

Australian Standard[®]

Chain link fabric fencing

**Part 3: Tennis court fencing—
Private/Residential**



This Australian Standard® was prepared by Committee CE-008, Chain Link Fabric Security Fences and Gates. It was approved on behalf of the Council of Standards Australia on 4 June 2010.

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 - Australian Chain Link Fencing Association
 - Australian Chamber of Commerce and Industry
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-

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Chain link fabric fencing

Part 3: Tennis court fencing— Private/Residential

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PREFACE

This Standard was prepared by the Standards Australia Committee CE-008, Chain Link Fabric Security Fences and Gates.

The objective of this Standard is to establish minimum requirements for chain link fabric fence materials and workmanship for private residential tennis court fences, in order to ensure satisfactory service by the fence for the purchaser, and assist manufacturers and installation contractors by eliminating unnecessary minor variations in purchasers' requirements. Where alternatives are provided in this Standard, purchasers should nominate their preference.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

Statements expressed in mandatory terms in notes and footnotes to tables are deemed to be requirements of this Standard.

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STANDARDS AUSTRALIA

Australian Standard Chain link fabric fencing

Part 3: Tennis court fencing—Private/Residential

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for the construction of private and residential applications for tennis court fencing for a range of alternative types and design options.

It also includes requirements for wire coatings, pipe grades and tables.

NOTES:

- 1 AS 1725 Parts 1 to 5 fencing solutions are not deemed to be structures as defined in AS 4100, therefore, are not intended to comply with AS 1170, AS 4100 and AS/NZS 4600. However, in applications of high wind loading, crowd control and safety barriers, which can be considered a risk to public safety or deemed to be a building structure, the specifier is required to comply with AS 1170, AS 4100 and AS/NZS 4600.
- 2 Appendix A provides purchasing guidelines which will assist the purchasers to establish the private/residential tennis court fencing requirements suitable for their site application. Purchasers need to carefully consider, select and nominate their preference for each component.

1.2 APPLICATION

This Standard applies to tennis court fencing intended for residential and private use only, where player participation is generally lower than on commercial courts. The level of player participation and potential impact damage to chain link fabric, should be considered when selecting between heavy and light duty fabric.

1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

- | | |
|--------|---|
| 1074 | Steel tubes and tubulars for ordinary services |
| 1170 | Structural design actions |
| 1725 | Chain link fabric fencing |
| 1725.1 | Part 1: Security fences and gates—General requirements |
| 2423 | Coated steel wire fencing products for terrestrial, aquatic and general use |
| 2700S | Colour Standards for general purposes |
| 3972 | Portland and blended cements |
| 4100 | Steel Structures |
| 4506 | Metal finishing—Thermoset powder coatings |

AS/NZS

- | | |
|------|---|
| 1163 | Structural steel hollow sections |
| 2312 | Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings |

- 4680 Hot dip galvanized (zinc) coatings on fabricated ferrous articles
- 4600 Cold-formed steel structures
- 4792 Hot-dip galvanized (zinc) coatings on ferrous hollow sections, applied by a continuous or a specialized process
- EN
- 10255 Non-alloy steel tubes suitable for welding and threading—Technical delivery conditions

1.4 DEFINITIONS

For the purpose of this Standard the definitions used in AS 1725.1 apply.

1.5 PIPE SPECIFICATIONS AND TABLES

Alternative pipe specifications and tables form part of the requirements of this Standard, to assist purchasers in evaluating the performance criteria for strength of the nominated Pipe Standards AS 1074 AS/NZS 1163 and EN 10255. The pipe specifications given in Table B1 of Appendix B for Class 1 (medium quality) pipe or Table C1 of Appendix C for Class 2 (medium/light quality) pipe shall be used when considering the durability required for the proposed application.

1.6 SERVICE LIFE

1.6.1 General

The durability of the various components in a fence is dependent on both the climatic conditions and the local environmental, or microclimatic, conditions of the site in which the fence is to be installed.

NOTE: For guidance on the durability of metal and paint coatings applied to steel, refer to AS/NZS 2312.

1.6.2 Estimation of durability of wire products

An accurate estimation of the durability is usually not possible without in-depth knowledge of all the conditions pertaining to a particular site, although local experience may prove to be of assistance.

For guidance, AS 2423 gives indications, or estimations, of the durability of metallic (i.e., non-plastic coated) zinc coatings covered by this Standard.

1.6.3 Pipe rails

Providing top and bottom pipe rails to tennis court fencing will vastly improve the service life of the chain link fabric from being deformed from impact damage.

NOTE: Purchaser may elect to provide an additional pipe rail set at 1000 mm above bottom rail to provide additional support to lower section of chain link fabric, on baseline end fences.

1.7 PRIVATE/RESIDENTIAL TENNIS COURT FENCING DESIGN OPTIONS

There are four design options depending on the level of durability and service life required. Each design shall include heavy duty chain link fabric, 3600 mm or 3000 mm minimum height from tennis court surface, excepting for side drop down viewing areas, when required. The design options shall be as follows:

- (a) *Type A*: Fencing design with top and bottom pipe rail for a higher level of durability and service life, shall be constructed with top and bottom pipe rails clamped to all posts with galvanized split clamp-on fittings and 3 rows of cable wire to support the 3600 mm chain link fabric, 3 mid cables set at 600 mm, 1200 mm and 1800 mm from ground level.

- (b) *Type B*: Fencing design with top pipe rail only for medium level of durability and service life, shall be constructed with top pipe rail only clamped to all posts with galvanized split clamp-on fittings and 4 rows of cable wire to support the 3600 mm chain link fabric, 1 bottom cable and 3 mid cables set at 600 mm, 1200 mm and 1800 mm from ground level.
- (c) *Type C*: Fencing design with bottom pipe rail only for medium level of durability and service life, shall be constructed with corner braced panels plus bottom pipe rail only clamped to all posts with galvanized spit clamp-on fitting and 4 rows of cable wire to support the 3600 mm chain link fabric, 1 top cable and 3 mid cables 600 mm, 1200 mm and 1800 mm from ground level.
- (d) *Type D*: Fencing design as rail-less for a lower level of durability and service life, shall be constructed with corner braced panels and 5 rows of cable wire only to support the 3600 mm chain link fabric, located at top and bottom and 3 mid cables set at 600 mm, 1200 mm and 1800 mm from ground level.

The types of private/residential tennis court fencing design options, as detailed, form part of this Standard; however, it is not intended to limit other designs or arrangements which may provide the purchaser improved performance.

Refer to Appendices B to I for requirements for specific design options, as follows.

- (i) Appendix B for class 1 medium quality pipe.
- (ii) Appendix C for class 2 medium/light quality pipe.
- (iii) Appendix D for gate frames.
- (iv) Appendix E for optional bracing panels and backstays.
- (v) Appendix F for fence and gates Type A (top and bottom rail).
- (vi) Appendix G for fence and gates Type B (top rail only).
- (vii) Appendix H for fence and gates Type C (bottom rail only).
- (viii) Appendix I for fence and gates Type D (rail-less with 4 cables).
- (ix) Baseplates shall be in accordance with AS 1725.1—2010, Appendix F.

1.8 PURCHASING GUIDELINES

NOTE: Refer to Appendix A for information on purchasing guidelines.

SECTION 2 MATERIALS

2.1 GENERAL

Materials used in the construction of components for private/residential tennis court fences and gates covered by this Standard shall meet the requirements of Clause 2.2 to 2.6.

NOTE: It is essential that the zinc or, where applicable, zinc/aluminium-alloy coating mass, or coating thickness, on all fencing materials, whether posts or chain link fabric or tie wire or hinges, that are not otherwise protected by an overlaid organic coating such as plastic, paint or powder coating, meet minimum specified requirements, if the fence is to attain service design life with minimal appearance of detractive red rust.

2.2 WIRE FENCING MATERIALS

Chain link fencing fabric, single-stranded fencing wire and tie wire shall comply, in all respects, with AS 2423.

Metallic-coated wires shall have a coating class appropriate for the service environment and for the nominated service design life.

Where the chain link fabric is composed of galvanized wire, all of the other wires used in the fence shall be of the same coating designation, i.e. if the fabric is W10Z, then all other galvanized wires shall be W10Z.

NOTE: The same principle applies to zinc/aluminium-alloy coated wires, e.g., the designation will be W05Z5A.

All metallic-coated wires used in the fence shall be either all galvanized or all zinc/aluminium-alloy coated, to ensure that all endure for similar periods of time before the onset of red rusting.

2.3 STEEL TUBES

Medium quality pipe specified in Tables B2 and B3 of Appendix B for posts, stays, rails and bracing rails shall comply with either AS/NZS 1163 strength grade 250 MPa and/or AS 1074, EN 10255 strength grade 195 MPa.

Light quality pipe specified in Tables C2 and C3 of Appendix C for posts, stays, rail and bracing rails shall comply with either AS/NZS 1163 strength grade 350 MPa and/or AS 1074, EN 10255 strength grade 195 MPa.

The galvanized (zinc) coating on the steel tubes shall comply with AS/NZS 4792 with a coating class of HDG 300 or equivalent service life.

2.4 FITTINGS/BASEPLATES

All clamps, pipe fittings, hinges, fasteners, catches and baseplates and any other parts shall be manufactured from plain carbon steel, suitable for hot-dip galvanizing complying with AS/NZS 4680.

2.5 CONCRETE POST FOOTINGS

Concrete for post footings shall comply with Tables B2 and B3 of Appendix B or Tables C2 and C3 of Appendix C and shall be at least 20 MPa in compressive strength.

Post footings shall have been prepared using cement complying with AS 3972.

2.6 POWDER COATING

Powder coating shall comply with the requirements of AS 4506.

SECTION 3 COMPONENTS

3.1 GATE POSTS

Gateposts shall be medium quality pipe as specified in Tables B2 and C2 of Appendices B and C respectively.

3.2 FENCE POSTS

Fence posts shall be in accordance with Clause 1.5 and either of the following pipe qualities, as nominated by the purchaser:

- (a) Class 1, (medium quality) see Appendix B, Table B3.
- (b) Class 2, (medium/light quality) see Appendix C, Table C3.

Posts may be spliced by butt welding provided that the splice is located in the concrete footing and is not less than 150 mm below top of concrete footing (welds to be cleaned and treated with zinc rich paint). The tops of all exposed posts shall be provided with tightly fitted galvanized steel caps.

3.3 BRACING RAILS, BRACING STAYS AND BACKSTAYS

Bracing rails, bracing stays and backstays shall be provided without joints and shall be minimum DN 32 (diameter nominal) 42.4 mm OD (outside diameter) in accordance with Clause 3.2.

3.4 PIPE RAIL FENCING

Pipe rail where nominated by the purchaser to support the chain link fabric, shall be DN 32, 42.4 mm OD without joints. Joints are only permitted for continuous top rail fencing at not less than 6000 mm intervals (top rail only). Joints shall be tight-fitting with either internal swaged, external or internal sleeve joints or screwed, socketed joints or butted together centrally over posts within the fittings as per selected pipe qualities in accordance with Clause 3.2.

NOTE: Joints in bottom rails are not permitted.

3.5 CHAIN LINK FABRIC

3.5.1 General

This Clause (3.5) specifies two optional heights of chain link fabric to be used for private/residential tennis court fencing, 3000 mm or 3600 mm, being manufactured with a nominal 45 mm pitch and using 2.50 mm wire light duty fabric. The option of 3.15 mm 'heavy duty' fabric is provided for applications where additional strength or durability is desired.

3.5.2 Height options

Height options for private/residential tennis court shall be:

- (a) 3000 mm.
- (b) 3600 mm.

The preferred height is 3000 mm. Refer to Table 3.1. For fencing above 3600 mm high, an engineer's design is required

NOTE: Chain link fabric is available up to 5000 mm heights for special site applications.

3.5.3 Pitch

Maximum 45 mm pitch fabric shall be used to restrict forcefully hit tennis balls from becoming embedded into mesh fabric.

NOTE: The purchaser may select other smaller pitch sizes of chain link fabric complying with AS 2423 if heavier grades of fabric or a heavier wire coating durability is required for their application.

3.5.4 Service duty

A grading to determine the durability and strength between two standard wire diameters for chain link fabric nominated in this standard for tennis court fencing with a 45 mm nominal pitch mesh shall be as follows:

- (a) *Heavy duty*—as defined in AS 2423, chain link fabric manufactured with 3.15 mm wire, which represents the most rigid and durable fabric for higher impact strength applications, heavy duty fabric is required for commercial tennis court applications.
- (b) *Light duty*—as defined in AS 2423, chain link fabric manufactured with 2.50 mm wire, light duty may be selected for Private/Residential low impact applications.

NOTES:

- 1 Light duty 2.50 mm wire chain link fabric provides for only approximately 60% of the impact bearing capacity of heavy duty 3.15 mm wire fabric.
- 2 Fuse-bonded polymer coatings provide positive adhesion to the base wire to withstand higher impact damage therefore requires less polymer coating thickness.
- 3 Fuse-bonded polymer-coated wire will provide for improved service life in higher impact situations and coastal areas.

For preferred chain link options, refer to Figure 3.1.

3.5.5 Selvedge

The preferred selvedge for private/residential tennis court fencing shall be selected as 'Knuckled-knuckled' (KK), knuckled at both top and bottom of fabric.

NOTE: Refer to Figure 3.1.

3.5.6 Coatings

The chain link fabric is available in a range of coating options as specified in AS 2423.

Chain link fabric that is manufactured with a metallic finish wire coating shall comply with the following:

- (a) *Galvanized coating*—Designation shall be W10Z minimum and identifying code HG.
- (b) *Zinc/aluminium-alloy coating*—Designation shall be W05Z5A minimum and identifying code ZA.

NOTES:

- 1 AS 2423 provides advice on durability of both zinc-coated and zinc/aluminium-alloy coated wires under a variety of environmental conditions.
 - 2 Thin organic coatings (paint compounds) may be used over metallic-coated wires (refer to AS 2423).
- (c) *Extruded plastic coated wire, PVC (polyvinyl chloride)*—Shall comply with AS 2423 with a base metallic coating not less than W02Z.
- NOTE: All extruded plastic coated wire diameters are measured and specified by the core base metallic-coated wire diameter, for example:
- (a) Extruded PVC—3.15 mm core base metallic-coated wire with extruded plastic coating provides a typical 3.95 mm minimum outside diameter.
 - (b) Extruded PVC—2.50 mm core base metallic coated wire with extruded plastic coating provides a typical 3.2 mm minimum outside diameter.

- (d) *Fuse-bonded polymer (FBP)*—Coated wire shall comply with AS 2423 with a base metallic coating not less than W02Z.

NOTE: All fuse-bonded polymer-coated wire diameters are measured and specified by the core base metallic-coated wire diameter, for example;

- (a) Fuse-bonded polymer—3.15 mm core base metallic-coated wire with fuse-bonded polymer-coated wire provides a typical 3.55 mm minimum outside diameter.
- (b) Fuse-bonded polymer—2.50 mm core base metallic-coated wire with fuse-bonded polymer-coated wire provides a typical 2.85 mm minimum outside diameter.

Colours for plastic/polymer-coated wire shall be either black or dark green. The black shall approximate Black N61 and the dark green shall be Bottle Green G11 of AS 2700S. The plastic shall be UV-stable.

NOTE: Other colours may be negotiated between interested parties, but it should be noted that the resulting plastics/polymer may have a lower resistance to UV radiation.

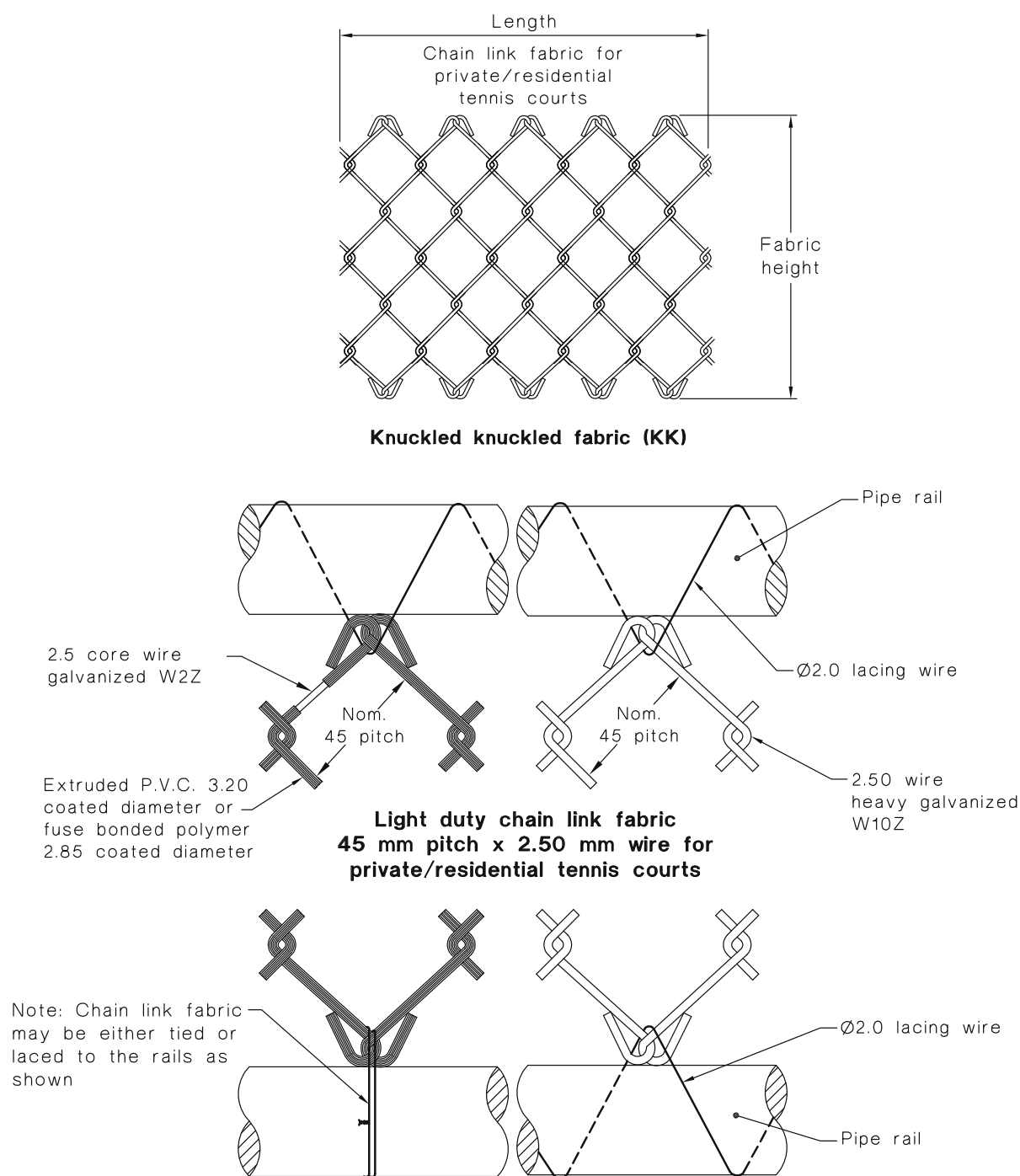


FIGURE 3.1 PREFERRED CHAIN LINK FABRIC OPTIONS

TABLE 3.1
PREFERRED RANGE OF CHAIN LINK FABRIC FOR
PRIVATE/RESIDENTIAL TENNIS COURT FENCING

Fabric height mm	Pitch or mesh size mm	Wire diameter mm	Wire coating designation and identifying code	Selvage—Top and bottom edge of fabric	Fabric service duty
Option 1—Light duty					
(Fabric height) × 45 × 2.50/W10Z/HG/KK light duty (chain link fabric) for Type A to D					
3.000	45	2.50	W10Z/HG	KK (Knuckled-Knuckled)	Light duty
3.600	45	2.50	W10Z/HG	KK (Knuckled-Knuckled)	Light duty
(Fabric height) × 45 × 2.50/W02Z/SG-PVC/KK light duty (chain link fabric) for Type A to D					
3.000	45	2.50	W02Z/SG-PVC	KK (Knuckled-Knuckled)	Light duty
3.600	45	2.50	W02Z/SG-PVC	KK (Knuckled-Knuckled)	Light duty
(Fabric height) × 45 × 2.50/W02Z/SG-FBP/KK light duty (chain link fabric) for Type A to D					
3.000	45	2.50	W02Z/SG-FBP	KK (Knuckled-Knuckled)	Light duty
3.600	45	2.50	W02Z/SG-FBP	KK (Knuckled-Knuckled)	Light duty
Option 2—heavy Duty					
(Fabric height) × 45 × 3.15/W10Z/HG/KK heavy duty (chain link fabric) for Type A to D					
3.000	45	3.15	W10Z/HG	KK (Knuckled-Knuckled)	Heavy duty
3.600	45	3.15	W10Z/HG	KK (Knuckled-Knuckled)	Heavy duty
(Fabric height) × 45 × 3.15/W02Z/SG-PVC/KK heavy duty (chain link fabric) for Type A to D					
3.000	45	3.15	W02Z/SG-PVC	KK (Knuckled-Knuckled)	Heavy duty
3.600	45	3.15	W02Z/SG-PVC	KK (Knuckled-Knuckled)	Heavy duty
(Fabric height) × 45 × 3.15/W02Z/SG-FBP/KK heavy duty (chain link fabric) for Type A to D					
3.000	45	3.15	W02Z/SG-FBP	KK (Knuckled-Knuckled)	Heavy duty
3.600	45	3.15	W02Z/SG-FBP	KK (Knuckled-Knuckled)	Heavy duty

NOTE: KK selvage mesh shall be the standard fabric available for private/residential tennis court fencing.

3.6 BRACING CABLE (FOR BRACED PANEL)

Bracing cable shall be of the same coating quality as selected for the chain link fabric and comprise two strands of 3.15 mm core wire twisted together or tensioned in conjunction with a galvanized 12 mm turnbuckle.

3.7 SUPPORT CABLES

Each support cable shall be of the same coating quality as selected for the chain link fabric and comprise any one of the following:

- Metallic-coated* Helicoil cable wire (single-strand 4 mm diameter wire helix spiralled).
- Extruded plastic coated* Helicoil cable wire (single-strand 4 mm diameter core metallic-coated base wire plus plastic coating to provide 5.20 mm coated outside diameter wire helix spiralled).
- Fuse-bonded polymer-coated* Helicoil cable wire (single-strand 4 mm diameter core metallic-coated base wire plus polymer coating to provide 4.35 mm coated outside diameter wire helix spiralled).