Eskom	Standard	Technology

Title: **COLOUR CODING STANDARD FOR LINE HARDWARE, INCLUDING HELICAL WIRE FORM PRODUCTS, TO BE APPLIED TO ESKOM OVERHEAD LINE CONDUCTORS**

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Executive Summary

This standard has initially been prepared on behalf of the Technical Steering Committee for Distribution (TESCOD). It has been approved by the relevant Steering Committee of Technology (SCOT) committee for use by Eskom as the accepted colour coding of hardware to be used on different conductor types.

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1. Introduction

This standard outlines the colour coding that is to be used on conductor accessories in Eskom. It allows for accessories to be more easily identifiable during construction, inspections and failure investigations.

2. Supporting clauses

2.1 Scope

This standard provides the colour coding requirements for application on all on conductor accessories applicable to Eskom overhead power lines.

2.1.1 Applicability

This document shall apply throughout Eskom Holdings Limited Divisions.

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

None

2.2.2 Informative

None

2.3 Definitions

2.3.1 General

Not applicable

2.3.2 Disclosure classification

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

2.4 Abbreviations

Abbreviation	Description
ABC	Aerial Bundle Conductor
HV	High Voltage
LV	Low Voltage
MV	Medium Voltage
SCOT	Steering Committee of Technology

2.5 Roles and responsibilities

Lines Engineering Services (Group Technology) in conjunction with Eskom procurement to ensure that all affected and prospective suppliers are made aware of the requirements as stipulated in this document

All respective Standards Implementation managers in the various OU's, are to ensure that helical products complying with this standard are used in their OU.

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This standard is to be communicated to all staff in the operational and maintenance environment, internal and external contractors, clerk of works, major engineering works, procurement, warehousing and logistics.

2.6 Process for monitoring

Equipment that will be on national Eskom contracts will undergo a technical and factory evaluation. Compliance with this standard will be verified during this exercise. Non-conformance with this standard will result in the issuing of a Non Compliance Report (NCR) to the respective supplier.

2.7 Related/supporting documents

None.

3. Requirements

3.1 Applications

Suppliers and manufacturers shall familiarize themselves with the colour coding of the line hardware that will be attached to the different type of conductors used by Eskom.

3.2 Standard Conductors

Conductor			Overall Diameter	Colour Code
Code	**Type**	**Strand**		
BANTAM	ACSR	3/4/1,68	5.03mm	Blue
ACACIA	AAC	7/2,08	6.24mm	Orange
SQUIRREL	ACSR	5/1/2,11	6.33mm	Orange
MAGPIE	ACSR	3/4/2,11	6.35mm	Green
MIDGE	AAC	7/2,10	6.18mm	Orange
ALMOND	AAC	7/2,34	7.02mm	Yellow
GOPHER	ACSR	6/1/2,36	7.08mm	Yellow
APHIS	AAC	3/3,35	7.24mm	Yellow
WEASEL	ACSR	6/1/2,59	7.77mm	Brown
“ 35 “	AAC	7/2,77	8.31mm	Blue
FOX	ACSR	5/1/2,79	8.37mm	Blue
LADYBIRD	AAC	7/2,79	8.37mm	Blue
FIR	AAC	7/2,95	8.85mm	Green
FERRET	ACSR	6/1/3,00	9.00mm	Green
HAZEL	AAC	7/3,30	9.90mm	Yellow
RABBIT	ACSR	6/1/3,35	10.05mm	Yellow
FLY	AAC	7/3,40	10.20mm	Yellow
PINE	AAC	7/3,61	10.83mm	Red
BLUEBOTTLE	AAC	7/3,66	10.98mm	Red
MINK	ACSR	6/1/3,66	10.98mm	Red

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Conductor			Overall Diameter	Colour Code
Code	**Type**	**Strand**		
EARWIG	AAC	7/3,78	11.34mm	Blue
WILLOW	AAC	7/4,04	12.12mm	Green
RACOON	ACSR	6/1/4,09	12.27mm	Green
SKUNK	ACSR	12/7/2,59	12.95mm	Orange
OAK	AAC	7/4,65	13.95mm	Brown
DOG	ACSR	AL 6/4,72, ST 7/1,60	14.15mm	Brown
HARE	ACSR	6/1/4,72	14.16mm	Brown
MULBERRY	AAC	19/3,18	15.90mm	Orange
HORNET	AAC	19/3,25	16.25mm	Red
TIGER	ACSR	30/7/2,36	16.52mm	Red
ASH	AAC	19/3,50	17.40mm	Yellow
WOLF	ACSR	30/7/2,59	18.13mm	White
ELM	AAC	19/3,76	18.80mm	Red
CHICADEE	ACSR	18/1/3,77	18.87mm	Red
JAGUAR	ACSR	18/1/3,85	19.30mm	Black
LYNX	ACSR	30/7/2,79	19.53mm	Green
POPLAR	AAC	37/2,78	20.09mm	Green
PANTHER	ACSR	30/7/3,00	21.00mm	Brown
SYCAMORE	AAC	37/3,23	22.61mm	Red
BEAR	ACSR	30/7/3,35	23.45mm	Orange
KINGBIRD	ACSR	18/1/4,78	23.90mm	Green
UPAS	AAC	37/3,53	24.71mm	Green
GOAT	ACSR	30/7/3,71	25.97mm	Black
CENTIPEDE	AAC	37/3,78	26.46mm	Blue
TERN	ACSR	45/7/6.75	27.00mm	Blue
ZEBRA	ACSR	54/7/3,18	28.62mm	Yellow
RAIL	ACSR	45/7/7.41	29.59mm	Green
SCORPION	AAC	37/4,72	29.89mm	Green
DINOSAUR	ACSR	AL 54/3,95	35.50mm	White
BULL	AAC	AL 61/4.25	38.25mm	Red
STEEL		1/3,66	11.09mm*	Brown
STEEL STEEL		3/3,35 3./4.00	10.15mm*	Black Yellow

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Conductor			Overall Diameter	Colour Code
Code	**Type**	**Strand**		
STEEL		7/4.00		Green
STEEL		19/2.65		Orange
STEEL		7/3.35		Blue
ABC 35 , Neutral 35mm^2 (Bare) ABC 35, Neutral 35mm^2 (Insulated) ABC 70 , Neutral 50mm^2 (Bare) ABC 70, Neutral 54.6mm^2 (Insulated)		-	8.31mm* 11.73mm*	Blue/ Pink Blue/ Pink Green/ Pink Green/ Pink
SERVICE CABLE 4		-		Orange/Pink
SERVICE CABLE 10		-		Brown/Pink

3.3 Marking, labelling and packaging

All supplied hardware must be properly identified by a durable paint that will remain for a minimum of 5 years after purchase and installed outdoors

3.4 Additional requirement for road crossing applications

All products that are intended or designated to be used on road crossing structures are to be colour coded with an additional black marking that is to be adjacent to the colour specified above i.e. hardware that are to be used on road crossing structures will have two identifying colours (black and the corresponding conductor colour).

4. Authorization

This document has been seen and accepted by:

Name and surname	Designation
R. Vajeth	Senior Engineer: Lines Engineering Services
Bruce McLaren	Lines Engineering Services
Bob Branfield	Lines Engineering Services
Bharat Haridass	Lines Engineering Services
K. Rozmiarek	Chief Engineer: Lines Engineering Services

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5. Revisions

Date	Rev	Compiler	Remarks
Aug 2015	1	M Khan	Included the following conductors in standard; Tern, Rail, Bull, 3/4.00, 7/4.00 Corrected the stranding information on some wires Changed the colour specified for Kingbird, 7/ 3.35 and 19/2.65 to ensure compliance with the Buyers Guide Included a column that specified the nominal diameter of all conductors and shield wires specified. Document number changed
March 2008	1	BP Hill	Added kingbird, 7/3.35 & 19.2.65
Oct 2006	0	BP Hill	First issue - 34-329

6. Development team

- Barry Hill Lines Engineering Services
- Bruce Mclaren Lines engineering Services
- Bob Branfield Lines Engineering Services
- Mohamed Khan Senior Engineer: SI - KZN OU
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- Neal Bodger Senior Technician: Land Surveying KZN OU
- David Bavin Tyco Electronics
- Demi Kambouris Preformed Line Products
- Peter Beckedahl Preformed Line Products
- Collin Boland Preformed Line Products
- Sean Corcoran Pfisterer

7. Acknowledgements

Not applicable

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Annex A – Impact Assessment

Impact assessment form to be completed for all documents.

1) Guidelines

- All comments must be completed.
- Motivate why items are N/A (not applicable)
- Indicate actions to be taken, persons or organisations responsible for actions and deadline for action.
- Change control committees to discuss the impact assessment, and if necessary give feedback to the compiler of any omissions or errors.

2) Critical points

2.1 Importance of this document. E.g. is implementation required due to safety deficiencies, statutory requirements, technology changes, document revisions, improved service quality, improved service performance, optimised costs.

The colour coding is used on most line hardware

2.2 If the document to be released impacts on statutory or legal compliance - this need to be very clearly stated and so highlighted.

The colour is an indication of the size of the conductor it is to be used on:

2.3 Impact on stock holding and depletion of existing stock prior to switch over.

No impact:

2.4 When will new stock be available?

Is available already as per buyers guide:

2.5 Has the interchangeability of the product or item been verified - i.e. when it fails is a straight swop possible with a competitor's product?

All suppliers use this colour coding:

2.6 Identify and provide details of other critical (items required for the successful implementation of this document) points to be considered in the implementation of this document.

none:

2.7 Provide details of any comments made by the Regions regarding the implementation of this document.

none:

3) Implementation timeframe

3.1 Time period for implementation of requirements.

ASAP:

3.2 Deadline for changeover to new item and personnel to be informed of DX wide change-over.

The colours were already in use:

4) Buyers Guide and Power Office

4.1 Does the Buyers Guide or Buyers List need updating?

No:

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4.2 What Buyer's Guides or items have been created?

none

4.3 List all assembly drawing changes that have been revised in conjunction with this document.

none:

4.4 If the implementation of this document requires assessment by CAP, provide details under 5

4.5 Which Power Office packages have been created, modified or removed?

none

5) CAP / LAP Pre-Qualification Process related impacts

5.1 Is an ad-hoc re-evaluation of all currently accepted suppliers required as a result of implementation of this document?

no:

5.2 If NO, provide motivation for issuing this specification before Acceptance Cycle Expiry date.

To add a comprehensive colour coding that is currently used:

5.3 Are ALL suppliers (currently accepted per LAP), aware of the nature of changes contained in this document?

They commented:

5.4 Is implementation of the provisions of this document required during the current supplier qualification period?

no:

5.5 If Yes to 5.4, what date has been set for all currently accepted suppliers to comply fully?

Comment:

5.6 If Yes to 5.4, have all currently accepted suppliers been sent a prior formal notification informing them of Eskom's expectations, including the implementation date deadline?

Comment:

5.7 Can the changes made, potentially impact upon the purchase price of the material/equipment?

no:

5.8 Material group(s) affected by specification: (Refer to Pre-Qualification invitation schedule for list of material groups)

none:

6) Training

6.1 State the level of training or communication required to implement this document. (E.g. none, communiqués, awareness training, practical / on job, module, etc.)

none:

6.2 State designations of personnel that will require training.

none:

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6.3 Is the training material available? Identify person responsible for the development of training material.

N/A:

6.4 If applicable, provide details of training that will take place. (E.G. sponsor, costs, trainer, schedule of training, course material availability, training in erection / use of new equipment, maintenance training, etc).

Comment:

6.5 Was Training & Development Section consulted w.r.t training requirements?

no:

7) Special tools, equipment, software

7.1 What special tools, equipment, software, etc will need to be purchased by the Region to effectively implement?

none:

7.2 Are there stock numbers available for the new equipment?

yes:

7.3 What will be the costs of these special tools, equipment, software?

none:

8) Finances

8.1 What total costs would the Regions be required to incur in implementing this document? Identify all cost activities associated with implementation, e.g. labour, training, tooling, stock, obsolescence

Comment: none……..

……

……

Impact assessment completed by:

Name: Mohamed Fayaz Khan

Designation: Senior Engineer : Standards Implementation KZN OU

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