drawings submitted?	240-56063792 Clause 3.3.1.2	
Are cables rating data and calculations submitted for current rating and fault current ratings?	240-56063792 Clause 3.3.1.3	
Has type testing been performed at an accredited Test facility?	240-56063792 Clause 3.3	
Are Type testing requirements met in accordance with Eskom requirements?	240-56063792 Clause 3.3	
Is the cable conductor marking method provided?	240-56063792 Clause 3.2.2	
Is the cable marking method provided?	240-56063792 Clause 3.2.3	
Is the longitudinal water blocking method provided?	240-56063792 Clause 3.1.4.7	
Does the materials and construction of cable meet the Eskom requirements?	240-56063792 Clause 3.3	
Do cable ratings meet Eskom requirements?	240-56063792, Table 1 (for relevant sizes)	
Is the marking of cable outer sheath provided?	240-56063792 Clause 3.2.4	
Are the type tested raw material and extrusion line information submitted?	SANS 1339	
Does schedule B meet Eskom's schedule A requirement.	240-56063792 Clause 3.3.1.1	
Any "NO" on the above scores the supplier will be disqualified. The Type testing should fully comply with the requirements of SANS 1339 in order to obtain YES under testing requirements. The MV XLPE cable should fully comply with Eskom specifications where applicable to obtain a YES on cable materials and construction.		

3.4.2 Technical evaluation criteria MV XLPE Cables – Level 2 Scoring

MV XLPE Cable technical evaluation for the documentation exercise			
Routine testing and type testing Weight: 4			
Criteria	Clause	Weight	Score
Were type tests performed in the last 10 years?	240-56063792 Clause 3.3 & 3.3.1.3	1	
Generic routine test certificate & reports submitted?	240-56063792 Clause 3.3 & 3.3.1.3	1	
Factory routine tests failure rate (Number of cables tested and failed per annum/number of cables tested per annum). Figures must be auditable for the last 2 years.	Ratio	1	
Was the water blocking method type tested?	240-56063792 Clause 3.1.4.7	1	
- For Type testing performed within the last 10 Years supplier gets 100% and loses 20 % for each additional year. - For the routine test certificate or report supplier gets 100 % if all requirements are met as per SANS 1339, and loses 20% for each missing requirement. - A factory routine test failure rate < 5% the supplier gets 100% and loses 100% for a factory failure rate > than 5%. - If water blocking testing was done supplier gets 100 %, and if not 0%.		Total	/4
Technical schedules Weight: 5 Total			
Criteria	Clause	Weight	Score
Correctness of completion i.e. no "TBA, Comply, Noted, supplied later, noted, acceptable only when Eskom informs"	Technical schedules A & B	2.5	
No technical deviations on technical schedules.	Technical schedules A & B	2.5	
NB: The technical schedules B are provided on the Annexures of the MV cable specifications. - Negative marking is done and a penalty of 0.2 points is applicable for each incorrect completion deviation. - Negative marking is done and a penalty of 0.1 points is applicable for each deviation from meeting Eskom specification and deviations.		Total	/5

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Drawings Weight: 6			
Criteria	Clause	Weight	Score
Drawing number shown on drawing?		0.3	
Revision number shown on drawing?		0.3	
Detailed description provided in "Title"?		0.3	
Approval date shown on drawing?		0.3	
Completed legend?		0.3	
Marking of conductor drawing submitted?		1.0	
Marking of cable drawing submitted?		0.6	
Marking of outer sheath drawing submitted?		0.6	
All cable layers indicated on drawing?		1.0	
Complete labelling of all cable layers?		1.0	
Negative marking and supplier loses the applicable weighting per deviation.		Total	/6
Packaging Weight: 5			
Criteria	Clause	Weight	Score
Are cable drums manufactured in accordance with Eskom specification?	240-56063792 Clause 3.2.5	3	
Is Marking of cable drum done in accordance with Eskom specification?	240-56063792 Clause 3.2.5	2	
Negative marking is applied, and supplier loses 0.1 point for each deviation from Eskom specification.		Total	/5

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3.5 Technical Evaluation Criteria for LV Cables**3.5.1 Technical Evaluation Criteria LV Power and Control Cables: Mandatory Technical Evaluation Requirements**

LV Power and Control Cable technical evaluation criteria for the documentation exercise		
TASK / MEASURE		
Criteria	Clause	Acceptance: Yes/ No
Is a full list as well as complete English copies of type test reports as per the specification requirements submitted?	240-56063805 Clause 3.8.4	
Is summary of tests schedule submitted in the provided excel format?	240-56063805 Clause 3.8.3	
Are completed technical schedules B submitted in the provided excel format?	Technical Schedules A and B	
Are cable construction drawings submitted?	240-56063805 Clause 3.8.1	
Are cable dimensional data drawings submitted?	240-56063805 Clause 3.8.1	
Are cable rating data and calculations submitted for current rating and fault current ratings?	240-56063805 Clause 3.8.2	
Has type testing been performed at an accredited Test facility?	240-56063805 Clause 3.8.4	
Are Type testing requirements met in accordance with Eskom requirements?	240-56063805 Clause 3.8.4	
Is the cable conductor marking method provided?	240-56063805 Clause 3.4	
Is the cable marking method provided?	240-56063805 Clause 3.8.4	
Does the materials and construction of cable meet the Eskom requirements?	240-56063805 & SANS 1507-3	
Does cable core colouring meet Eskom requirements?	240-56063805, Table 1 (for relevant number of cores)	
Is the marking of cable outer sheath provided?	240-56063805 Clause 3.8.6	
Are the type tested raw material and extrusion line information submitted?	SANS 1507-3	
Does schedule B meet Eskom schedule A requirement.	240-56063805 Clause 3.8.3	
Any "NO" on the above scores the supplier will be disqualified. The Type testing should fully comply with the requirements of SANS 1507-3.		

3.5.2 Technical evaluation criteria LV Power and Control Cables – Level 2 Scoring

LV Power and Control Cable technical evaluation for the documentation exercise			
Routine testing and type testing Weight: 4			
Criteria	Clause	Weight	Score
Were type tests performed in the last 10 years?	240-56063805 Clause 3.8.4	1	
Generic routine test certificate & reports submitted?	240-56063805 Clause 3.8.4	1	
Factory routine tests failure rate. (Number of cables tested and failed per annum/number of cables tested per annum). Figures must be auditable for the last 2 years. Suppliers with greater than 5% failure rates will be excluded.	Ratio	1	
Does cable core colouring meet Eskom requirements?	240-56063805 Table 1	1	
- For Type testing performed within the last 10 Years supplier gets 100% and loses 20 % for each additional year. - For the routine test certificate or report supplier gets 100 % if all requirements as per SANS included, and loses 20% for each missing requirement. - A factory routine test failure rate < 0.05% the supplier gets 100%, and loses 100% for a factory failure rate > than 0.05. - Is cable core colouring document submitted and meets Eskom requirements? If yes supplier gets 100 %, and if not 0%.		Total	/4
Technical schedules Weight: 5 Total			
Criteria	Clause	Weight	Score
Correctness of completion i.e. no "TBA, comply, noted, supplied later, noted, acceptable only when Eskom informs"	Technical schedules A & B	2.5	
No technical deviations on technical schedules.	Technical schedules A & B	2.5	
NB: The technical schedules B are provided on the Annexures of the LV Power and Control Cable Specification. - Negative marking is done and a penalty of 0.2 points is applicable for each incorrect completion deviation. - Negative marking is done and a penalty of 0.1 points is applicable for each deviation from meeting Eskom specification and deviations.		Total	/5

Drawings Weight: 6			
Criteria	Clause	Weight	Score
Drawing number shown on drawing?		0.3	
Revision number shown on drawing?		0.3	
Dimensions shown on drawing?		0.3	
Detailed description provided in "Title"?		0.3	
Approval date shown on drawing?		0.3	
Completed legend?		0.3	
Marking of conductor drawing submitted?		1.0	
Marking of cable drawing submitted?		0.6	
Marking of outer sheath drawing submitted?		0.6	
All cable layers indicated on drawing?		1.0	
Complete labelling of all cable layers?		1.0	
Negative marking and supplier loses the applicable weighting per deviation.		Total	/6
Packaging Weight: 5			
Criteria	Clause	Weight	Score
Are cable drums manufactured in accordance with Eskom specification?	240-56063805 Clause 3.7	3	
Is Marking of cable drum done in accordance with Eskom specification?	240-56063805 Clause 3.7	2	
Negative marking is applied, and supplier loses 10% for each deviation from Eskom specification.		Total	/5

3.6 Conclusion

This report is effective to specify the technical evaluation criteria for MV and LV cables to be used in Eskom. The cable suppliers are to complete technical schedule B in accordance with 240-56063792, 240-85450662, SANS 1339 and SANS 1507-3 as part of the tender deliverables.

The technical evaluation criteria for this project are specified in clause 3.1 to clause 3.6 of this document.

4. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Mfundu Songo	Senior Manager: Dx Engineering
Kebone Mogase	Senior Advisor: Commercial

5. Revisions

Date	Rev	Compiler	Remarks
April 2023	4	Q. Khumalo	Requirements for PILC cables have been removed. PILC will no-longer be included for National Contracts; will be procured by the OUs as and when required by the specific OU.
March 2022	3	Q. Khumalo	Option to waiver factory evaluation and factory sample evaluations if they have been performed within the past 7 years (clause 3.2 and 3.3). Factory evaluation check sheet added (Table 1).
Sept 2017	2	Q. Khumalo	Revised to align with the latest revision of the cable standards (240-56063792 & 240-56063805). Included the buyer's guides for Aluminium cables. Added the requirements for factory sample evaluation.
Oct 2014	1	T. Du Plessis & Q. Khumalo	New document.

6. Development team

The following people were involved in the development of this document:

- Queeneth Khumalo: Chief Engineer: Dx Engineering and Technology HV Plant

7. Acknowledgements

Not applicable.