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Remarks:

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- The technical committee, **SABSTC218/SC 03; Material and Physical Requirements**, responsible for the preparation of this standard has reached consensus that the attached document should become a South African standard. It is now made available by way of public enquiry to interested and affected parties for public comment, and to the technical committee members for record purposes. Any comments should be sent by the indicated closing date, either by mail, or by fax or by email to

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SOUTH AFRICAN NATIONAL STANDARD

Inspection and supplemental treatment of treated wood utility poles

WARNING

**This document references other
documents normatively.**

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Table of changes

Change No.	Date	Scope

Foreword

This South African standard was prepared by National Committee SABS/TC 201/SC 13, *Timber preservation – Material and physical requirements*, in accordance with procedures of the South African Bureau of Standards, in compliance with annex 3 of the WTO/TEU agreement.

This document was approved for publication in xxxx 20XX.

This document supersedes SANS 10324:2007 (edition 1.1).

Reference is made in 6.1.1.4 to the "relevant national department", in South Africa this means the Department of Agriculture in accordance with the Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947).

Annexes A, B, C, E, F, G, and H form an integral part of this standard. Annexes D and I are for information only.

Compliance with this document cannot confer immunity from legal obligations.

Introduction

When used in ground contact, wooden poles are exposed to various forms of biological attack, climatic conditions and physical hazards. As a result of the high cost of replacing them, there has been a growing need to maintain these poles in service to ensure a longer lifespan, especially in the case of utility poles.

This standard provides procedures to ensure uniformity in respect of the inspection and supplemental treatment of in-service wooden poles such as power distribution, telephone, and street lighting poles as well as piling, structural, agricultural, shade net, fencing, building, and foundation poles used in ground contact.

Contractors are encouraged to seek clarity on any aspect of this standard prior to commencing with inspection and supplemental treatment poles in service.

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Inspection and supplemental treatment of treated wooden poles used in ground contact

1 Scope

1.1 This standard covers the inspection of in-service wooden poles used in ground contact for power distribution and telephone lines, street lighting as well as for other purposes such as piling, structural, agricultural, shade net, fencing, building and foundation purposes to assess damage caused by fungal decay and/or subterranean termite attack and/or physical factors and to classify the poles accordingly.

1.2 This standard covers the application of supplemental treatment(s) at the ground-line area to prolong the service life of those poles that have been classified as sound (class 1 poles) and serviceable (class 2 poles).

2 Normative references

The following referenced documents in whole or in part, are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. Information on currently valid national and international standards can be obtained from the South African Bureau of Standards.

SANS 457-2, *Wooden poles, droppers, guardrail posts and spacer blocks – Part 2: Softwood species.*

SANS 457-3, *Wooden poles, droppers and guardrail posts – Part 3: Hardwood species.*

SANS 753, *Line poles, cross-arms and spacers for power distribution, telephone systems and street lighting.*

SANS 754, *Eucalyptus poles, cross-arms and spacers for power distribution and communications systems*

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3 Definitions

For the purposes of this standard, the following definitions shall apply.

3.1

acceptable

acceptable to the authority administering this standard, or to the parties concluding the service agreement, as relevant

3.2

accredited inspector

inspector that has been certified by a qualified inspection body as competent to perform inspection and supplemental treatment of wooden poles used in ground contact (see annex A)

3.3

approved supplemental treatment chemical

approved for internal and/or external supplemental treatment of treated wooden poles to provide added protection to the ground-line area of such poles against fungal decay and/or attack by subterranean termites (see annex B)

3.4

check

separation along the grain of the wood and across the annual rings but not extending to the end of the pole and with a width of more than 5 mm and a length of more than the diameter of the pole, halfway along the length of the check.

3.5

check scraper

sharp, triangular shaped instrument that is used to scrape off soil from the pole surface and in cavities and to also externally probe the outside layer of a pole for external decay

3.6

chemical paste

thixotropic, diffusable wood preserving paste that is used for external supplemental and/or remedial treatment of treated wooden poles in service to provide additional protection to the external ground-line portion against fungal and termite attack, especially in cases where shell rot has been detected in the ground-line area

3.7

chemical rod

solid casted diffusible wood preserving rod, measuring 10 mm in diameter and 100 mm long, that is used for internal supplemental treatment of treated wooden poles in service to provide additional protection to the internal ground-line portion against fungal and termite attack.

NOTE: Casted type rods as opposed to the fused types, facilitate the release of the diffusible active ingredients when used under relatively dry conditions.

3.8

compaction

replacement of the excavated soil around a pole (see clause 8)

3.9

contractor

inspection company or body conducting the inspection and supplemental treatment of the wooden poles in service as agreed upon between the customer and the contractor

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3.10

customer

person or company requesting the inspection and supplemental treatment of its wooden poles

3.12

drill bit

twist or auger type drill bit that consists of a shank length capable of drilling a hole of at least 200 mm deep and with a cutting diameter of 12 mm

3.13

ground-line area

critical area of a wooden pole used in ground contact that extends from 50 mm above to 300 mm below the ground-line

3.14

heart rot

wood degradation and softening of the inner core of a wooden pole caused by fungal decay

3.15

other poles

poles not regarded as utility poles (see 3.22) and typically used for agricultural, building, and fencing purposes and produced in accordance with SANS 457-2 or SANS 457-3

3.16

plastic plug

plug that is used to close the 12 mm inspection or treatment holes after chemical rods have been inserted into a pole as an internal supplemental treatment

NOTE The plastic plugs with a small end diameter of 10 mm and a large end diameter of 14 mm with a total length of 30 mm and are manufactured from UV protected PVC.

3.17

serviceable pole

poles with allowable defects that have been classified as either class 2 or class 3 poles when applicable (see 5.4)

3.18

shell rot

wood degradation and softening of the outer surface of a wooden pole caused by fungal decay

3.19

shell thickness indicator

tool specifically designed to extract wood fibre from drilled holes, to probe for internal decay or termite attack and to measure the remaining sound shell thickness of a pole that has been attacked

3.20

sound pole

pole that has no apparent internal or external form of degradation, except for allowable checks, and that has been classified as a class 1 pole

3.21

supplemental treatment

secondary preservative treatment that is applied either as an internal or an external supplemental treatment to treated wooden poles that have been in ground contact use for some years, to augment the initial primary preservative treatment and to also prevent and remedy any incipient fungal decay attack in the ground-line area of the pole

3.22

utility pole

relatively large diameter wooden pole, used in power distribution lines, telecommunication systems and street lighting and produced in accordance with SANS 753 or SANS 754

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4 Pole inspection

4.1 Accredited inspector

4.1.1 Only accredited inspectors (see 3.2), shall qualify to do utility pole inspections and the supplemental treatment thereof as given in this standard. The agreement between the contracting inspection body and the utility body shall be in writing. For the inspection and supplemental treatment of other poles (excluding utility poles), the use of an accredited inspector to perform the work shall be agreed upon between the customer and the contractor.

4.1.2 The inspector shall inspect and assess each pole for physical damage or deterioration, damage caused by fungal decay or subterranean termite attack (or both), decide on the classification of the pole, mark the pole as required and ensure that the correct supplemental treatment(s) and dosage(s) are applied and that, after the inspection, the soil compaction around the pole is done correctly.

4.2 Inspection procedures

4.2.1 An inspector shall inspect all the designated poles, even if they appear to be in a good condition.

4.2.2 The first inspection shall be done after a period of 30 days and not later than 10 y after installation of a treated pole. Thereafter, the poles shall be re-inspected every five to ten years, as required. In certain areas it may be necessary to inspect treated wooden poles on a more regular basis due to the severity of fungal decay and/or termite attack in that area.

4.2.3 All poles shall be inspected, and an internal supplemental treatment shall be applied to all class 1 and class 2 poles as prescribed in 6.1.2, irrespective whether heart rot is present or not. Chemical rods (see 3.7) shall be used for the internal supplemental treatment.

4.2.4 In the case of class 1 and class 2 poles with shell rot, an external supplemental treatment shall be applied to such poles as prescribed in 6.1.3. A chemical paste (see 3.6) shall be used for the external supplemental treatment.

4.2.5 The inspection detailed in 4.5 and 4.6 shall be used to assess any damage caused by fungal decay or subterranean termite attack (or both) and the details given in clause 5 shall be used to classify the poles according to whether they are sound (class 1 poles), serviceable (class 2 poles and class 3 poles that will be stubbed) or rejected (class 4 poles and class 3 poles that will not be stubbed).

4.2.6 Poles that are classified as sound, serviceable or rejected shall be marked accordingly as prescribed in clause 7.

4.2.7 The results of each inspection shall when required (see 9.1 or 9.2) be recorded on a Pole Inspection and Treatment Record Form.

4.3 Above-ground visual inspection of utility poles

4.3.1 The above-ground visual inspection is only mandatory in the case of utility poles (see 3.22 and SANS 753 or SANS 754 as relevant). All other poles (see 3.15 and SANS 457-2 or SANS 457-3) only need to be inspected above ground if so specified by the customer.

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4.3.2 The area above the ground-line of a pole shall be inspected and the following information recorded for each pole:

- a) the pole manufacturer's name;
- b) if no pole manufacturer's tag is visible, it shall be recorded as such;
- c) the year that the pole was manufactured;
- d) the pole number and, if no pole number is visible, the pole shall be numbered in accordance with the customer's numbering plan as agreed in the contract;
- e) the pole species, e.g. "E" (eucalyptus species) or "P" (pine species);
- f) the length of the pole, if indicated on the pole tag;
- g) any lightning damage, when relevant;
- h) the width of checks on the pole surface;
- i) any poles leaning (see 6.4);
- j) any fire damage or fungal decay visible on the pole surface;
- k) the compaction of the soil around the pole;
- l) mechanical damage to the pole in any way; and
- m) any pole leaning out of plumb by more than 300 mm, when measured from the top of the pole.

4.4 Excavation of pole

4.4.1 The soil around the pole shall be removed to a depth of at least 300 mm to enable inspection and assessment of any biological damage to the pole caused by fungal decay and/or subterranean termite attack below the ground-line.

4.4.2 Smaller poles, other than utility poles, shall be excavated to a depth of between 200 mm and 300 mm, depending on the physical size and planting depth.

4.5 External inspection of ground-line area

4.5.1 The ground-line area is considered most critical and it shall be thoroughly inspected in accordance with the procedures outlined in 4.5.2 to 4.5.5 (inclusive).

4.5.2 Any soil that is stuck to the pole surface shall be removed by cleaning the exposed area with a wire brush, taking care not to disturb any existing external degradation that still has to be assessed.

4.5.3 On completion of the assessment, all the remaining soil and softened or decayed wood shall be scraped off from the pole surface, or in checks or voids with a check scraper.

4.5.4 The check scraper shall also be used to probe for external decay pockets (shell rot) on the pole surface.

4.5.5 The depth of any shell rot (decayed wood) detected on the pole surface shall be measured and recorded on a form (see 9.1 or 9.2 as applicable).

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4.6 Internal inspection below ground-line

4.6.1 All other poles (see SANS 457-2 or SANS 457-3)

4.6.1.1 Depending on the ground-line diameter of the pole (see 6.1.2.3), one or two 12 mm inspection hole(s) of at least 150 mm, but not more than 175 mm deep shall be drilled where only one chemical rod needs to be inserted per inspection hole.

4.6.1.2 Alternatively, one or two 12 mm inspection hole(s) of at least 250 mm, but not more than 275 mm deep, or one or two inspection hole(s) of at least 350 mm, but not more than 375 mm deep shall be drilled, in cases where either two or three chemical rods need to be inserted per inspection hole, respectively (see 6.1.2.3, and annex C).

4.6.1.3 The hole(s) shall be initiated approximately 50 mm above the ground-line at the point of deepest shell rot, if present. When more than one hole is required, the holes shall be equally spaced around the circumference of the pole, towards the centre of the pole.

4.6.1.4 The hole(s) shall be drilled at an angle of approximately 20° to 30° to the vertical (upright) as illustrated in the example given in annex D, using a "twist" or "auger" type drill bit.

4.6.1.5 A shell thickness indicator shall be used to probe the inspection holes for fungal decay and/or termite presence, both dormant and active, and the findings recorded.

4.6.1.6 Where applicable, the shell thickness indicator shall also be used to measure the remaining sound wood and the outer shell thickness for each inspection hole shall be recorded separately on a form (see 9.1 or 9.2 as applicable).

4.6.1 Utility poles (see SANS 753 or SANS 754)

4.6.1.1 Two 12 mm inspection holes, each with a depth of at least 150 mm, and not more than 175 mm shall be drilled into the pole. The first hole shall be started near the ground-line and the second hole at approximately 200 mm below the ground-line. The holes shall be drilled diagonally opposite each other, towards the centre of the pole and at an angle of approximately 30° to the vertical (upright) as illustrated in annex E using a twist or auger type drill bit.

4.6.1.2 The first inspection hole shall be drilled in the pole section where internal fungal decay is most likely to be detected if present. Alternatively, it shall be drilled at the point of deepest shell rot, if applicable. The second inspection hole shall be drilled in the pole section where internal subterranean termite attack may be present, even though it was not detected in the upper pole section where the first hole was drilled.

5 Pole classification

5.1 General

5.1.1 Each pole inspected shall be assessed and classified as one of the pole classes given in 5.2 to 5.5 (inclusive).

5.1.2 Above ground checks shall only be assessed up to a height of 1,8 m. Higher measurements are not only impractical but also unnecessary because the influence of checks on the pole strength decreases towards the top end.

5.1.3 Any checks that are closer than 5 mm from each other shall be measured as one check

5.2 Class 1 (sound poles)

Poles shall be classified as class 1 poles (sound poles) if they meet the following requirements:

- a) The pole shall not have any signs of termite damage and/or activity (dead or alive), internal or external fungal decay, or any physical damage;
- b) Individual checks measured at the widest point of the check shall,
 - 1) in the case of a check that extends from within the ground line area, not exceed 15 mm in width in the case of utility poles and $\frac{1}{8}$ of the diameter in the case of other poles; and
 - 2) in the case of a check that originates above the ground-line area, not exceed 20 mm in width in the case of utility poles and $\frac{1}{8}$ of the diameter in the case of other poles.

5.3 Class 2 (serviceable poles)

Poles shall be classified as class 2 serviceable poles if they meet the following requirements:

- a) poles shall not have any signs of termite damage or activity (whether dead or alive);
- b) poles with internal decay (heart rot) only, or in combination with shell rot, shall have a minimum shell thickness in excess of 70 mm that consists of sound wood, where measured;
- c) external decay (shell rot) shall not penetrate more than 5 mm into the pole surface, therefore affecting less than 5 mm in depth of the outer shell;
- d) mechanical, fire or lightning damage shall not penetrate more than 10 mm into the pole surface; and
- e) individual checks in the ground-line area, shall not exceed a width of 20 mm in the case of utility poles and $\frac{1}{8}$ of the diameter in the case of other poles, when measured at the widest point of the check.

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5.4 Class 3 (serviceable poles if stubbed)

Stubbing of class 3 poles shall be agreed upon between the customer and the contractor, while the poles that are not stubbed shall be rejected and classified as class 4 poles (see 5.5). class serviceable poles to be stubbed shall meet the following requirements:

- a) poles shall not have any signs of termite damage. Poles with any termite activity (dead or alive) shall be classified as class 4 poles (see 5.5);
- b) poles with internal decay (heart rot) shall have a remaining shell thickness of not less than 40 mm that consists of sound wood, where measured;
- c) external decay (shell rot) shall not penetrate more than 10 mm into the pole surface and when measured at the deepest point, the remaining shell thickness shall not be less than 40 mm;
- d) individual checks in the ground-line area shall not exceed a width of 25 mm in the case of utility poles and $\frac{1}{5}$ the diameter in the case of other poles, when measured at the widest point of the check;
- e) mechanical or lightning damage shall not penetrate deeper than 15 mm into the pole surface and the remaining shell thickness shall not be less than 40 mm; and
- f) fire damage in the ground-line area shall not penetrate deeper than 10 mm into the pole surface and the remaining shell thickness shall not be less than 40 mm.

NOTE While stubbing of poles may be a viable option in the case of class 3 utility poles, it is often more appropriate to reject and replace class 3 poles.

5.5 Class 4 (rejected poles)

All poles that do not meet the minimum criteria for a class 3 pole shall be classified as class 4 poles and shall be rejected. The responsibility of rejected poles shall be the responsibility of the customer, unless otherwise agreed upon with the contractor.

6 Supplemental treatment and/or other action

6.1 Treatment of Class 1 and Class 2 poles

6.1.1 General

6.1.1.1 After the inspection and classification procedures given in clauses 4 and 5, all the class 1 and class 2 poles shall be treated internally with chemical rods as specified in 6.1.2.

6.1.1.2 Holes drilled for the purpose of internal supplemental treatment, as specified in 6.1.2.1 to 6.1.2.3 (inclusive), shall not be drilled into a check, irrespective of the width of the check. Plugs applied to holes drilled for previous inspection and internal treatment, shall not be drilled out but removed with a tool that is fit for the purpose.

6.1.1.3 Any class 2 poles with shell rot in the ground-line area shall also be treated externally with a chemical paste as specified in 6.1.3.

6.1.1.4 Only approved supplemental and remedial wood treatment chemicals registered with the relevant national department (see foreword) shall be used for both internal and external supplemental treatment.

6.1.2 Internal supplemental treatment

6.1.2.1 Utility poles with a ground-line diameter of 175 mm to 225 mm

6.1.2.1.1 For the internal supplemental treatment of utility poles with a ground-line diameter of 175 mm to 225 mm, a minimum of 6 chemical rods per pole are required.

6.1.2.1.2 Two additional treatment holes of 12 mm in diameter shall be drilled diagonally opposite each other and at right angles to the two inspection holes that have already been drilled (see 4.6.2). The treatment holes shall commence 50 mm above the ground-line and shall be drilled to a depth of at least 250 mm and not more than 275 mm, using a "twist" or "auger" type drill bit. The holes shall be directed towards the centre of the pole and drilled at an angle of approximately 30° to the vertical (upright) (see figure E.1).

6.1.2.1.3 Two chemical rods, each 10 mm in diameter and 100 mm in length, shall be inserted into each of the two treatment holes, and one chemical rod shall be inserted into each of the two inspection holes that have already been drilled (see 4.6.2), resulting in a total number of 6 chemical rods per pole. The rods shall be pushed right down to the bottom of the hole and the holes sealed off with plastic plugs. The plugs shall be tapped into the holes until flush with the pole surface.

6.1.2.2 Utility poles with a ground-line diameter of 225 mm to 275 mm:

6.1.2.2.1 For the internal supplemental treatment of utility poles with a ground-line diameter of 225 mm to 275 mm, a minimum of 8 chemical rods per pole are required.

6.1.2.2.2 Three additional treatment holes of 12 mm in diameter shall be drilled equally spaced around the circumference of the pole and between the two inspection holes that have already been drilled (see 4.6.2). The treatment holes shall commence 50 mm above the ground-line and shall be drilled to a depth of at least 250 mm and not more than 275 mm, using a "twist" or "auger" type drill bit. The holes shall be directed towards the centre of the pole and drilled at an angle of approximately 30° to the vertical (upright) (see figure E.2). Care shall be taken to ensure that no treatment hole is drilled at a position which is vertically on top of an inspection hole (see figure E.2).

6.1.2.2.3 Two chemical rods, each 10 mm in diameter and 100 mm in length, shall be inserted into each of the three treatment holes, and one chemical rod shall be inserted into each of the two inspection holes that have already been drilled (see 4.6.2), resulting in a total number of 8 chemical rods per pole. The rods shall be pushed right down to the bottom of the hole and the holes sealed off with plastic plugs. The plugs shall be tapped into the holes until flush with the pole surface.

6.1.2.3 All other poles (excluding utility poles)

6.1.2.3.1 For internal supplemental treatment of all other poles (excluding utility poles), the number as well as the depth of the additional 12 mm treatment holes to be drilled, will depend on the pole ground-line diameter and the total number chemical rods to be inserted as specified in annex C.

6.1.2.3.2 Should only one chemical rod per treatment hole be required, the hole(s) shall be drilled at least 150 mm but not more than 175 mm deep. Alternatively, should either two or three chemical rods be required per treatment hole, the hole(s) shall be drilled at least 250 mm but not more than 275 mm deep, or at least 350 mm but not more than 375 mm deep, respectively (see annex C).

6.1.2.3.3 All treatment holes shall be initiated 50 mm above the ground-line and drilled to the required depth, using a "twist" or "auger" type drill bit. Each holes shall be directed towards the centre of the pole and drilled at an angle of approximately 20° to 30° from the vertical (upright), as illustrated in the figure D.1. Where more than one treatment hole is required, the holes shall be drilled equally and spaced around the circumference of the pole located between existing inspection holes (see 4.6.1). No treatment hole shall be drilled vertically above an inspection hole.

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6.1.2.3.4 A chemical rod with a diameter of 10 mm and a length of 100 mm shall be inserted into a 150 mm to 175 mm deep treatment hole. Alternatively,

a) two chemical rods of the same dimensions shall be inserted into a treatment hole with a depth of 250 mm to 275 mm, and

b) three chemical rods shall be inserted into a treatment hole with a depth of 350 mm to 375 mm.

6.1.2.3.5 One, two, or three chemical rod(s) shall be inserted into each inspection hole, depending on the depth of the inspection hole that has been drilled (see 4.6.1).

6.1.2.3.6 All rods shall be fully inserted to the bottom of the hole, and each hole shall be sealed with a plastic plug. The plugs shall be tapped in until flush with the surface of the pole (see annex D for the required application procedure).

6.1.3 External supplemental treatment

NOTE External supplemental treatment is only applicable to class 2 poles.

6.1.3.1 Utility poles

6.1.3.1.1 In the case of class 2 poles with shell rot in the ground-line area, all soil and softened/decayed wood shall be removed from the outer surface of the pole. An approved chemical paste shall be applied evenly around the circumference of the pole at a minimum rate of 1000 g per running metre and over an effective length of not less than 300 mm, starting from 25 mm above the ground-line and extending towards the butt end.

6.1.3.1.2 External supplemental protection to the outer ground-line portion of the pole shall be applied using either a PVC wrap applicator that has been prefilled with the chemical paste, or a plastic bandage covering the chemical paste that has been brushed onto the pole surface. The application procedure shall be done strictly in accordance with the chemical paste manufacturer's instructions for use (see 3.6 for more details regarding chemical pastes and the application thereof).

6.1.3.2 All other poles (excluding utility poles)

The procedures given in 6.1.3.1 shall also be applied to class 2 poles that have shell rot in the ground-line area, and when specified by the customer.

6.2 Stubbing of Class 3 utility poles

Class 3 poles shall be stubbed within a period of 6 m after having been inspected and reported to ensure that such poles remain serviceable.

6.3 Replacement of rejected class 3 and class 4 poles

Class 3 poles that are not stubbed (see 5.4) and all class 4 poles shall be replaced within a period of 6 m after having been inspected and reported.

6.4 Leaning poles

All poles that are leaning out of plumb by more than 500 mm shall be straightened within a period of 6 m after having been inspected and reported.

7 Pole marking

7.1 Utility poles

7.1.1 General

7.1.1.1 After inspection and/or supplemental treatment of utility poles, each pole shall be legibly and indelibly marked in line with the structure identification mark, and the tag shall be applied 1,8 m above the ground-line of the pole.

7.1.1.2 When requested or specified by the customer, each pole shall be legibly and indelibly marked with a tag applied approximately 1,5 m above the ground-line of the pole after inspection and/or supplemental treatment.

7.1.2 Class 1 and class 2 poles

The round aluminium or galvanized steel tag shall be 25 mm to 30 mm in diameter. The tag shall have a hole to facilitate its attachment and it shall be attached to the pole with a 15 mm long, 2,5 mm thick galvanized steel nail. The tag shall display the following information:

- a) the letters CR (where CR shall be the abbreviated trade name of the chemical rod that was used for internal supplemental treatment of the pole) on the top part of the tag and the letters CP (where CP shall be the abbreviated trade name of the chemical paste that was used for external supplemental treatment of the pole) on the bottom part of the tag, if relevant;
- b) the company name, trade name or trademark of the contractor that undertook the inspection and supplemental treatment of the poles;
- c) the month and year in which the inspection and supplemental treatment took place; and
- d) the class of pole, i.e. C1 for a class 1 pole or C2 for a class 2 pole.

7.1.3 Class 3 and Class 4 poles

7.1.3.1 The square shaped aluminium or galvanized steel tag shall measure 25 mm × 25 mm. The tag shall have a hole to facilitate its attachment, and it shall be attached to the pole with a 15 mm long 2,5 mm thick galvanized steel nail. The tag shall display the following information:

- a) the company name, trade name or trademark of the contractor that undertook the inspection of the poles;
- b) the month and year in which the inspection took place;
- c) the class of pole, i.e. C3 for a class 3 pole or C4 for a class 4 pole; and
- d) the word "STUBBED" for class 3 poles that have been stubbed and the word "REJECT" for class 4 poles and class 3 poles that have not been stubbed.

7.1.3.2 A single white line shall be painted horizontally around the pole with an oil-based paint. The line shall be painted above the tag and shall be about 50 mm wide. This line signifies that these poles shall be removed and replaced within a period of 6 m after inspection, or in the case of a class 3 pole, that the pole shall be stubbed within a period of 6 m after inspection to render it serviceable again.

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7.2 All other poles

7.2.1 Class 1 and class 2 poles

The round aluminium or galvanized steel tag with the information as described in 7.1.2 shall be used to identify class 1 and class 2 poles.

7.2.2 Class 3 and class 4 poles

7.2.2.1 A single white line shall be painted horizontally around the pole with an oil-based paint. The line shall be painted approximately 1,5 m above the ground-line of the pole and shall be about 50 mm wide.

7.2.2.2 This line signifies that these poles shall be removed and replaced within a period of 6 m after inspection, or in the case of a class 3 pole, that the pole shall be stubbed within a period of 6 m after inspection to render it serviceable again.

8 Restoration of inspection area

8.1 After the inspection and supplemental treatment work has been completed, the area around each pole shall be restored, using the procedure outlined in 8.2 to 8.6 (inclusive).

8.2 Back filling shall be carried out by replacing the excavated material in layers of not more than 100 mm around the pole and compaction of each layer by ramming the soil with a stamper. Care shall be taken to ensure no damage to any cables, wrap applicators, or bandages that have been applied as external supplemental treatments (see 3.21).

8.3 The soil shall be compacted with a stamper, weighing not less than 6 kg and with a footprint area of not less than 100 cm² and not more than 200 cm², and to such an extent that the surface level of excavated area is level with the undisturbed soil of the area. The layers of fill used during compaction shall not be more than 100 mm per layer.

8.4 Vegetation or big stones shall not be included in the back-filling material.

8.5 The soil around the pole shall be level with the general ground level without any hollows where water can accumulate.

8.6 The area surrounding the pole shall be left in a clean and orderly state and all debris shall be removed from the site.

9 Recording of inspection and treatment information

9.1 Utility poles

Complete details of every wooden utility pole inspected shall be recorded on a record form (see annex H) in accordance with the requirements of annexes F and G. A copy of all the recorded inspection results and information as well as the supplemental treatment that has been done, shall be submitted to the customer or the relevant person as indicated in the contract.

9.2 All other poles (excluding utility poles)

9.2.1 When so agreed upon between the customer and the contractor, a copy of all the recorded inspection results and information as well as the supplemental treatment that has been done, shall be submitted to the customer.

9.2.2 The details of each wooden pole inspected shall be recorded on a record form similar to the one given in annex I.

Annex A (normative)

Accredited inspectors

A.1 In the case of utility poles, only accredited inspectors shall qualify to do inspections and supplemental treatments. The requirements for an accredited inspector are indicated in Annex A.

A.2 The inspector shall have undergone the necessary theoretical and practical training required for the inspection and supplemental treatment of wooden poles under the supervision of an accredited inspector. The inspector shall also have clear knowledge of how to interpret and use this standard.

A.3 After the abovementioned training has been completed, the apprentice inspector shall undergo approval inspections from an accredited inspector or a person that is qualified to do so before being accredited and certified by a qualified inspector as being competent for inspection and maintenance treatment of wooden poles in service.

Annex B (normative)

Approved supplemental treatment chemicals

B.1 Internal or external supplemental treatment of treated wooden poles in service shall be used to augment and supplement the initial primary preservative treatment. It shall also be used to prevent and remedy any incipient decay in the ground-line area of the pole.

B.2 Supplemental treatment products have been tested under South African field exposure conditions to ensure that acceptable diffusion rates and retention levels of the active ingredient(s) are achieved in the critical ground-line area of the pole, particularly in cases where poles are used in relative dry soil conditions.

B.3 The minimum required retreatment cycle for approved supplemental treatment chemicals shall not be less than a period of 5 y, particularly in cases where poles are exposed to high soil moisture conditions, e.g. when used in heavy wet soils.

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Annex C (normative)

Application rates required for internal supplemental treatment of poles

C.1 In the case of wooden utility poles produced in accordance with SANS 753 or SANS 754, the internal supplemental treatment with chemical rods shall be done in accordance with the application procedures and application rates as specified in 6.1.2.1. and 6.1.2.2. Specific reference shall be taken to the number of inspection and treatment holes that are required as well as the number of chemical rods per hole that are required, and as illustrated in annex E.

C.2 For all other poles produced in accordance with SANS 457-2 or SANS 457-3 (excluding utility poles), the internal supplemental treatment with chemical rods shall be done in accordance with the application procedure(s) specified in 6.1.2.3 and annex D, and the required application rates given in table C.1 respectively.

Table C.1 – Chemical rod application rates

1	2	3	4	5
Number of holes and chemical rods required for poles with different ground-line diameters				
Pole ground-line diameter ^a	12 mm Holes ^b		Chemical rods ^c	
	Depth (mm)	No. per pole	No. per hole	Total per pole
75 to 125	150 to 175	2	1	2
125 to 175	250 to 275	2	2	4
175 to 225	250 to 275	3	2	6
225 to 275	250 to 275	4	2	8
275 to 325	250 to 275	5	2	10
325 to 375	250 to 275	5	3	15
375 to 425	350 to 375	6	3	18
425 to 475	350 to 375	8	3	24

^a Measure the ground-line diameter of each pole that needs to be treated internally by fitting a diameter tape tightly around the pole circumference at ground level. Record the ground-line diameter as well as the corresponding total number of chemical rods required for the internal supplemental treatment of each pole on a inspection and treatment record form, similar to the record form given in either annex H or annex I, as applicable.

^b Indicates the total number of inspection as well as treatment holes that must be drilled.

^c Indicates the total number of chemical rods that shall be inserted into the inspection as well as treatment holes.

Annex D (informative)

Internal supplemental treatment of other poles (excluding utility poles)

D.1 The application procedure required for the internal supplemental treatment of other poles (excluding utility poles) with chemical rods as specified in 6.1.2.3 and the applicable application rate as recommended in annex C are illustrated in figure D.1.

D.2 The example given in figure D.1 is applicable for a pole with a ground-line diameter of 125 mm to 175 mm that needs to be treated internally with a total of four chemical rods (each measuring 10 mm in diameter and 100 mm in length as specified in annex C). Two chemical rods shall be inserted into each of the two inspection/treatment holes as illustrated in figure D.1.

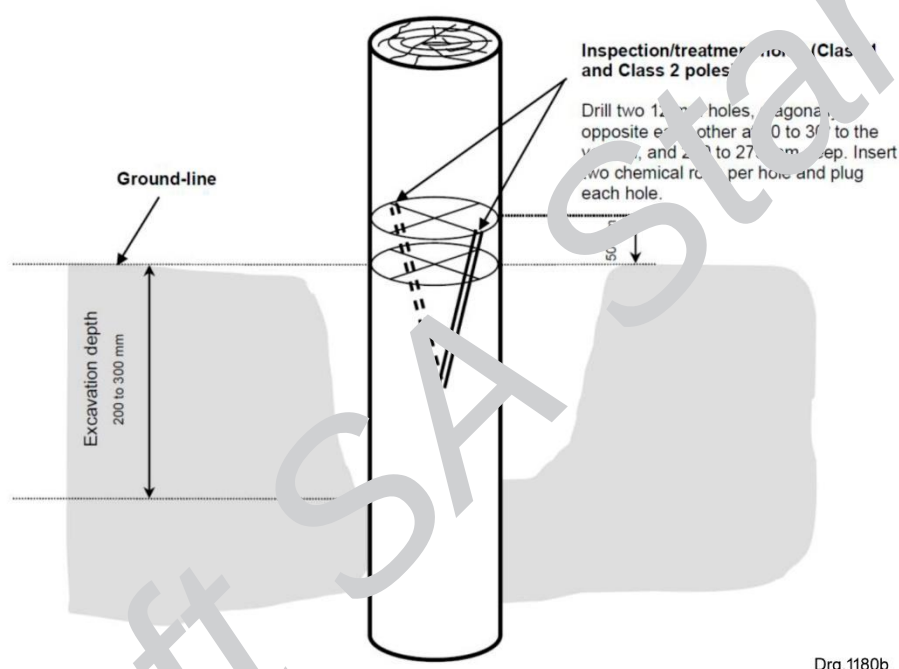


Figure D.1 — Other poles with ground-line diameter of 125 mm to 175 mm

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Annex E (normative)

Internal supplemental treatment of utility poles

E.1 Utility poles with a ground-line diameter of 175 mm to 225 mm

E.1.1 The application procedure and the chemical rod application rate required for the internal supplemental treatment of wooden utility poles, with ground-line diameters ranging from 175 mm to 225 mm as specified in 6.1.2.1 are illustrated in figure E.1.

E.1.2 Each Class 1 and Class 2 utility pole, with a ground-line diameter of 175 mm to 225 mm shall be treated internally with a total of six chemical rods. Each rod shall measure 10 mm in diameter and 100 mm in length. The treatment shall be done at a rate of one chemical rod in each of the two inspection holes and two chemical rods in each of two treatment holes as illustrated in figure E.1.

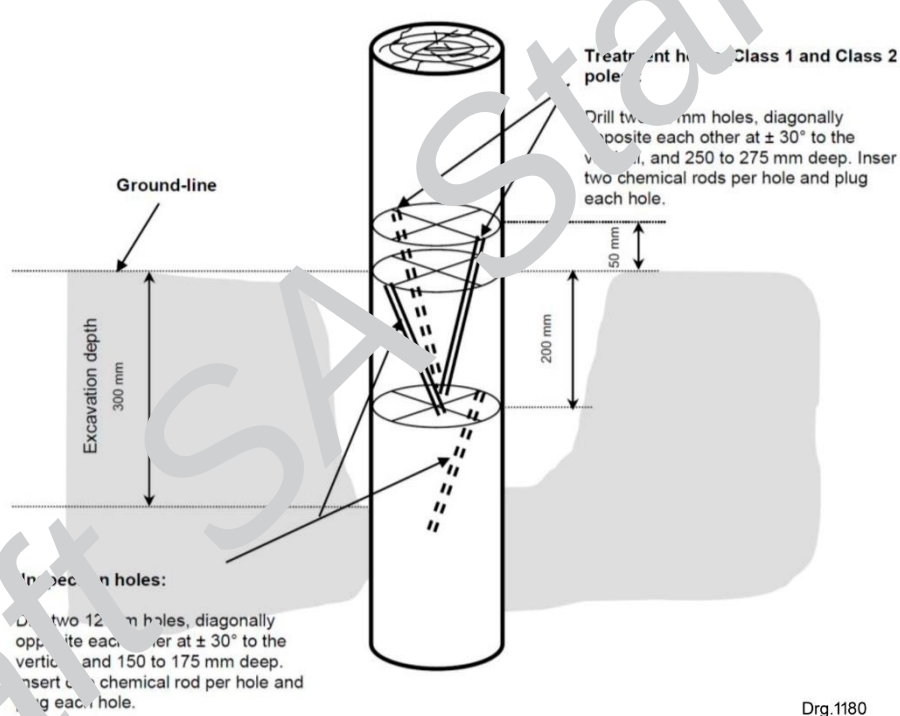


Figure E.1 — Utility poles with a ground-line diameter of 175 mm to 225 mm

E.2 Utility poles with a ground-line diameter of 225 mm to 275 mm

E.2.1 The application procedure and the chemical rod application rate that is required for internal supplemental treatment of wooden utility poles with ground-line diameters ranging from 225 mm to 275 mm as specified in 6.1.2.2 is illustrated in figure E.2.

E.2.2 Each Class 1 and Class 2 utility pole, with a ground-line diameter of 225 mm to 275 mm shall be treated internally with a total of eight chemical rods. Each rod shall measure 10 mm in diameter and 100 mm in length. The treatment shall be done at a rate of one chemical rod in each of the two inspection holes and two chemical rods in each of three treatment holes as illustrated in figure E.2.

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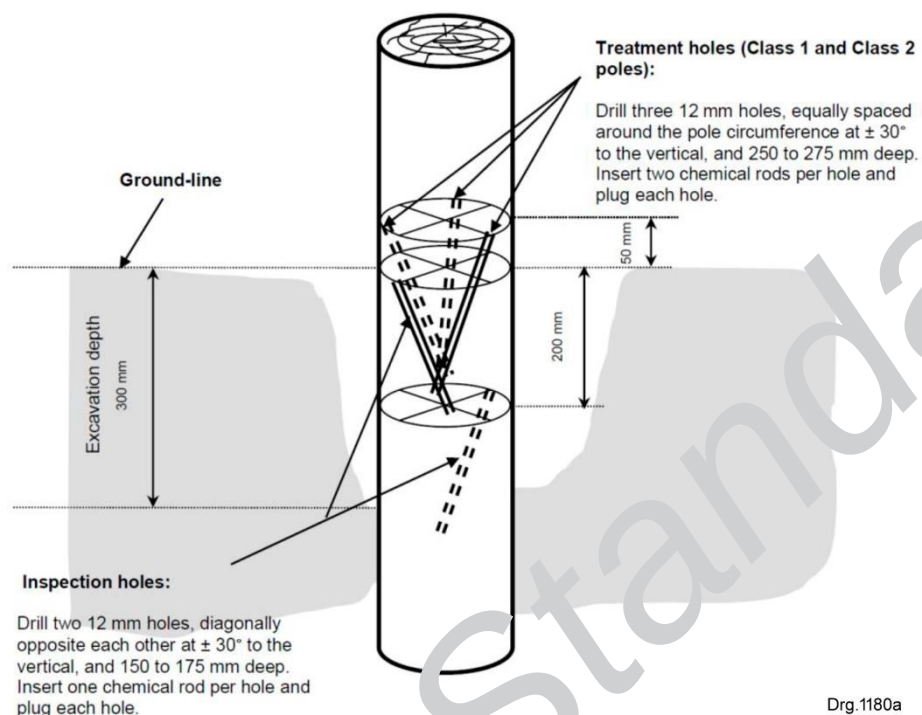


Figure E.2 — Utility poles with a ground-line diameter of 225 mm to 275 mm

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Annex F
(normative)

Recording of pole inspection and treatment information

F.1 During the inspection and supplemental treatment of treated wooden poles in service, the information listed in F.3 shall be recorded on a "Pole Inspection and Treatment Record" form, similar to the record form given in annex H for utility poles and/or the record form given in annex I for all other poles (excluding utility poles).

F.2 In the case of utility poles, all the required information shall be recorded for every pole inspected (see F.3). For all other poles (excluding utility poles) this requirement is optional and only information as agreed upon between the customer and the contractor needs to be recorded.

F.3 The following information shall be recorded when required in accordance with F.1 and F.2:

- a) inspection date;
- b) customer identification details as well as depot/address;
- c) inspection company and inspector identification details;
- d) pole location and line identification details;
- e) pole number;
- f) terrain and vegetation where poles are situated;
- g) information on pole tag, e.g. manufacturer's details, month and year of treatment;
- h) pole species, e.g. "E" for European larch and "P" for Pine;
- i) ground-line diameter of pole;
- j) date of last inspection;
- k) pole classification assessed, e.g. class 1, 2, 3, or 4;
- l) details of supplemental treatment carried out on pole if classified as sound (a class 1 pole) or serviceable (a class 2 pole);
- m) details of all forms of degradation and/or damage found on pole, whether biological, physical or mechanical; and
- n) shell thickness of pole as measured at the two inspection holes.

NOTE The abbreviated codes to be used on the abovementioned "Pole Inspection and Treatment Record" form, are listed in annex G.

Annex G
(normative)

Abbreviated codes

G.1 General

The abbreviated codes given in G.2 to G.4 (inclusive), as relevant, shall be recorded on the Pole Inspection and Treatment Record Form given in annex H or I, as applicable, unless otherwise agreed upon between the customer and contractor carrying out the inspection and supplemental treatment of treated wooden poles in service.

G.2 Abbreviated codes for the terrain and soil

Cl for clay soil;

Ma for marshy/wet soil;

No for normal/level terrain;

Ro for rocky terrain;

St for steep terrain;

Sa for sandy soil;

Va for valley.

G.3 Abbreviated codes for the type of vegetation

Ag for agricultural;

Fo for forestry;

Gr for grassland;

Ir for irrigation;

Ru for rural;

Th for thorny and/bush veld;

Ur for urban.

G.4 Abbreviated codes for the type of defects:

F for fire damage;

HR for heart rot;

I for incipient decay;

LC for large check;

LD for lightning damage;

MD for mechanical damage;

SC for severe check;

SR for shell rot;

TI for termite infestation.

Pole Inspection and Treatment Record for "Utility" poles

Inspection Company: Inspector: Inspection date:

[illegible]

Pole Inspection and Treatment Record for "Other" poles

Customer: Address: Pole use/type inspected:

Inspection Company: Inspector: Inspection date:

[illegible]