



INTERNATIONAL TELECOMMUNICATION UNION

**ITU-T**

**L.5**

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

**CONSTRUCTION, INSTALLATION  
AND PROTECTION OF CABLE AND OTHER  
ELEMENTS OF OUTSIDE PLANT**

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**CABLE SHEATHS MADE OF METALS  
OTHER THAN LEAD OR ALUMINIUM**

**ITU-T Recommendation L.5**

(Extract from the *Blue Book*)

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## NOTES

1 ITU-T Recommendation L.5 was published in Volume IX of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

2 In this Recommendation, the expression “Administration” is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

## Recommendation L.5

### CABLE SHEATHS MADE OF METALS OTHER THAN LEAD OR ALUMINIUM

(Geneva, 1972)

#### 1 Types of metallic-sheathed cables

1.1 The most common form of metallic sheath used as an alternative to a lead or aluminium sheath is one of corrugated steel. This consists of a long steel strip, shaped into a tube round the cable core, welded by a suitable process (inert-gas arc, mains frequency or high frequency heating) along the longitudinal seam and then corrugated. Outer protection for the steel sheath is provided by means of a special viscous, anti-corrosion compound enclosing one or more plastic tapes and laid so that the troughs of the corrugations are completely filled. An external plastic covering is then extruded over the compound-protected steel to form a smooth outer covering.

1.2 For protection against induced currents the cable described in § 1.1 above may be used with aluminium or copper tapes laid longitudinally or helically beneath the corrugated steel sheath. Alternatively, a corrugated-copper sheath can be used in place of the corrugated-steel sheath.

#### 2 Construction

2.1 The metallic strip is shaped into a long tube round the cable core, welded along the longitudinal seam and then corrugated.

2.2 Unprotected steel is particularly vulnerable to corrosion attack and the protection provided usually consist of a layer of compound in which may be embedded plastic tapes so that the corrugations are completely filled. An outer sheath of polyethylene or similar Class II covering (see reference [1]) is the extruded over the compound.

2.3 Armouring of the cable is not normally necessary, but may be provided in special cases.

#### 3 Uses

Corrugated steel- or copper-sheathed cables may be used for all types of telecommunication cable and the following are the main considerations influencing their use:

- a) taking all factors into consideration (laying costs, duct space, cable cost, for example), and although the total diameter of the cable is greater than in the case of plastic, lead or noncorrugated-aluminium sheathed cables, telecommunication cables with steel sheaths may be more economical than lead-covered cables;
- b) a steel sheath is not vulnerable to vibration caused by road or rail traffic;
- c) a corrugated metal sheath has good flexibility;
- d) a corrugated metal sheath with a smooth outer covering is easy to handle during installation;
- e) the same type of cable can be laid direct in the ground or pulled into ducts;
- f) such a sheath resists moderate crushing stresses and provides protection against most of the damage caused by stones or digging tools;
- g) if the plastic covering of steel-sheathed cables is damaged, rapid corrosion may be expected.

#### Reference

- [1] CCITT manual *Outside plant technologies for public networks*, ITU, Geneva, 1988, Part IV-A, Chapter III, § 1.2.2.