

JIS G 3533:1993/Amendment 1:2008

Barbed wires

Approved by

Quality Control Manager

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Barbed wire

1 Scope

This Japanese Industrial Standard specifies the Iowa type barbed wires.

Remarks: The standards cited in this Standard are given in the Following:

JIS G 3547 zinc- coated low carbon steel wires

JIS H 0401 Methods of test for hot dip galvanized coatings

JIS Z 2241 Method of tensile test for metallic materials

2 Names of individual parts

The name of each part of the barbed wire shall be as shown in Fig. I.

In Fig. I, the numerals encircled express the method of counting of lays in one pitch.

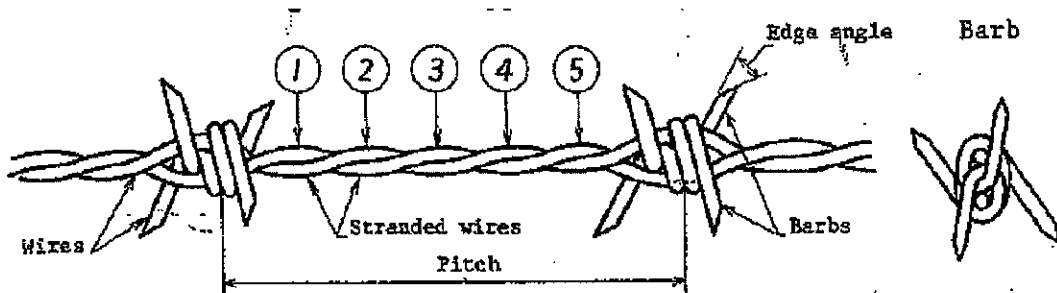


Fig. 1. Iowa type barbed wire

3 Class, symbol and applicable wire diameter

The barbed wire shall be categorized into seven classes, Nos. 1 to 7, according to the zinc coating mass of the wire used, and their symbols and applicable wire diameter shall be as given in Table 1.

Table 1. Class, symbol and application wire diameter

Unit : mm.

Class	Symbol	Applicable wire diameter	Remarks
Class 2	BWGS-2	1.60 or over, up to and incl. 2.90	A barbed wire using the wires of SWMGS-2 in JIS G 3547

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4 Mechanical properties

The tensile strength for the strength for the stranded wires shall be tested in accordance with 10.1 and 10.2, and the results shall conform to table 2.

Table 2. Mechanical property

Wire diameter (mm.)	Tensile Strength (N/mm. ²)
	BWGS-2
1.60 or over to and excl. 1.80	-
1.80 or over to and excl. 2.60	290 to 590
2.60 or over, up to and incl. 2.90	

Remark : As for the barbed wire marked with a bar in Table 2, the requirements on mechanical property is not applied.

As for those mark with a slash, there is no prescription on barbed wire is produced.

5 Zinc coating characteristics

The zinc coating mass for the stranded wires and barbs shall be determined according to the tests of 10.1 and 10.3, and the results shall conform to Table 3.

Table 3. Zinc coating mass

Wire diameter (mm.)	Zinc coating mass (g/m. ²)
	BWGS-2
1.60 or over to and excl. 1.80	19 min.
1.80 or over to and excl. 2.00	
2.00 or over to and excl. 2.30	23 min.
2.30 or over to and excl. 2.60	
2.60 or over to and excl. 2.90	
2.90	28 min.

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Remark : As for the barbed wire marked with a slash, there is no prescription since no barbed wire is produced.

6 Dimension and tolerances thereon

6.1 Pitches, pitch tolerances and number of lays in one pitch

The pitches, pitch tolerances and number of lays in one pitch shall be as specified in Table 4.

Table 4. Pitches, pitch tolerance and number of lays in one pitch

Pitch (mm.)	Tolerance on pitch (mm.)	Number of lays in one pitch
75	± 13	2 to 7
100		
125		

6.2 Edge angle

The edge angle of the barb shall be in the range of 30° to 45°

6.3 Tolerances on wire diameter

The diameter of the wire shall be measured according to 10.4, and the tolerances thereon shall be as specified in Table 5.

Table 5. Tolerances on wire diameter

Unit : mm.

Wire diameter	BWGS-2
1.60 or over , up to and incl. 2.00	± 0.05
Over 2.00 up to and incl. 2.90	± 0.07

Remark : As for the barbed wires marked with a slash in Table 5, there is on prescription since no barbed wire is produced.

7 Appearance

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The barbed wires shall be practically uniform in shape of barbs and pitches, and free from rust, flaw, tear or other defects that are detrimental to practical use.

8 Material

The material used for the manufacture of the barbed wires shall be the zinc – coated low carbon steel wires which conform to the requirements of each class symbolized with **SWMGS-2 in JIS G 3547**, respectively.

9 Method of manufacture

The barbed wires shall be manufactured by winding the barbed around the wires with a constant pitch and then stranding the wires together.

10 Tests

10.1 Sampling method of test piece

Each one test piece for tensile and zinc coating mass tests shall be taken from one end of a coil.

10.2 Tensile test

The tensile test shall be carried out as follows:

1. The test method shall be specified in JIS Z 2241.
2. In the case where the test piece fractures at gripped portion and the value obtained fails to meet the requirements, the test shall be invalidated, and a retest may be made on the test piece newly taken from the coil.

10.3 Zinc coating mass test

The zinc coating mass test shall be carried out as follows:

1. The test piece shall be taken from the barbed wire after untwisting the barbed and strands. In this case, the number of barbed shall be 5 to 10 pieces.

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2. The test method shall be as specified in 3.2 of JIS H 0401.

10.4 Measurement on wire diameter

As to the diameter of the wire, it shall be determined by the maximum and minimum values of diameter in the same section at an arbitrary portion.

11 Inspection

The inspection shall be carried out as follows:

1. The mechanical properties shall conform to the requirements specified in 4
2. The characteristics on zinc coating shall conform to the requirements specified in 5
3. The dimensions shall conform to the requirements specified in 6
4. The appearance shall conform to the requirements specified in 7

12 Designation of barbed wire

The barbed wire wires shall be designated by the class or its symbol, the diameter of the wire of stranded portion, the diameter of the wire of the barb (when this is equal to that of stranded portion, this may be omitted), the number of barb edges and the pitch.

Example : BWGS-2 2.60 x 2.00 x 4p x 75

(For the barbed wire of class symbol of BWGS-2, 2.60mm in diameter of the wire of stranded portion, 2.00 mm in diameter of the barbed, 4 point of the edge and 75 mm in pitch)

13 Marking

The barbed wires having passed the inspection shall be marked the following details on each coil.

1. Symbol of class

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2. Diameter of the wire stranded portion X the diameter of the wire of the barb (when they are equal, the latter may be omitted) X the number of barb edges X pitch
3. Net mass
4. Year and month of manufacture or its identifying symbol
5. Manufacturer's name or its identifying brand

14 Report

The manufacturer shall the test report stating the specified time on request by the purchaser.

Barbed wire

(Amendment 1)

10.3 Zinc coating mass test

Replace by the following

10.3 Zinc coating mass test

1. The test piece shall be taken from the baked wire of 300mm to 600 mm in length after untwisting the barbs and strands.
2. The test solution shall be as specified in 5.2.3 of JIS H 0401.
3. Cleaning of test piece shall be as specified in 5.2.4 of JIS H 0401.
4. **Operation and calculation of coating mass** Weigh the mass of calmed test piece to the nicest 1.01 g. When the test piece is too long in comparison with the vessel bend or wind the wire appropriately so as to dip the test piece completely in the test solution . After hydrogen generation lessens and coating layer is removed, take out piece, wash it with wipe it well with a cotton cloth and dry it sufficiently. Weigh its mass again to the nearest 0.01g, measure its diameters of the same position at right angles to each other to the nearest 0.01 mm and calculate the mean of them

The coating mass shall be calculates by the following formula.

$$A = \frac{W_1 - W_2}{W_2} \times d \times 1960$$

- Where,
- A : coating mass (g/m²)
 - W₁ : mass of the piece before removing coating layer(g)
 - W₂ : mass of the piece after removing coating layer(g)
 - d : diameter of the piece after removing coating layer(mm)
 - 1960 : constant

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NOTE(1) The test solution may be used repeatedly as the coating layer can be easily removed.
