

254. All cables, other than flexible cables for portable apparatus and signalling-wires, shall comply with the following requirements:—

- (a.) They shall be covered with insulating-material (except that the outer conductor of a concentric system may be bare). The lead sheath of lead-sheathed cables, and the iron or steel armouring of armoured cables, shall be of not less thickness respectively than is recommended by the British Engineering Standards Association.
- (b.) They shall be efficiently protected from mechanical damage, and supported at sufficiently frequent intervals and in such a manner as adequately to prevent danger and damage to the cables.
- (c.) Concentric cables, or two-core or multi-core cables protected by a metallic covering, or single-core cables protected by a metallic covering which shall contain all the conductors of the circuit, shall be used (i) where the pressure exceeds low pressure, (ii) where the roadway conveying the cables is also used for mechanical haulage, and (iii) where there may be risk from igniting gas, coaldust, or other inflammable material:
 

Provided that if the medium-pressure direct-current system is used—(i) two single-core cables protected by metallic coverings may be used for any circuit if the said metallic coverings are bonded together by earth conductors so placed that the distance between any two consecutive bonds is not greater than 100 ft. measured along either cable, and (ii) two single-core cables covered with insulating-material efficiently protected or otherwise than by a metallic covering may be used in gate-roads (except in gate-roads which are also used for mechanical haulage, or where there may be risk of igniting gas, coaldust, or other inflammable material) for the purpose of supplying portable apparatus.
- (d.) Cables unprotected by a metallic covering shall be properly secured by some non-conducting and readily breakable material to efficient insulators.
- (e.) The metallic covering of every cable shall be—(i) electrically continuous throughout; (ii) earthed, if it is required by Regulation 250 (1) to be earthed, by a connection to the earthing-system of not less conductivity than the same length of the said metallic covering; (iii) efficiently protected against corrosion where necessary; (iv) of a conductivity at all parts and at all joints at least equal to 50 per cent. of the conductivity of the largest conductor enclosed by the said metallic covering; and (v) where there may be risk of igniting gas, coaldust, or other inflammable material so constructed as to prevent as far as is reasonably practicable any fault or leakage of current from the live conductors from causing open sparking:
 

Provided that where two single-core cables protected by metallic coverings bonded together in accordance with paragraph (c) of this regulation are used for a circuit the conductivity of each of the said metallic coverings at all parts and at all joints shall be at least equal to 25 per cent. of the conductivity of the conductor enclosed thereby.
- (f.) Cables and conductors where joined up to motors, transformers, switch-gear, and other apparatus shall be installed so that (i) they are mechanically protected by securely attaching the metallic covering (if any) to the apparatus; and (ii) the insulating-material at each cable-end is efficiently sealed so as to prevent the diminution of its insulating properties. Where necessary to prevent abrasion or to secure gas-tightness there shall be properly constructed bushes.

255. (1.) Flexible cables for portable apparatus shall be two-core or multi-core, and covered with insulating-material which shall be efficiently protected from mechanical damage. If a flexible metallic covering be used either as the outer conductor of a concentric system or as a means of protection from mechanical damage, the same shall not alone be used to form an earth conductor for the portable apparatus.

(2.) Every flexible cable for portable apparatus shall be connected to the system and to the portable apparatus itself by a properly constructed connector.

(3.) At every point where flexible cables are joined to main cables a switch capable of entirely cutting off the pressure from the flexible cables shall be provided.

(4.) No lamp-holder shall be in metallic connection with the guard or other metal work of a portable lamp.

256. (1.) Every person appointed to work, supervise, or adjust any apparatus shall be competent for the work that he is set to do. No person except an electrician or a competent person acting under his supervision shall undertake any work where technical knowledge or experience is required in order adequately to avoid danger.

(2.) An electrician shall be appointed in writing by the manager to supervise the apparatus. If necessary for the proper fulfilment of the duties detailed in the succeeding

paragraphs of this rule, the manager shall also appoint in writing an assistant or assistants to the electrician.

(3.) The electrician shall be in daily attendance at the mine. He shall be responsible for the fulfilment of the following duties, which shall be carried out by him or by an assistant or assistants duly appointed under subclause (2):

(a) The thorough examination of all apparatus (including the testing of earth conductors and metallic coverings for continuity) as often as may be necessary to prevent danger; and (b) the examination and testing of all new apparatus, and of all apparatus re-erected in a new position in the mine before it is put into service in the new position: Provided that in the absence of the electrician for more than one day the manager shall appoint in writing an efficient substitute.

(4.) The electrician shall keep at the mine a log-book made up of daily log-sheets kept in the form prescribed by the Minister. The said log-book shall be produced at any time to an Inspector of Mines on his request.

(5.) Should there be a fault in any circuit the part affected shall be made dead without delay, and shall remain so until the fault has been remedied.

(6.) All apparatus shall be kept clear of obstruction and free from dust, dirt, and moisture as may be necessary to prevent danger. Inflammable or explosive material shall not be stored in any room, compartment, or box containing apparatus, or in the vicinity of apparatus.

(7.) Adequate precautions shall be taken by earthing or other suitable means to discharge electrically any conductor or apparatus or any adjacent apparatus if there is danger therefrom, before it is handled, and to prevent any conductor or apparatus from being accidentally or inadvertently electrically charged when persons are working thereon. While lamps are being changed the pressure shall be cut off; provided that this paragraph shall not apply to the cleaning of commutators and slip-rings working at low or medium pressures.

(8.) The person authorized to work an electrically driven coal-cutter or other portable machine shall not leave the machine while it is working, and shall, before leaving the working-place, ensure that the pressure is cut off from the flexible trailing cable which supplies such coal-cutter or other portable machine. Trailing cables shall not be dragged along by the machine when working.

(9.) Every flexible cable shall be examined periodically (if used with a portable machine, at least once in each shift by the person authorized to work the machine), and if found damaged or defective it shall forthwith be repaired or replaced by a spare cable in good and substantial repair. Such damaged or defective cable shall not be further used underground until after it has been sent to the surface and there properly repaired.

257. In any part of a mine in which inflammable gas, although not normally present, is likely to occur in quantity sufficient to be indicative of danger—

(a.) All cables, apparatus, signalling-wires, and signalling-instruments shall be constructed, installed, protected, worked, and maintained so that in the normal working thereof there shall be no risk of open sparking.

(b.) All motors shall be constructed so that when any part is live all rubbing-contacts (such as commutators and slip-rings) are so arranged or enclosed as to prevent open sparking.

(c.) The pressure shall be switched off apparatus forthwith if open sparking occurs, and during the whole time that examination or adjustment disclosing parts liable to open sparking is being made. The pressure shall not be switched on again until the apparatus has been examined by the electrician or one of his duly appointed assistants and the defect (if any) has been remedied or the adjustment made.

(d.) Every electric lamp shall be enclosed in an airtight fitting, and the lamp-globe itself shall be hermetically sealed.

(e.) A safety-lamp shall be provided and used with each motor when working, and should any indication of fire-damp appear from such safety-lamp the person appointed to work the motor shall forthwith cut off the pressure therefrom, and report the matter to a fireman-deputy or other official.

(f.) Haulage by electric locomotives on the trolley-wire system is prohibited.

258. With the consent in writing first obtained of the Minister in all cases, and subject to such conditions affecting safety as may be prescribed by him, haulage by electric locomotives on the trolley-wire system or by storage-battery locomotives may be used in mines in which inflammable gas does not occur in quantity sufficient to be indicative of danger.

259. (1.) Current from lighting or power circuits shall not be used for firing shots.

(2.) Shot-firing cables shall be covered and protected as provided by Regulation 255 (1) for flexible cables. Adequate precautions shall be taken to prevent them from touching other cables and apparatus.