

## ELECTRICITY

DECREE ART. 27

**Order of 13 December 1988**

### **LAYING DOWN THE SPECIAL PROVISIONS APPLICABLE TO CERTAIN LABORATORIES, TEST PLATFORMS AND PILOT FACILITIES**

Ministry of Work, Employment and Professional Training

(Official Journal of 30-12-1988).

The Minister of Work, Employment and Professional Training and the Minister of Agriculture and Forestry,

In view of Decree No. 88-1056 of 14 November 1988 implemented for the execution of the provisions of Book II of the *Code de Travail* (Labour Code) concerning the protection of people against electrical hazards in establishments using electrical currents, in particular Articles 22 and 27 thereof;

In view of the opinion of the Higher Council for the Prevention of Occupational Hazards and of the National Commission for Occupational Health and Safety in Agriculture,

Hereby decide:

#### **Art. 1**

This order shall apply to premises and sites where the following are carried out:

- electrical or electromechanical tests of new or reconditioned equipment or machines;
- physico-chemical tests or analyses, either in laboratories or pilot facilities,

where the presence of accessible live parts in these premises or on these sites is necessary for technical reasons.

The scope of application of this order shall exclude work premises or sites where repetitive tests or analyses are carried out for which it is possible to take protective measures against the risk of direct contact in accordance with the provisions of Article 16 of the aforementioned decree.

**Art. 2**

The demarcation of work and test sites provided for in Article 23 of the aforementioned decree must be done for each individual site.

Where the voltages applied to the accessible live parts are in the "low voltage B", "high voltage A" or "high voltage B" ranges, this demarcation must be done by all suitable means, such as fixed or movable partitions, screens or barriers, whose mechanical properties must meet the mechanical stresses to which they are normally exposed; the demarcated area must be indicated by explicit warning devices on each external accessible surface; the display of notices provided for in paragraph 1 of Article 26 of the aforementioned decree must be supplemented by red warning lights that light up prior to power being switched on, remain lit throughout the test procedure and are located in a prominent position at each access point to the area concerned.

**Art. 3**

The access authorisation referred to in Article 24 of the aforementioned decree must be issued only to personnel having completed safety training specifically related to the nature of the work to be done. The set of instructions provided for in paragraph II of Article 48 of the aforementioned decree must be adapted to the various types of operation carried out at the work or test site.

**Art. 4**

Any persons not involved in operations at the work or test site but authorised to enter it in the framework of the provisions of Article 25 of the aforementioned decree must not take part in the work or tests under any circumstances. The person entrusted with responsibility for permanent monitoring must be chosen from among the personnel referred to in Article 3 above.

**Art. 5**

For the most common tests, the normal assignments of each worker and the procedures for the use of the various energy sources must be laid down in a specific safety instruction manual.

This manual must specify the working procedures needed to ensure the safety of the workers and the safeguards to be implemented in the event of incidents or accidents.

Tests involving the use of an unusual electrical procedure must be preceded by a study and must be the subject of a special instruction manual.

**Art. 6**

I. - Each power supply point must be indicated with a plate specifying the rating and type of current.

II. - Every necessary precaution must be taken to avoid the risk of people coming into direct contact with an exposed live part. To this end:

1° For circuits in the "low voltage A" range with an operating current of 16 amps maximum, the connections of movable electric conduits to fixed installations and to measurement apparatus must be made using devices with a protection level of IP 2X or IP XXB such as standardised power outlets, banana plugs with shrink-sleeves, alligator clips with insulated jaws and wire handling devices;

2° For all other circuits, instructions setting out the details and order of the operations to be done when installing and removing mobile electric conduits must be displayed. These instructions must specify, in particular, that power must be switched off before conducting any work on the live parts of materials being tested. However, if the test procedure requires a permanent power supply, the work in question may be done with the power on, provided that the provisions of Article 50 of the aforementioned decree are complied with.

III. - The presence and absence of current at each power supply point must be permanently indicated by signal lamps. To this end:

1° For voltages in the "low voltage A" and "low voltage B" ranges, a signal lamp must be installed at each power supply point. In addition, where the power supply point comprises live parts which do not themselves have a protection level of IP 2X or IP XXB, there must be a double system indicating the presence and absence of current;

2° For voltages in the "high voltage A" and "high voltage B" ranges, a pulsed signal lamp visible from the entire work area must be installed and supplemented with a sound device indicating when power is about to be switched on.

**Art. 7**

Every step must be taken to ensure that the protection against indirect contact provided for in Section IV of the aforementioned decree is guaranteed when power is supplied to the materials being tested.

**Art. 8**

Portable measuring devices and flexible cables must be fully insulated for the voltage being used and must be designed and protected in such a way as to

avoid any risk to personnel, even in the event of a connection error or the wrong choice of measuring range.

The connection cords must be indelibly marked with the cross-section and nominal voltage.

The condition of the measuring apparatus and connection cords must always be checked prior to use. If an insulation fault is discovered, the equipment concerned must be switched off immediately.

#### **Art. 9**

Individual protective devices and equipment such as insulating gloves, anti-glare goggles, mobile devices for checking the absence of current and insulating headgear or helmets must be made available to the personnel and must always be ready for use.

Items of individual protective equipment must allocated to specific users. They must be checked and cleaned before being allocated to another user.

The device for checking the absence of current must always be checked before and after use.

The person in charge of the facility must take every step to ensure that individual protective equipment is actually used.

#### **Art. 10**

During modification work, transformation of a work or test site or when the installation, assembly or removal of heavy or bulky items of equipment requires the intervention of unauthorized persons within the meaning of Article 3 of this order, the power supply points comprising live parts which do not themselves have a protection level of IP 2X or IP XXB in the "low voltage A" and "low voltage B" ranges or IP 3 X or IP XXC in the "high voltage A" and "high voltage B" ranges must be disconnected in accordance with the provisions of Article 49 of the aforementioned decree.

#### **Art. 11**

In the case of tests on materials which cannot be mounted inside a test platform, the provisions of Articles 2 and 3 above must be implemented in accordance with the characteristics of the location where the test is being done and must be supplemented by the following measures:

- evacuation of work sites not materially separated from the test area;
- permanent monitoring of the movement of people and equipment involved in the handling operation within the test area and its immediate vicinity.

**Art. 12**

If, following an assembly operation at the place of use, tests requiring the presence of accessible live parts need to be carried out prior to the final powering-up of the equipment, measures analogous to those laid down in Article 11 above must be implemented to ensure an equivalent degree of safety.

**Art. 13**

The provisions of this order shall enter into force on 1st January 1989.

**Art. 14**

The Director of Industrial Relations at the Ministry of Work, Employment and Professional Training and the Director of Operations, Social Policy and Employment at the Ministry of Agriculture and Forestry shall be responsible, according to his own remit, for the execution of this order, which will be published in the Official Journal of the French Republic.

Paris, 13 December 1988.