

the paint and thus gradually exposing the bare surface of the iron to the destructive action of oxygen in the presence of water

The iron should be prepared by removing the scale with a stiff wire brush and destroying the rust by a pickle of dilute acid, which must be afterward washed off before applying the paint. For use on iron exposed to changes of temperature, to gases or moisture, a paint was recommended called "anti-rust," which is manufactured especially for this purpose. Sections of iron pipe were shown which had been painted with this material and with other kinds of paint, and exposed to various severe conditions of temperature and oxidizing gases.

The writer considered it very important that specifications for painting engineering constructions should be carefully drawn and strictly adhered to, even to the specification of definite brands or makes of materials. The engineer should experiment, in order to determine the best paint to use under given conditions, or should seek advice on the subject from those who have made its manufacture and its wearing qualities the study of their lives. It is poor economy to use any but the best material obtainable, the saving in the first cost being more than counterbalanced by the labor of renewing the paint in a comparatively short time.

SLAG CEMENT.

In a recent article on slag cements, La Genie Civil states that these cements are made by finely grinding blast furnace slag and mixing it with a suitable proportion of fat lime. The grinding has to be very fine, because as the cement is made by a simple mixture it is necessary that the surface on which the two constituents, the lime and the slag, react on each other should be as large as possible, if proper chemical combination is to ensue. As manufactured in France, the cement leaves only 20 per cent. on a sieve containing upward of 25,000 meshes per square inch, and only 8 to 10 per cent. on a sieve with 4,500 meshes per square inch. The density of slag cement is much less than that of Portland, weighing, bulk for bulk, but from 0.8 to 0.88 times as much. In general, this cement also sets somewhat more slowly than Portland, but when hardened has, in many cases, a greater strength, particularly at early dates after setting. In some experiments still unfinished the following results were attained

with a slag cement from the Department of Isere:

Age.	1 Week.	1 Month.	3 Months.
Breaking load, lb. per sq. inch.....	473.5	568.8	678.3

These are higher than any attained in tests made on Portland cements for the new Croton aqueduct. Experiments have also been made with slag cement mortar mixed with, and allowed to harden in, sea water, and gave the following results, the mortar consisted of six parts by weight of cement to ten of sand:

Age.	8 days	28 days.....	Breaking weight, lb. per square inch.
	252.0	319.9	275.1
	273.0	285.8	341.2
	375.4	327.0	327.0
			248.0

The main objection to slag cement seems to be that if it is allowed to harden in dry air, its strength is very materially reduced, and it is then liable to crack. In the town of Ville-franche-sur-Saone (Rhône) it has been largely used for paving foot-paths, some 4,800 square yards having been laid there with most satisfactory results.

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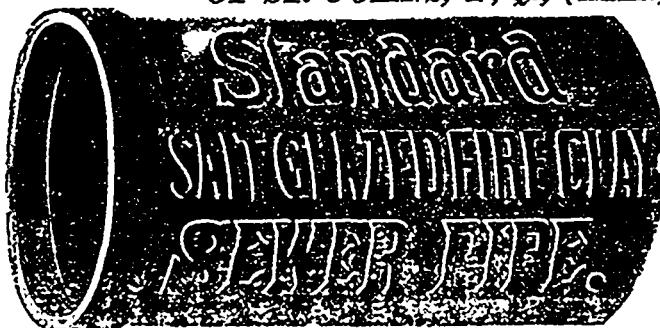
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