



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

L.8

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

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

**CORROSION CAUSED BY ALTERNATING
CURRENT**

ITU-T Recommendation L.8

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation L.8 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.8

CORROSION CAUSED BY ALTERNATING CURRENT

(Geneva, 1976)

Laboratory experiments and the results of examinations of industrial installations show that stray alternating currents can cause corrosion.

However, other experiments on lead to compare the effects of direct current and alternating current by weight loss show that the corrosion effect due to a.c. is very slight compared with corrosion by d.c. A.c. corrosion appears in the form of pitting.

The following points should nevertheless be noted:

- the corrosion, although rare, occurs more readily with frequencies below the usual mains frequency of 50 Hz or 60 Hz;
- rectification may occur due to the nature of the soil or to the presence at the surface of the metals of oxides or polluting substances.

There is no practical way of finding out the current densities and the voltages at which corrosion occurs. The individual pitting that is usual, the fact that anodic and cathodic reactions occur on the same surface of the metals, and variations in the chemical characteristics of the environment make it impossible for any accurate concept or definition of critical current density to be worked out at present.

It seems reasonable to suggest that a.c. at low voltage is not usually harmful to steel or lead but may corrode aluminium in some cases.