

| | | |
|---|---|--|
|  | GLOBAL STANDARD | Page 1 of 7 |
| | CONCENTRIC-LAY-STRANDED BARE CONDUCTOR | GSC003 Rev. 02 addendum 04/04/2019 |

CONCENTRIC-LAY-STRANDED BARE CONDUCTORS ADDENDUM FOR ENEL DISTRIBUIÇÃO SÃO PAULO

| Countries I&N | Elaborated by |
|---------------|---------------|
| Brazil | R. Sales |

| | Elaborated by | Verified by | Approved by |
|-------------------------------------|--------------------|----------------------|--------------------|
| Global I&N – O&M/NCS | J. Goossens | N. Cammalleri | M. Mazzotti |

This document is intellectual property of ENEL Group distribution companies; reproduction or distribution of its contents in any way or by any means whatsoever is subject to the prior approval of the above mentioned companies which will safeguard their rights under the civil and penal codes. This document is for Internal Use.

| Revision | Data | List of modifications |
|----------|------------|-----------------------|
| 0 | 04/04/2019 | First emission |

| | | |
|---|---|--|
|  | GLOBAL STANDARD | Page 2 of 7 |
| | CONCENTRIC-LAY-STRANDED BARE CONDUCTOR | GSC003 Rev. 02 addendum 04/04/2019 |

CONTENTS

| | |
|---|---|
| 1 SCOPE | 2 |
| 2 LIST OF CONDUCTORS | 2 |
| LOCAL SECTION A –Enel São Paulo (Brazil), | 3 |

LOCAL SECTION

A LATAM: Eletropaulo (Brazil),

1 SCOPE

This addendum of the Global Standard GSC003 rev. 2 specifies the requirements applicable Distribuição São Paulo (Brazil). They are specified in this document with reference to the same paragraph number of GSC003 rev. 2.

2 LIST OF CONDUCTORS

The list of conductors with the main requirements, which is an integral part of the present document, is reported in “Concentric –lay-stranded bare conductors (Common List)” attached. In the follows tables are shown a brief of these requirements.

Table 1 - Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Reinforced

| Standard | Cod. GSC | Size | | | Code Words | Quantity of | | | DC Resistance at 20 °C (Ω/km) |
|-----------|----------|-------|-----|-----------------|------------|-------------|----|-----------------|-------------------------------|
| | | Kcmil | Awg | mm ² | | AL | ST | AL Coated Steel | |
| ASTM B232 | 047 | 134,6 | - | - | Leghorn | 12 | 7 | - | 0,4247 |
| | 048 | 556,5 | - | - | Osprey | 18 | 1 | - | 0,1022 |
| | 049 | 636 | - | - | Grosbeak | 26 | 7 | - | 0,0898 |
| | 050 | 795 | - | - | Drake | 26 | 7 | - | 0,0719 |
| | 051 | 954 | - | - | Rail | 45 | 7 | - | 0,0599 |

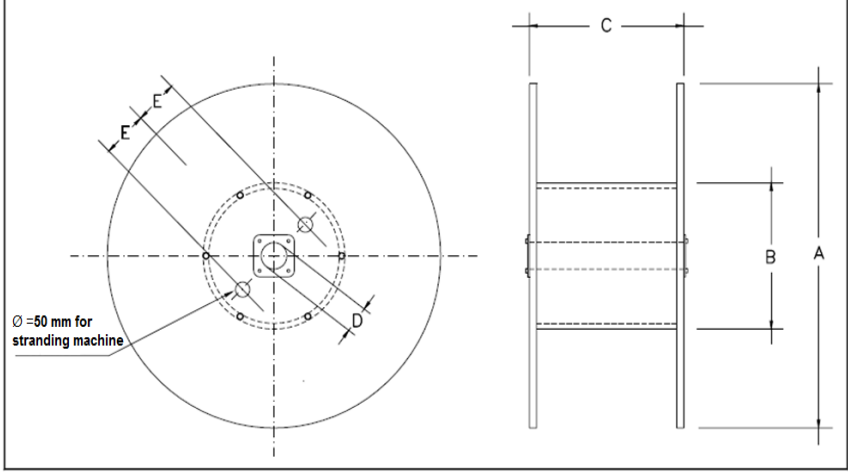
| | | |
|---|---|--|
|  | GLOBAL STANDARD | Page 3 of 7 |
| | CONCENTRIC-LAY-STRANDED BARE CONDUCTOR | GSC003 Rev. 02 addendum 04/04/2019 |

LOCAL SECTION A – LATAM: Enel São Paulo (Brazil)

| ITEM | TITLE | DESCRIPTION |
|-------|-----------------|---|
| 3.3 | Local Standards | <ul style="list-style-type: none"> • NTE-M-056 Condutores Elétricos - Distribuição Aérea • NTE-099-0 Cabos de alumínio com alma de aço para linhas aéreas com ou sem cobertura • ABNT-NBR-7270 Cabos de alumínio nus com alma de aço zincado para linhas aéreas – especificação • ABNT-NBR 11137 Carretel de madeira para acondicionamento de fios e cabos elétricos – dimensões e estruturas |
| 5.1.5 | Copper wires | Copper wires shall be medium-hard temper, uncoated, under the standards ASTM B2. |
| 5.2.6 | Greases | It is not required greases for conductors. |
| 6.1 | Type Test | <ul style="list-style-type: none"> • Surface Condition • Overall Diameter • Number and type of wires • Cross section area • Mass per unit length • Rated tensile strength • Elongation • Joints • Electrical resistance • Lay ratio and direction of lay • Grease temperature characteristics |

| | | |
|---|---|--|
|  | GLOBAL STANDARD | Page 4 of 7 |
| | CONCENTRIC-LAY-STRANDED BARE CONDUCTOR | GSC003 Rev. 02 addendum 04/04/2019 |

LOCAL SECTION A – LATAM: Enel São Paulo (Brazil)

| ITEM | TITLE | DESCRIPTION |
|------|---------------------|---|
| 6.2 | Sample test | <ul style="list-style-type: none"> • Number and type of wires • Cross section area • Lay ratio and direction of lay • Mass per unit length • Rated tensile strength (wires) • Electrical resistance (wires) • Grease temperature characteristics <p>The acceptance level shall be determined according to the procedure described in standard IEC 60410 considering AQL 1,5%, level II, simple sampling.</p> |
| 7 | CONDITION OF SUPPLY | <p>The cable shall be delivered by the manufacturer on a wooden or metal spool, which will not be returned, as per maximum and minimum dimensions indicated in Table 4 and in accordance with Figure 2.</p> <p>In order to use the reel in a spooling machine, the reel shall be supplied with two holes spaced at 50 cm, equidistant and aligned with central hole.</p> <div style="text-align: center;">  </div> <p style="text-align: center;"><i>Figure N° 3 Trial type</i></p> |

| | | |
|---|---|--|
|  | GLOBAL STANDARD | Page 5 of 7 |
| | CONCENTRIC-LAY-STRANDED BARE CONDUCTOR | GSC003 Rev. 02 addendum 04/04/2019 |

LOCAL SECTION A – LATAM: Enel São Paulo (Brazil)

| ITEM | TITLE | DESCRIPTION | | | | | | | | | | | | | | | |
|------------------|---------------------|---|------------------|-----|------------------|------------------|---|----|----|----|----|----|------|-----|------|----|-----|
| | | <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">A⁽¹⁾</td> <td style="text-align: center;">B</td> <td style="text-align: center;">C⁽¹⁾</td> <td style="text-align: center;">D⁽²⁾</td> <td style="text-align: center;">E</td> </tr> <tr> <td style="text-align: center;">mm</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">mm</td> </tr> <tr> <td style="text-align: center;">1730</td> <td style="text-align: center;">(3)</td> <td style="text-align: center;">1120</td> <td style="text-align: center;">80</td> <td style="text-align: center;">(4)</td> </tr> </table> <p>Notes:</p> <p>(1) Maximum value (2) Minimum value (3) Twice of the minimum bend ratio of conductor used to transport , as indicated by the manufacturer. (4) 300 ó 180 mm , according to the type of reel.</p> <p>The wooden spools shall be treated according to the international requirements for the control of plant disease, avoiding the compounds "Pentachlorophenol" and "Creosote". The treatment must include, at least: highly toxic to xylophagous organisms, high penetration and holding power, chemical stability, non-corrosive substances to metals nor should they affect the physical characteristics of wood.</p> <p>Each reel shall be protected with a plastic coat than avoids the corrosion of the conductor.</p> <p>The total length of the cable supplied may not be less than that requested in the purchase order and shall not be longer by any more than 1%.</p> <p>The maximum gross weight of the packaged spool must not exceed 2500 kg.</p> <p>The spool type must be 250/110, nominal length of 300 meters. According to standard NBR 11137.</p> | A ⁽¹⁾ | B | C ⁽¹⁾ | D ⁽²⁾ | E | mm | mm | mm | mm | mm | 1730 | (3) | 1120 | 80 | (4) |
| A ⁽¹⁾ | B | C ⁽¹⁾ | D ⁽²⁾ | E | | | | | | | | | | | | | |
| mm | mm | mm | mm | mm | | | | | | | | | | | | | |
| 1730 | (3) | 1120 | 80 | (4) | | | | | | | | | | | | | |
| 8 | PACKING MARKING AND | <p>The spools must:</p> <p>Indicate the correct rolling direction with an arrow on its side.</p> <p>Have a stainless steel plate for its identification on each side, each one of which must include at least the following information, in the language of the country where it will be used (Spanish or Portuguese):</p> <ul style="list-style-type: none"> • Name of the manufacturer • Country of origin of the item • ENEL GROUP • Purchase Order N° • Conductor caliber (en mm²) • Number of the spool within the delivered batch. • Net weight and gross weight in kg. • Cable type • Cable length, in meters. | | | | | | | | | | | | | | | |

| | | |
|---|---|--|
|  | GLOBAL STANDARD | Page 6 of 7 |
| | CONCENTRIC-LAY-STRANDED BARE CONDUCTOR | GSC003 Rev. 02 addendum 04/04/2019 |

LOCAL SECTION A – LATAM: Enel São Paulo (Brazil)

| ITEM | TITLE | DESCRIPTION | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|---------------------|---|-----------|---------------------|--------------------|-------|------------------|------|---------|-------------------|------|-----------|-------------------|------|-----------|--------------------|------|-----------|-------------------|------|---------|--------------------|------|---------|--------------------|------|---------|--------------------|------|
| | | The drums length are indicated in the following table: | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Formation</th> <th style="width: 33%;">Spool max dimension</th> <th style="width: 34%;">Nominal length [m]</th> </tr> </thead> <tbody> <tr> <td>4 AWG</td> <td>ABNT 11137 65/25</td> <td>3310</td> </tr> <tr> <td>1/0 AWG</td> <td>ABNT 11137 100/60</td> <td>2370</td> </tr> <tr> <td>134,6 MCM</td> <td>ABNT 11137 100/60</td> <td>2040</td> </tr> <tr> <td>336,4 MCM</td> <td>ABNT 11137 125/100</td> <td>2000</td> </tr> <tr> <td>556,5 MCM</td> <td>ABNT 11137 150/80</td> <td>1500</td> </tr> <tr> <td>636 MCM</td> <td>ABNT 11137 125/100</td> <td>1860</td> </tr> <tr> <td>795 MCM</td> <td>ABNT 11137 125/100</td> <td>1490</td> </tr> <tr> <td>954 MCM</td> <td>ABNT 11137 170/100</td> <td>2020</td> </tr> </tbody> </table> | Formation | Spool max dimension | Nominal length [m] | 4 AWG | ABNT 11137 65/25 | 3310 | 1/0 AWG | ABNT 11137 100/60 | 2370 | 134,6 MCM | ABNT 11137 100/60 | 2040 | 336,4 MCM | ABNT 11137 125/100 | 2000 | 556,5 MCM | ABNT 11137 150/80 | 1500 | 636 MCM | ABNT 11137 125/100 | 1860 | 795 MCM | ABNT 11137 125/100 | 1490 | 954 MCM | ABNT 11137 170/100 | 2020 |
| Formation | Spool max dimension | Nominal length [m] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 AWG | ABNT 11137 65/25 | 3310 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1/0 AWG | ABNT 11137 100/60 | 2370 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 134,6 MCM | ABNT 11137 100/60 | 2040 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 336,4 MCM | ABNT 11137 125/100 | 2000 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 556,5 MCM | ABNT 11137 150/80 | 1500 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 636 MCM | ABNT 11137 125/100 | 1860 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 795 MCM | ABNT 11137 125/100 | 1490 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 954 MCM | ABNT 11137 170/100 | 2020 | | | | | | | | | | | | | | | | | | | | | | | | | | | |



CONCENTRIC-LAY-STRANDED BARE CONDUCTOR

GSC003

Rev. 02
addendum
04/04/2019

GSC003- Rev 02 - COMMON LIST

| GS Type code | Distribution Company and Country | Country code | Standard | Type | Size | | | Code Words | Class | Aluminum Wires | | | Steel Wires | | | | Aluminum-Alloy Wires | | | Copper wires | | Outside diameter | Total mass (kg/km) | Rated strength (kN) | D.C resistance (Ω/km) | Applied | Type | Θ1 | Θ2 | Θ4 |
|--------------|----------------------------------|--------------|-------------------|------|-------|-----|-----|------------|-------|----------------|----------|--------|-------------|----------|--------|--------------|----------------------|----------|--------|--------------|----------|------------------|--------------------|---------------------|-----------------------|---------|------|----|----|----|
| | | | | | Kcmil | AWG | mm2 | | | Number | Diameter | Layers | Number | Diameter | Layers | Type | Number | Diameter | Layers | Number | Diameter | | | | | | | | | |
| GSC003.1 | AM-SP-BRASIL | 6771976 | ASTM B 232/B 232M | ACSR | - | 4 | - | Swan | AA | 6 | 2,12 | 1 | 1 | 2,12 | 0 | ACSR/GA-ACSR | - | - | - | - | - | 6,35 | 85,35 | 8,3 | 1,3278 | No | - | - | - | - |
| GSC003.3 | CE-SP-BRASIL | 6771526 | ASTM B 232/B 232M | ACSR | - | 1/0 | - | Raven | AA | 6 | 3,37 | 1 | 1 | 3,37 | 0 | ACSR/GA-ACSR | - | - | - | - | - | 10,11 | 216,2 | 19,35 | 0,536 | No | - | - | - | - |
| GSC003.7 | AM-SP-BRASIL | 4545171 | ASTM B 232/B 232M | ACSR | 336,4 | - | - | Linnet | AA | 26 | 2,89 | 2 | 7 | 2,25 | 1 | ACSR/GA-ACSR | - | - | - | - | - | 18,31 | 689,8 | 62,73 | 0,1699 | No | - | - | - | - |
| GSC003.47 | SP-BRASIL | 323068 | ASTM B 232/B 232M | ACSR | 134,6 | - | - | Leghorn | AA | 12 | 2,69 | 1 | 7 | 2,69 | 1 | ACSR/GA-ACSR | - | - | - | - | - | 13,45 | 500,2 | 60,69 | 0,4247 | No | - | - | - | - |
| GSC003.48 | SP-BRASIL | 323075 | ASTM B 232/B 232M | ACSR | 556,5 | - | - | Osprey | AA | 18 | 4,47 | 1 | 1 | 4,47 | 1 | ACSR/GA-ACSR | - | - | - | - | - | 22,35 | 901 | 60,98 | 0,1022 | No | - | - | - | - |
| GSC003.49 | SP-BRASIL | 323061 | ASTM B 232/B 232M | ACSR | 636 | - | - | Grosbeak | AA | 26 | 3,97 | 2 | 7 | 3,09 | 1 | ACSR/GA-ACSR | - | - | - | - | - | 25,15 | 1301,7 | 111,9 | 0,0899 | No | - | - | - | - |
| GSC003.50 | SP-BRASIL | 323069 | ASTM B 232/B 232M | ACSR | 795 | - | - | Drake | AA | 26 | 4,44 | 2 | 7 | 3,45 | 1 | ACSR/GA-ACSR | - | - | - | - | - | 28,11 | 1626 | 139,6 | 0,0719 | No | - | - | - | - |
| GSC003.51 | SP-BRASIL | 323070 | ASTM B 232/B 232M | ACSR | 954 | - | - | Rail | AA | 45 | 3,7 | 3 | 7 | 2,47 | 1 | ACSR/GA-ACSR | - | - | - | - | - | 29,61 | 1603 | 149,7 | 0,0599 | No | - | - | - | - |