INTERPLANT STANDARD — STEEL INDUSTRY

IP SS

SPECIFICATION FOR INDUSTRIAL WIRE CLOTH AND WIRE MESH

IPSS : 1-07-032-86

Based on IS : 2405 (Part I)-1980 *and* IS : 5742 (Part I)-1970

0. Foreword

0.1 Interplant standardization activity in steel industry has been initiated under the aegis of the Indian Standards Institution (ISI) and the Steel Authority of India Limited (SAIL). This Interplant Standard prepared by the Standards Committee on Paints and Portable Maintenance Equipment, IPSS : 1 : 7 with the active participation of the representatives of all steel plants and established manufacturers of industrial wire cloth and wire mesh adopted by the Approval Committee on Consumable Stores and General Equipment, IPSS 1, on 27 March 1986.

0.2 Interplant Standards for steel industry primarily aim at achieving rationalization and unification of parts and sub-assemblies used in steel plant equipment and accessories and provide guidance in indenting stores or equipment for existing or new installations by individual steel plants. For exercising effective control on inventories, it is advisable to select a fewer number of sizes (or types) from among those mentioned in this standard for the purpose of company standards of individual steel plants. It is not desirable to make deviations in the technical requirements.

---

1. Scope — This standard lays down requirements regarding material, construction, dimensions and finish of woven wire cloth and wire mesh with square apertures for industrial use.

2. Terminology — The following definitions shall apply.

2.1 *Woven Wire Cloth or Wire Mesh* — A mesh of wires which cross each other in plain or twilled weave to form the apertures.

2.2 *Aperture Size* — Dimension defining an opening, normally specified as clear distance between two adjacent warp or weft wires (strands or threads) measured across the projected level of the cloth or mesh.

2.3 *Warp Wires* — All woven wires running length wise of the cloth/mesh.

2.4 *Weft Wires* — All woven wires running cross wise of the cloth/mesh.

2.5 *Wire Diameter* — Diameter of wire from which the cloth mesh is woven and measured across the projected level of the finished cloth/mesh.

2.6 *Screen Opening* — The clear space between the wires of the cloth/mesh.

2.7 *Open Sieving Area* — Ratio of the area of the apertures to the total surface area of the cloth in percent.

2.8 *Type of Weave* — The way in which warp and weft wires across each other.

2.9 *Plain Weave* — Every warp wire crosses alternately above and below every weft wire and vice versa (Fig. 1).

2.10 *Twill Weave* — Every warp wire crosses alternately above and below every successive pair of weft wires and vice versa (Fig. 2).

3. Material — The material of the mesh depends to a large extent on the purpose for which the wire mesh is required.

3.1 Unless otherwise specified by the purchaser, the wire cloth/mesh shall be made from wire of the material specified below:

Size of Aperture	*Material of Wire*
Below 250 μm	Phosphorbronze or stainless steel or monel.
250 μm to 900 μm	Phosphorbronze or stainless steel monel or brass (Cu70 Zn30)
1·00 mm to 3·35 mm (both inclusive)	Phosphorbronze or brass or steel (Cu 70 Zn 30) or stainless steel
4·00 mm to 5·50 mm (both inclusive)	Brass (Cu 70 Zn30) or steel
6·30 mm and above (inclusive 6·30)	Steel

Note — 1 μm = 10^{-6} m.

Amendments Issued (*to be filled up by the user department*):

No.	Date of Issue	No.	Date of Issue
1		3	
2		4	

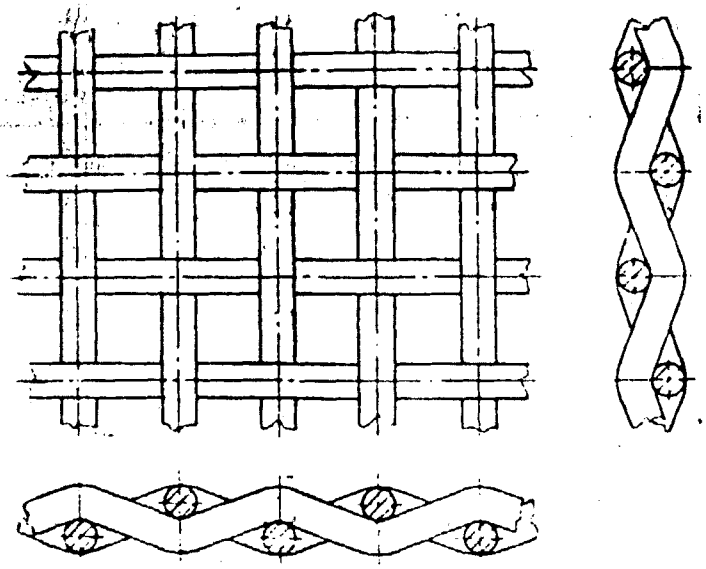

FIG. 1 PLAIN WEAVE

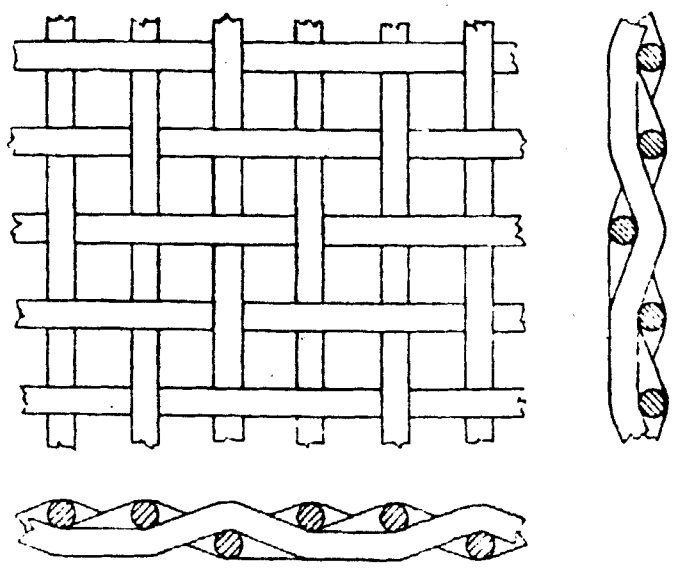

FIG. 2 TWILL WEAVE (RIGHT OR LEFT LAY) TWILT WEAVE. 3 SHAFT. RIGHT LAY

3.2 The wire cloth/mesh may be woven from any of the wires of the materials recommended in **3.1**. The following materials are recommended to be screened against the material of the cloth/mesh for the use in steel industries:

Material of Cloth/Mesh	*Material to be Screened*
a) Brass (Cu70 Zn30) conforming to IS : 4413-1981 'Specification for brass wires for general engineering purposes (*first revision*)'	Water, oil, oxygen
b) Mild steel (galvanized) conforming to IS : 280-1978 'Specification for mild steel wire for general engineering purposes (*third revision*)'	Crushed lime stone
c) Stainless steel or (04Cr18Ni10) conforming to IS : 6528-1972 'Specification for stainless steel wire'	Water, oil, sinter, coke, etc

3.3 *Construction*

3.3.1 The wire shall be circular cross section and its diameter shall conform to that specified in col 4 of Table 1. The tolerance limits shall apply to diameters of both warp and weft wires.

3.3.2 The wire cloth/mesh shall be regularly woven to produce uniform square apertures and there shall be no punctures or obvious defects in the cloth/mesh.

3.4 *Tolerances*

3.4.1 *Permissible variation in average aperature* — The average of the widths of all measured apertures shall not depart from the nominal size of apertures by more than the permissible variation shown in col 2 of Table 1.

3.4.2 *Maximum permissible variation in individual aperture size* — No individual aperture shall exceed the nominal aperture size by more than the maximum permissible variation shown in col 3 of Table 1.

3.4.3 *Wire diameter* — Tolerances for wire diameters shall be in accordance with those listed in col 5 of Table 1. The tolerance limits shall apply to diameters of both warp and weft wires separately.

3.5 *Crimping* — The general aim of crimping is to create stability in the mesh so as to hold the wires in correct relationship and preserve the shape and size of the aperture. The various types of crimps are shown in Fig. 3.

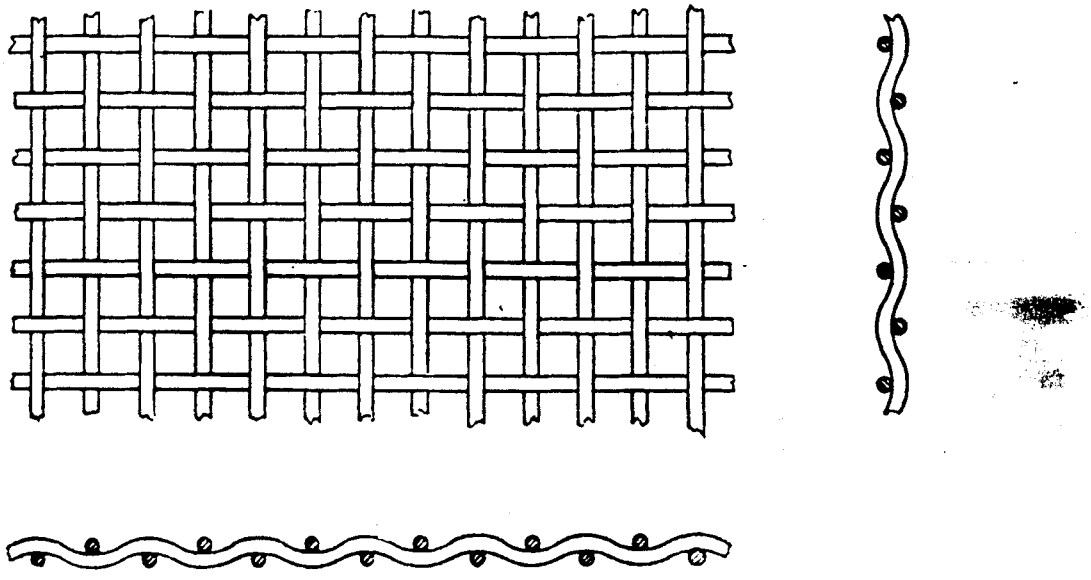

FIG. 3A PLAIN WEAVES, WOVEN WITH PRE-CRIMPED WIRES (FORM A — DOUBLE CRIMP)

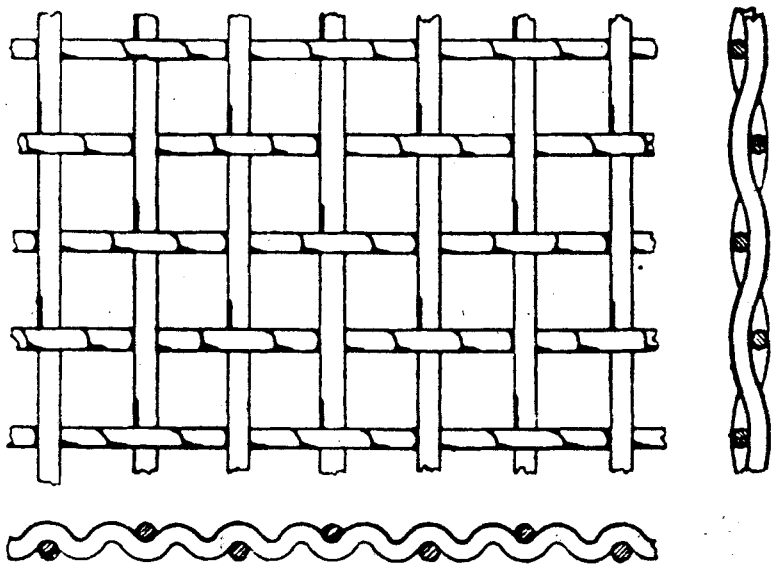

FIG. 3B FORM B — SINGLE INTERMEDIATE CRIMP

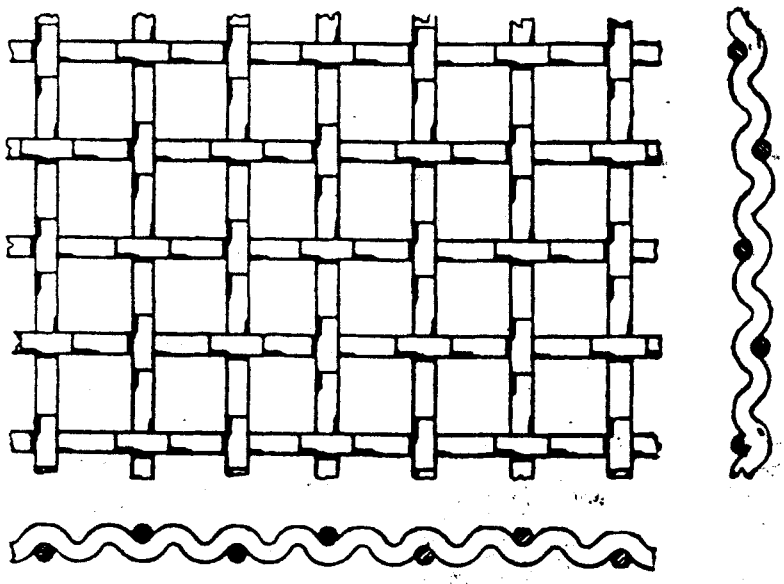

FIG. 3C FORM C — DOUBLE INTERMEDIATE CRIMP

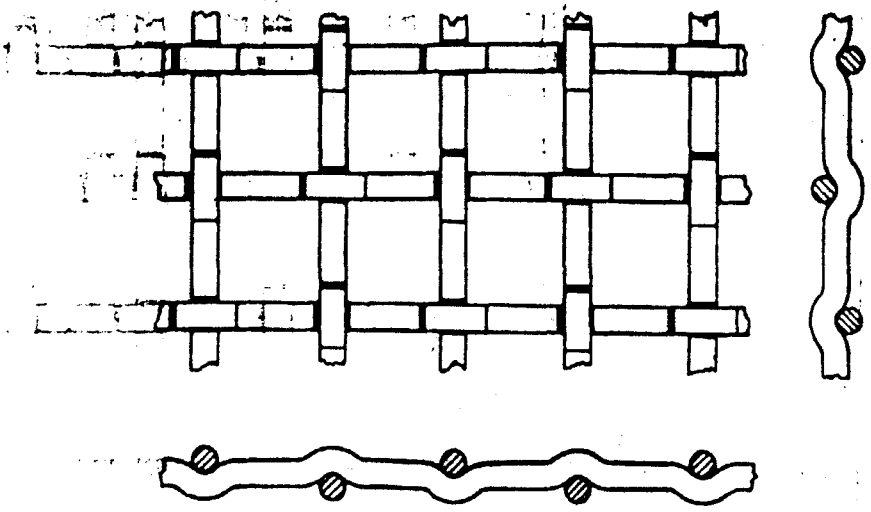

FIG. 3D FORM D — LOCK CRIMP

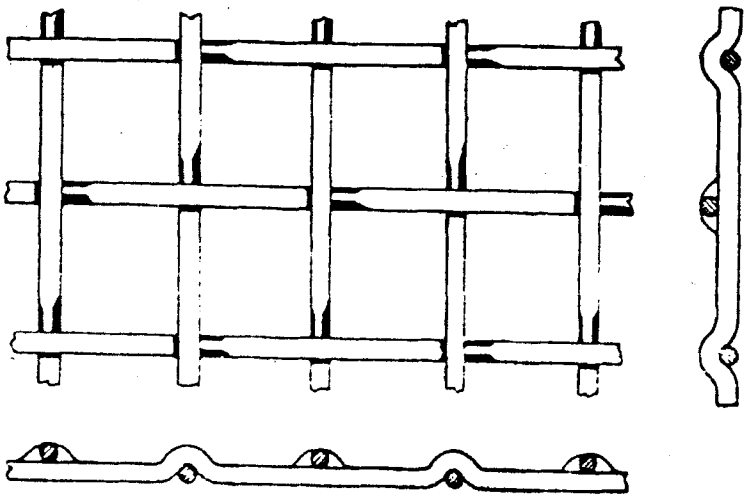

FIG. 3E FORM E — FLAT TOP CRIMP

Both the warp and weft wires of wire mesh having aperture size greater than 2·80 mm shall be crimped preparatory to the process of weaving.

Crimps are generally similar in both the directions.

3.6 *Edge Construction* — General, high tensile wire mesh is used for screening purpose and it is in common practice to finish or reinforce the edges in such a way that they assist assembly of the mesh into the screening machinery.

4. Finish

4.1 The wire cloth mesh shall have smooth surface.

4.2 There shall be no visible defects in the cloth mesh.

5. Designation — The wire cloth mesh in this standard shall be designated with:

a) nominal aperture size,
b) diameter of wire,
c) size of screen (sieve),
d) type of edge construction,
e) type of weave,
f) material of wire,
g) condition of material, annealed and galvanized (AG) or hardened (H); and
h) number of this standard.

Example:

A wire mesh of 6·3 mm aperture size and 2·0 mm wire diameter, 3 500 × 1 700 mm sieve size, for D plain weave, annealed and galvanized shall be designated as 'Plain weave wire sieve'.

6 3 2 0 — 3 500 × 1 700, D-AG as per IPSS : 1-07-032-86.

6. Marking — Wire cloth/mesh shall have permanently attached lable on which the following informations shall be marked.

a) Manufacturer's name or trade-mark,
b) Nominal aperture,
c) Diameter of wire,
d) Size of wire cloth/mesh,
e) Material of wire,
f) Type of weave, and
g) Number of this IPSS.

7. Sampling — Sampling shall be made as per **10** of IS : 2405 (Part 1) 1980 'Specification for industrial sieves: Part 1 Wire cloth sieves (*first revision*)'.

8. Testing

8.1 Testing of the wire cloth and mesh shall be done as per Appendix A of IS : 2405 (Part 1) 1980.

TABLE 1 APERTURE SIZE AND WIRE DIAMETER COMBINATIONS

(*Clauses* 3.3.1, 3.4.1, 3.4.2 and 3.4.3)

Aperture Size	Tolerance in Average Aperture	*Max.* Permissible Variation in Individual Aperture Size	Wire Diameter	Tolerance	Open Area Percentage
mm			mm		
(1)	(2)	(3)	(4)	(5)	(6)
0·100 (100 m)	± 0·008	0·056	0·071	± 0·004	34
0·160 (160 m)	± 0·014	0·075	0·112	± 0·004	35
0·250 (250 m)	± 0·027	0·075	0·180	± 0·008	34
0·355 (355 m)	± 0·027	0·110	0·280	± 0·008	31
0·500 (500 m)	± 0·054	0·110	0·400	± 0·010	31
0·710 (710 m)	± 0·054	0·180	0·450	± 0·013	37
1·00	± 0·088	0·25	0·355	± 0·010	54
1·00	± 0·088	0·25	0·630	± 0·015	38
2·80	± 0·18	0·42	1·12	± 0·025	51
4·00	± 0·25	0·60	1·25	± 0·025	58
5·00	± 0·30	0·78	2·50	± 0·050	44
5·00	± 0·30	0·78	3·15	± 0·050	37
6·3	± 0·38	0·85	2·5	± 0·050	51
6·3	± 0·38	0·85	4	± 0·076	37
8·0	± 0·38	0·85	4	± 0·076	44
12·5	± 0·43	1·2	5	± 0·076	51
16	± 0·51	1·4	5	± 0·076	58
20	± 0·76	1·8	6·3	± 0·076	58
20	± 0·76	1·8	3·15	± 0·050	74
25	± 1·14	2·4	6·3	± 0·076	64

8.2 The material of the wire shall be tested separately and a test certificate of the material tested in a recognized test shall be supplied along with each supply.

9. Guarantee — The guarantee shall be as agreed to between the purchaser and the supplier.