

PERMITTED EXPLOSIVES

What is understood by the term 'permitted explosives' is—the explosives which have successfully passed the special test to which all explosives are now subject before being placed upon the 'permitted' list for use in coal mines. I understand that this test is conducted by His Majesty's Inspectors of Explosives at the testing station in Woolwich Arsenal, England, by means of a special apparatus, and that the test is probably much more severe than is anticipated in actual mining practice. Briefly I may say that the test consists of firing twenty shots from a small cannon. The cartridges for the test are supplied by the manufacturers, and a specified measurement of tamping or stemming is used. The mouth of the cannon I understand is enclosed or inserted into an explosive mixture, thus making the test equivalent to a blown-out shot.

By virtue of the Coal Mines Act, colliery officials have now no option but to employ an explosive of the 'permitted type' in mines in which explosive mixtures have been found in dangerous quantities within the previous twelve months, and this type of explosive is one which has successfully passed the above test. Therefore, we find that, having successfully passed this test, the explosive is recommended and ultimately placed on the 'permitted list,' thus becoming a 'permitted explosive'. Further, having regard to safety, what is required in a 'permitted' explosive is that there should be complete combustion when it is fired, that is to say, everything must be converted into gases, which must be neither noxious or explosive; or, in other words, the object of their manufacture is to reduce the temperature of detonation, so that the resultant gases will be incapable of igniting fire damp or coal dust, providing all necessary precautions have been taken and the hole or holes properly stemmed.

I would, however, venture the opinion that it must not be assumed, because these explosives have passed the test that they are safe in all details, but ordinary care and precaution should be taken with them as with other explosives.

The use of permitted explosives is subject to the following conditions: (1) The charge to be placed in a properly drilled shot-hole with sufficient tamping; (2) to be fired by an efficient electrical apparatus or other means equally safe; (3) to be fired by a competent person appointed (in writing) by the owner, agent, or manager, and not being a person whose wages depend upon the amount of mineral to be gotten.

From the second condition we have the privilege of firing by more than one method, and I mention this simply because whatever method is adopted we must (with a permitted explosive) have recourse to detonation, which can only be effected by means of a special safety fuse or electricity, and as a fuse may only be fired under certain conditions, I would adopt, as a precaution in the use of these explosives, the electrical system of firing.

The several dangers which ought to be guarded against are as follows:

(1) Overcharging. Never overcharge a shot-hole; it is likely to evolve flame if you do so. (2) Every care should be taken to prevent miss-fires; and if they occur they should be reported as early as possible, and all necessary precautions taken. (3) Firing a shot in a hole containing a cavity or break. There is a possibility of fire-damp being present in the cavity, and if charged and fired it may lead to disaster. (4) Premature ignition and explosion. Permitted explosives

should be handled with great care, and should never receive rough treatment, as they are susceptible to shock. (5) Blown-out shots. Every care should be taken to avoid these, as they may set up a disastrous explosion if explosive mixtures are present. These dangers may be intensified or diminished according to prevailing circumstances.

Therefore, to avoid these dangers, the precautions necessary in actual firing are to ascertain if the hole or holes have been bored with all necessary judgement, measure the depth of the holing, and compare it with the depth of the hole. The holing should be at least six inches deeper than the shot-hole to prevent blown-out shots. The hole should be carefully cleaned, and examined with a scraper to detect the presence of any cavity or break. The place in the vicinity of the shot-hole should be minutely examined for fire-damp, and a radius of from 20 to 30 yards should be efficiently watered if there is a great accumulation of coal dust, and existing circumstances warranted it, in order to comply with the Mines Act and prevent possibilities. All tools should then be removed to a safe distance. Being satisfied with these observations sufficient explosives may be taken from the box to fire the hole, and the box immediately closed and locked again. Cartridges may now be placed in the hole and gently but firmly pressed home, all 'bouncing,' 'jamming' or 'ramming' be carefully avoided. Insert detonator into 'primer' and secure it thereto, place this upon the cartridges in the hole, and commence tamping by placing pieces of stiff but pliable clay, so moulded as to fit the hole, and gently press back into the charge until a sufficient quantity has been adjusted, taking care meanwhile not to damage the detonator wires. This tamping may be a little more firmly pressed as each pellet is applied.

REDUCING ROOF COSTS

The roofing problem has always been a vexatious one for the farmer. On barns and sheds he needed a light weight roofing which he could lay himself without having to pay for skilled labor from town. Ready Roofings which were manufactured for this purpose required painting regularly or they could not be made to last. Painting the roofs every year or two was a nuisance. The average farmer was pretty sure to neglect it, while if he attended to it regularly the expense of the paint in the end amounted to more than the roof itself. When a farmer bought one of these painted roofings he would figure, say \$20.00, for the roofing, and \$4.00 every two years for paint. If he figured on a ten year basis, his roof looked pretty expensive.

All this has been changed in recent years by the appearance in the market of Amatite Roofing. Amatite is laid and handled like any other roofing, except that it never needs to be painted. It has a surface of mineral matter firmly cemented on so that rain never can wash it off. This mineral surface is weather-proof and furnishes a fine durable wearing surface. The farmer who buys amatite figures \$20.00 for his roof, and nothing for paint.

Our readers can obtain a sample of Amatite without charge by addressing the nearest office of the Carrington-Paterson Mfg. Co., Limited, St. John, N. B. Halifax, N. S.