

"Earthed" means connected to the general mass of earth in such manner as will ensure at all times an immediate discharge of electrical energy without danger.

"Earthing-system" means an electrical system in which all the conductors are earthed.

"Switch gear" means switches or fuses, conductors, and other apparatus in connection therewith used for the purpose of controlling the current or pressure in any system or part of a system.

"Authorized person" means a person appointed in writing by the manager of the mine to carry out certain duties incidental to the generation, transformation, distribution, or use of electrical energy in the mine, such person being a person who is competent for the purposes of the rule in which the term is used.

"Electrician" means a person appointed in writing by the manager of the mine to supervise the apparatus in the mine and the working thereof, such person being a person who is over twenty-one years of age and is competent for the purposes of the rule in which the term is used.

"Danger" means danger to health or danger to life or limb from shock, burn, or other injury to persons employed, or from fire explosion attendant upon the generation, transformation, distribution, or use of electrical energy.

"Use" of electricity means the conversion of electricity into mechanical energy, heat, or light for the purpose of providing mechanical energy, heat, or light.

251. Electricity shall not be used in any part of a mine where, on account of the risk of explosion of gas or coal dust, the use of electricity would be dangerous to life; and if the owner of a mine, on being required by an Inspector not to use, or to desist from using, electricity in the mine or any part thereof on such ground as aforesaid, refuses to do so, the question as to the application of this regulation to the mine or any part thereof shall be settled by the Chief Inspector.

252. If at any time at any place in the mine the percentage of inflammable gas in the general body of the air in that place is found to exceed $1\frac{1}{2}$, the electric current shall at once be cut off from all cables and other electrical apparatus in that place, and shall not be switched on again as long as the percentage of inflammable gas exceeds that amount:

Provided that nothing in this regulation shall apply to any telephone or signalling wires or instruments, as long as the conditions prescribed with reference to the installation and use of such wires and instruments are complied with, nor to any electric hand-lamps for the time being approved.

253. Notices shall be sent to the Inspector on forms prescribed by the Minister, as follows, namely,—

- (a.) Notice of the intention to introduce apparatus into any mine or into any ventilating district in any mine.
- (b.) Notice of the intention to introduce or reintroduce electricity into any mine where the use of electricity has previously been prohibited.
- (c.) On or before the 21st day of January in every year, an annual return giving the size and type of apparatus, and any particulars which may be required by the Minister as to the circumstances of its use.

If the Inspector does not object in writing, within one calendar month from the receipt by him of the notice, to the carrying-out of either of the intentions specified in the first or second notices, the owner shall be entitled to carry out such intention or intentions:

Providing that this regulation shall not apply to telephones and signalling-apparatus.

254. A proper plan on the same scale as that kept at the mine in fulfilment of the requirements of the said Act shall be kept in the office at the mine, showing the position of all fixed apparatus in the mine other than cables, telephones, and signalling-apparatus. The said plan shall be corrected as often as may be necessary to keep it reasonably up to date, and it shall be produced to an Inspector of Mines at any time on his request.

255. The following notices, constructed of durable material, shall be exhibited where necessary:—

- (a.) A notice prohibiting any person other than an authorized person from handling or interfering with apparatus.
- (b.) A notice containing directions as to procedure in case of fire. This notice shall be exhibited in every place containing apparatus other than cables, telephones, and signalling-apparatus.
- (c.) A notice containing directions as to the restoration of persons suffering from the effects of electric shock.
- (d.) A notice containing instructions how to communicate with the person appointed in charge of the switch gear, as provided by Regulation 263 (1) hereof. This notice shall be exhibited at the shaft-bottom.

256. In all places lighted by electricity, where a failure of the electric light would be likely to cause danger, one or

more safety-lamps or other proper lights shall be kept continuously burning.

257. Fire-buckets of suitable capacity, filled with clean dry sand ready for immediate use in extinguishing fires, shall be kept in every place containing apparatus other than cables, telephones, and signalling-apparatus.

258. (1.) Where necessary to prevent danger or mechanical damage, transformers and switch gear shall be placed in a separate room, compartment, or box.

(2.) Unless the apparatus is so constructed, protected, and worked as to obviate the risk of fire, no inflammable material shall be used in the construction of any room, compartment, or box containing apparatus, or in the construction of any of the fittings therein. Each such room, compartment, or box shall be substantially constructed, and shall be kept dry.

(3.) Adequate working-space and means of access clear of obstruction and free from danger shall be provided for all apparatus that has to be worked or attended to by any person, and all handles intended to be operated shall be conveniently placed for that purpose.

259. (1.) All apparatus and conductors shall be sufficient in size and power for the work they may be called upon to do, and so constructed, installed, protected, worked, and maintained as to prevent danger so far as is reasonably practicable.

(2.) All insulating-material shall be chosen with special regard to the circumstances of its proposed use. It shall be of mechanical strength sufficient for its purpose, and so far as is practicable it shall be of such a character, or so protected, as fully to maintain its insulating properties under working-conditions of temperature and moisture.

(3.) Every part of a system shall be kept efficiently insulated from earth, except that (a) the neutral point of a polyphase system may be earthed at one point only; (b) the mid-voltage point of any system, other than a concentric system, may be earthed at one point only; and (c) the outer conductor of a concentric system shall be earthed. Where any point of a system is earthed it shall be earthed by connection to an earthing-system at the surface of the mine.

(4.) Efficient means shall be provided for indicating any defect in the insulation of a system.

260. (1.) All metallic sheaths, coverings, handles, joint-boxes, switch-gear frames, instrument-covers, switch and fuse covers and boxes, and all lampholders unless efficiently protected by an earthed or insulating covering made of fire-resisting material, and the frames and bed-plates of generators, transformers, and motors (including portable motors) shall be earthed by connection to an earthing-system at the surface of the mine.

(2.) Where the cables are provided with a metallic covering constructed and installed in accordance with Regulation 264 (c) such metallic covering may be used as a means of connection to the earthing-system. All the conductors to an earthing-system shall have a conductivity at all parts and at all joints at least equal to 50 per cent. of that of the largest conductor used solely to supply the apparatus, a part of which it is desired to earth: Provided that no conductor of an earthing-system shall have a cross-sectional area of less than 0.022 square inch.

(3.) All joints in earth conductors, and all joints to the metallic covering of the cables, shall be properly soldered or otherwise efficiently made, and every earth conductor shall be soldered into a lug for each of its terminal connections. No switch, fuse, or circuit-breaker shall be placed in any earth conductor.

This regulation shall not apply (except in the case of portable apparatus) to any system in which the pressure does not exceed low-pressure direct current or 125 volts alternating current.

261. (1.) Where electricity is distributed at a pressure higher than medium pressure (a) it shall not be used without transformation to medium or low pressure except in fixed machines in which the high or extra-high pressure parts are stationary; and (b) motors under 20 horse-power shall be supplied with current through a transformer stepping down to medium or low pressure.

(2.) Where energy is transformed, suitable provision shall be made to guard against danger by reason of the lower-pressure apparatus becoming accidentally charged above its normal pressure by leakage from or contact with the higher-pressure apparatus.

262. Switch gear and all terminals, cable-ends, cable-joints, and connections of apparatus shall be constructed and installed so that—

- (a.) All parts shall be of mechanical strength sufficient to resist rough usage.
- (b.) All conductors and contact areas shall be of ample current-carrying capacity, and all joints in conductors shall be properly soldered or otherwise efficiently made.