

Indian Standard



SPECIFICATION FOR RUBBER CONVEYOR AND ELEVATOR BELTING

PART IV HYGIENIC BELTING

(First Revision)

1. Scope — Covers requirements for rubberized canvas hygienic conveyor belting intended for handling foodstuffs and other products which require hygienic handling.

1.1 This standard does not cover PVC/plastic hygienic belting.

2. Terminology, and Dimensions and Tolerances — As prescribed in IS : 1891 (Part I)-1978 'Specification for rubber conveyor and elevator belting: Part I General purpose belting (second revision)'.

3. Fabric — As prescribed in IS : 1891 (Part I)-1978. In case the belts are manufactured from cotton duck, it shall conform to Type 28 or 32 of IS : 5996-1970 'Specification for cotton belting ducks'.

4. Rubber Cover — Hygienic Requirement — All the compounding ingredients used in the rubber compound from which the rubber covers are made should be free from harmful ingredients liable to extraction by contact with the foodstuffs and other materials being handled or which may cause the development of undesirable odour, taste or discolouration. The compounding ingredients recommended for this purpose are as given in Appendix A.

5. Construction — As prescribed in IS : 1891 (Part I)-1978, except that the requirements of 6.1.2 of IS : 1891 (Part I)-1978 shall not apply.

6. Test Requirements of Finished Belting

6.1 Tensile Strength and Elongation at Break of Rubber Cover — When tested as described in Appendix C of IS : 1891 (Part I)-1978, the tensile strength and elongation at break of the rubber cover shall be as follows:

Tensile strength	10 MN/m ² , <i>Min</i>
Elongation at break	350 percent, <i>Min</i>

6.2 Adhesion — The adhesion between the individual plies and between the cover and the plies shall be such that when tested in the manner described in Appendix G of IS : 1891 (Part I)-1978, the force required to cause separation of the plies shall be as given in Table 1.

6.3 Ageing Test — After ageing for 72 hours at $70 \pm 1^\circ\text{C}$ in the manner described in IS : 3400 (Part IV)-1965 'Methods of test for vulcanized rubbers: Part IV Accelerated ageing', the tensile strength and elongation at break of the rubber used for the cover shall not vary by more than $\begin{smallmatrix} +10 \\ -25 \end{smallmatrix}$ percent and $\begin{smallmatrix} +10 \\ -45 \end{smallmatrix}$ percent respectively from the corresponding values obtained before ageing.

6.4 Toughability — As prescribed in IS : 1891 (Part I)-1978.

7. Packing — The belting shall be packed as mutually agreed to between the purchaser and the vendor.

8. Marking — The belting shall be marked as follows at the intervals of 5 to 10 m on the carrying surface:

- The symbol A to denote hygienic quality of the belting,
- The last two digits of the year of the manufacture,
- Letters or trade-mark identifying the manufacturer, and
- The number of this standard.

8.1 ISI Certification Marking — Details available with the Indian Standards Institution.

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TABLE 1 LOADS FOR ADHESION TESTING
(Clause 6.2)

Sl No.	Test	Load, Min
(1)	(2)	(3)
		kN/m width
i) Adhesion between individual plies		2.45
ii) Adhesion between cover and plies:		
a) Covers up to and including 1.0 mm thick		(No test)
b) Covers over 1.0 mm thick		2.35

Note — No individual value obtained at the time of measurement should be below the values specified above by more than 0.8 kN/m.

9. Sampling, and Information to be Supplied by the Purchaser with Enquiry or Order — As prescribed in IS : 1891 (Part I)-1978.

10. Other Requirements — Any other requirement not specifically mentioned in this standard shall be as laid down in IS : 1891 (Part I)-1978.

APPENDIX A

(Clause 4)

RECOMMENDED COMPOUNDING INGREDIENTS

A-1. General — In giving the following data it is not intended to imply that the use of alternative materials may not give belts of a suitable quality. The recommendations are, in every case, intended mainly to indicate types of materials which have been found, by practical experience, to be suitable for producing belts to be used for conveying foodstuffs.

A-2. Compounding

A-2.1 The belts may be made from natural rubber, or some suitable synthetic non-toxic elastomer or a blend of the two together with the necessary compounding ingredients.

A-2.2 All the compounding ingredients used in the rubber shall be free from harmful materials liable to extraction by contact with foodstuffs or which may cause the development of undesirable odour, taste or discolouration.

Note — In the case of natural rubber belts, light coloured crepe of natural rubber that has been rendered suitable for extrusion (superior processing rubber), or air-dried plantation rubber that is free from *p*-nitrophenol (so called air-dried sheets), and in the case of synthetic rubber belts, *cis*-1, 4-polyisoprene, polybutadiene, styrene-butadiene copolymers, nitrile-butadiene copolymers or chloroprene rubber (polychloroprene), or a blend of any of these, may be used as raw material. Divinyl benzene may be used as third polymerization component.

A-3. Accelerators — Recommended accelerators of the tasteless type to suit the requirements specified in 4 are thiuram disulphides or monosulphides, dithiocarbamates and suitable polyamines.

A-4. Antioxidants — Where it is considered that an antioxidant be employed, the following materials are recommended.

A-4.1 Condensation Products of Acetone and Aniline

A-4.2 Di- β -naphthyl-*p*-phenylenediamine (Symmetric)

A-5. Fillers — The following are recommended.

A-5.1 China Clay — See IS : 505-1968 ' Specification for light kaolin (first revision) '.

A-5.2 Barytes — See IS : 1683-1973 ' Specification for barytes for rubber industry (first revision) '.

A-5.3 *Blanc Fixe*

A-5.4 *Kieselguhr*

A-5.5 *Silica*

A-5.6 *Whiting* — See IS : 1685-1960 ' Specification for whiting for rubber industry '.

A-5.7 *Carbon black*

A-6. Softeners — The following are recommended.

A-6.1 *Stearic Acid* — See IS : 1675-1971 ' Specification for stearic acid, technical (*first revision*) '.

A-6.2 *Petroleum Jelly*

A-6.3 *Light Coloured Mineral Oil* — For example, transformer oil [see IS : 335-1972 Specification for new insulating oils for transformers and switchgear (*second revision*)].

EXPLANATORY NOTE

This Indian Standard (Part IV) was first issued in 1971. It is now being revised to bring it in line with the current manufacturing practices. Values have been given in SI units.

This standard is being issued in the following parts:

- Part I General purpose belting
- Part II Heat-resistant belting
- Part III Oil-resistant belting
- Part IV Hygienic belting

It is proposed to cover PVC/plastic hygienic belting in a separate standard.