NZS 3471:1974

Incorporating Amendment No. 1

New Zealand Standard

Specification for Galvanised Steel Fencing Wire – Plain and Barbed

Declared on 22 February 1974 to be a standard specification pursuant to the provisions of section 23 of the Standards Act 1965.

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The following SANZ references relate to this standard:

Project No. P1036
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AMENDMENTS

No.	*Date of issue*	*Remarks*	*Entered by, and date*
1	20–2–76	Corrects a typographical error, and introduces a clause clarifying the status of related documents	Incorporated in this reprint

NOTES

NZS 3471 : 1974

(Incorporating Amendment No. 1)

NEW ZEALAND STANDARD

Specification for GALVANIZED STEEL FENCING WIRE — PLAIN AND BARBED

Metric units

STANDARDS ASSOCIATION OF NEW ZEALAND
WORLD TRADE CENTER, 15-23 STURDEE STREET, WELLINGTON
Postal address: Private Bag, Wellington Telegrams: *Standards*, Wellington

February 1974

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COMMITTEE REPRESENTATION

This standard was prepared under the supervision of the Iron and Steel Industry Sectional Committee (34) for the Standards Council established under the Standards Act 1965. The committee consisted of representatives of the following:

Department of Scientific and Industrial Research
Department of Trades and Industry
Ministry of Works
New Zealand Government Railways Department
New Zealand Institution of Engineers
*New Zealand Manufacturers Federation
New Zealand Manufacturing Engineers Federation
New Zealand Manufacturing Engineers and Metal Trades Federation
New Zealand Master Builders Federation
New Zealand Reinforcing Steel Fabricators Association
New Zealand Steel Guild
Steel Merchants Stockholders Association.

In addition to this representation Dr N. T. Evans of Auckland was co-opted to serve on the committee.

The Steel Fencing Wire Committee (34/2) was responsible for the preparation of the standard and in addition to the organization marked with an asterisk (*) above consisted of representatives of the following:

Federated Farmers of New Zealand
G.K.N. (N.Z.) Ltd.
Ministry of Agriculture and Fisheries
New Zealand Agricultural Engineering Institute
Wire Distributors Ltd.

FOREWORD

This standard is a revision in metric units of NZS 143: 1968 *Galvanized steel fencing wire and barbed wire* which is to be withdrawn when metrication in the fencing wire industry is completed.

Although the main reason for replacing NZS 143 is to introduce a series of rational metric wire diameters which are in agreement with the recommendations of the International Standards Organization the opportunity has also been taken to prepare a completely redrafted standard which removes the anomalies and ambiguities present in the earlier document. Most of the changes relate to the galvanizing quality, now completely specified within the standard, and remove the ambiguity over coating weight which arose previously by the cross reference to NZS 134 *Galvanized coatings on wire.*

With high tensile grade wire of less than 2·5 mm diameter it has not been possible to specify as great a thickness of galvanized coating as for wire of mild steel grade. It is advised therefore that when the selection of these high tensile grade wires is under consideration due account should be taken of the reduction in corrosion resistance which this implies.

RELATED DOCUMENTS

This standard requires reference to the following documents:

	Clause reference herein
ENDORSED BRITISH STANDARDS	
BS 443 : 1969 *Galvanized coatings on wire.*	4.2, 4.3
BS 4545 : 1970 *Methods for mechanical testing of steel wire.*	3.1

METRIC ABBREVIATIONS

g/m^2	grams per square metre
kg	kilogram
m	metre
mm	millimetre
N	newton

NEW ZEALAND STANDARD

SPECIFICATION FOR GALVANIZED STEEL FENCING WIRE— PLAIN AND BARBED

*1 SCOPE

1.1 This standard covers the requirements for the quality and dimensions of plain and barbed galvanized steel fencing wire of mild steel and high tensile grades.

1.2 Where any other standard named in this standard has been declared or endorsed in terms of the Standards Act 1965, then—

(a) Reference to the named standard shall be taken to include any current amendments declared or endorsed in terms of the Standards Act 1965; *or*

(b) Reference to the named standard shall be read as reference to any standard currently declared or endorsed in terms of the Standards Act 1965 as superseding the named standard, including any current amendments to the superseding standard declared or endorsed in terms of the Standards Act 1965.

NOTE—The date at which amendments or superseding standards are regarded as "current" is a matter of law depending upon the particular method by which this standard becomes legally enforcible in the case concerned. In general, if this is by contract the relevant date is the date on which the contract is created, but if it is by Act, Regulation, or bylaw then the relevant date is that on which the Act, Regulation, or bylaw is promulgated; for bylaws, promulgation includes updating by the procedure set out in MP 3801, *A guide to the adoption of the model building bylaw (NZS 1900) by local authorities using the standard adoption and annual updating procedures.*

* New clause added by Amendment No. 1.

2 MANUFACTURE

2.1 General

2.1.1 All wire should be of good uniform quality, have a circular cross-section and be free from surface irregularities.

2.1.2 Plain fencing wire shall contain neither spliced joints nor welds made after the galvanizing operation.

2.1.3 Spliced joints may be permitted in barbed wire but shall not exceed three in any 25 kg reel. The joints shall be made in a workmanlike manner and no two joints shall be closer than 75 m.

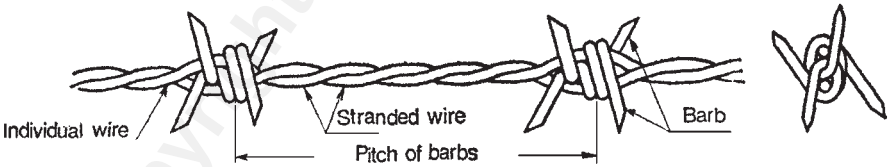
2.1.4 Welds made after the galvanizing operation may be permitted in barbed wire but shall not exceed one in any 25 kg reel.

2.2 Barbed wire

2.2.1 Barbed wire shall be formed from two individual wires uniformly twisted together in either a clockwise or an anti-clockwise direction and have between 30 and 40 twists per metre.

2.2.2 The barbs shall be wrapped around the individual wires by a method which prevents slipping and exposes the four ends of the barbs approximately 90 degrees apart in a plane at right angles to the stranded wire.

Barbed wire manufactured to the Iowa pattern shown in fig. 1 complies with the requirements of this clause.



*** Fig. 1** BARBED WIRE OF THE IOWA PATTERN

2.2.3 The pitch of the barbs shall be either 75 mm or 150 mm. The average pitch determined over a length of 6 m shall not exceed the specified pitch and no single pitch shall vary from the specified pitch by more than 15 mm.

* As altered by Amendment No. 1.

2.2.4 The points of the barbs shall project from the stranded wire by between 9 mm and 13 mm. Their ends shall be sharp and cut at an angle not greater than 35 degrees to the barb axis.

2.2.5 The wire used for the manufacture of barbed wire shall comply with the requirements of table 2 for mild steel grade and table 3 for high tensile grade.

2.2.6 Finished barbed wire shall be wound on compact reels to contain a nominal weight of 25 kg.

2.3 **Plain fencing wire**

2.3.1 All plain fencing wire shall be wound in coils of 25 kg nominal weight.

3 MECHANICAL PROPERTIES

3.1 The minimum breaking load of wire shall, when tested in accordance with BS 4545*, comply with the requirements of table 1 for plain fencing wire and table 2 or table 3 for barbed wire and shall show an elongation of not less than 4 percent over a gauge length of 250 mm.

3.2 Wire shall be capable of withstanding close wrapping for at least 6 turns around a wire of its own diameter without fracture of the steel.

3.3 All mechanical tests shall be carried out after the galvanizing of the wire.

4 GALVANIZING QUALITY

4.1 The galvanizing shall consist of a continuous even coating of zinc. If applied by the hot-dip process, spelter having a zinc content of not less than 98 percent shall be used.

4.2 The weight of zinc coating, when determined in compliance with BS 443*, shall nowhere be less than the values shown in table 1 for plain fencing wire and in table 2 or table 3 for barbed wire.

4.3 The zinc coating shall be able to withstand the number of dips in standard Preece test solution required by table 1 for plain fencing

* *See* list of related documents.

wire and table 2 or table 3 for barbed wire. The Preece test shall be performed and assessed in accordance with the method specified in BS 443*.

4.4 The zinc coating shall remain firmly adherent to the steel after the wire has been close wound at least 6 times around a wire of its own diameter and shall not crack or flake to such an extent that any flakes of zinc can be removed by rubbing with the bare finger.

5 DIMENSIONS

5.1 The overall diameter of the finished galvanized wire shall comply, within the tolerances permitted, with one of the standard wire sizes given in table 1 for plain fencing wire and table 2 or table 3 for barbed wire.

5.2 The diameter shall be determined by taking 2 measurements at right angles to each other at 3 positions along a length of not less than 250 mm and the average of these 6 measurements shall be taken as the diameter of the wire.

6 SAMPLING

6.1 From each batch comprising not more than 50 coils of wire of the same type and size, manufactured under essentially similar conditions, one coil shall be sampled for testing.

6.2 A sufficient length of wire shall be cut from one end of each sample coil and shall be tested for mechanical properties, galvanizing quality and dimensions.

6.3 Should a sample fail to satisfy the test requirements a further 2 samples from the batch of coils represented shall be tested. If either of these fails to satisfy the test requirements, the batch of coils represented by the sample shall, at the option of the manufacturer, be either retested on an individual coil basis or rejected.

6.4 Where a batch of coils is retested on an individual coil basis all coils which fail to satisfy the test requirements shall be rejected.

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* *See* list of related documents on p. 4.

7 MARKING

7.1 Except in the case of barbed wire, where the information may be marked on the reel, each coil of wire shall carry a durable label of convenient size on which shall be clearly and indelibly marked the following information:

(a) The number and year of this standard.

(b) The manufacturer's name or registered trade mark.

(c) The diameter of the wire.

(d) The nominal weight of the wire in the coil or reel.

(e) The minimum length of wire in the coil or reel.

(f) The minimum breaking load of the wire.

(g) The grade of steel.

(h) For barbed wire, the pitch of the barbs.

7.2 The starting end of the wire in the reel or coil shall be marked to facilitate easy identification.

NOTE — Compliance with this standard may be claimed in two ways:

(1) The expression "NZS 3471" appearing on a product is a *claim* by the manufacturer that it complies with the requirements of this standard. This is the manufacturer's responsibility, and carries the usual obligations under the Sale of Goods Act 1908 and the Consumer Information Act 1969, as well as others under the Standards Act 1965.

(2) The Standard Certification Mark appearing on a product *certifies* compliance with the standard through a system of supervision, control, and testing which has been established by the manufacturer to the satisfaction of the Standards Council. In addition, periodical inspections are made at the manufacturer's works, and testing to the standard at agreed intervals is carried out by independent testing authorities. The Standard Certification Mark is registered as a certification trade mark under the Trade Marks Act 1953, and may be used *only* (a) in terms of a licence issued by the Standards Association of New Zealand and also (b) in conjunction with the licence number and the relevant New Zealand standard number.

Further particulars of the conditions of licensing may be obtained from the Director, Standards Association of New Zealand, Private Bag, Wellington.

THE STANDARD CERTIFICATION MARK

Table 1 REQUIREMENTS FOR PLAIN FENCING WIRE

Nominal diameter	*Plus or minus tolerance on diameter*	*Breaking load*		*Galvanized coating*		
				Minimum weight	*Preece test No. of dips*	
		Min.	*Max.*		Minute	½ Minute
MILD STEEL GRADE						
mm	mm	N	N	g/m²		
4·50	0·1	7320	9860	290	3	1
4·00	0·1	5780	7790	290	3	1
3·55	0·1	4550	6140	275	3	1
3·15	0·1	3590	4830	275	3	1
2·50	0·08	2110	2580	260	3	–
2·00	0·05	1350	1650	240	3	–
HIGH TENSILE GRADE						
2·50	0·08	6060	7610	260	3	–
2·00	0·05	3880	4870	215	2	–

* **Table 2** REQUIREMENTS FOR BARBED WIRE OF MILD STEEL GRADE

Nominal diameter	*Plus or minus tolerance on diameter*	*Breaking load*		*Galvanized coating*		
				Minimum weight	*Preece test No. of dips*	
		Min.	*Max.*		Minute	½ Minute
INDIVIDUAL WIRES						
mm	mm	N	N	g/m²		
2·50	0·08	2110	2580	260	3	
BARBING WIRE						
2·0	0·05	1350	1650	240	3	

* As altered by Amendment No. 1.

Table 3 REQUIREMENTS FOR BARBED WIRE OF HIGH TENSILE GRADE

Nominal diameter	*Plus or minus tolerance on diameter*	*Breaking load*		*Galvanized coating*		
				Minimum weight	*Preece test No. of dips*	
		Min.	*Max.*		Minute	½ Minute
INDIVIDUAL WIRES						
mm	mm	N	N	g/m²		
1·60	0·05	2170	2480	200	2	–
BARBING WIRE						
1·60	0·05	860	1060	230	2	1