

Book review

Symposium on use of pozzolanic materials in mortars and concretes

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THIS IS A COLLECTION of nine papers on various aspects of the use of pozzolanas in the United States. The papers are devoted to relating practical experiences with concrete containing pozzolanas rather than to a theoretical and fundamental study of pozzolanic activity.

Apart from one or two general papers, the collection reflects clearly the different uses to which pozzolanas are put in the United States compared with Europe. In Europe the use of pozzolanas in concrete has been favoured on account of the increased resistance to chemical attack of pozzolana-containing concrete or occasionally as an economy, since a part of the cement in a mix can sometimes be replaced by pozzolana without loss of strength. In the United States, however, the main reasons for the use of pozzolanas are quite different. The first interests appears to have arisen through the need to control heat production in mass concrete, and pozzolanas have been found valuable for this purpose. Arising out of this work was the discovery that additions of pozzolanas could control the expansive reactions which occur between high-alkali cements and certain aggregates. The majority of the papers in this collection are devoted to detailed descriptions of the selection and use of pozzolanas for these two applications.

A paper by Mielenz, Witte and Glantz of the U.S. Bureau of Reclamation gives an excellent account of the properties of some seventy naturally occurring pozzolanas

when used either in the raw state or calcined.

It is difficult to assess the value of this publication in general terms. For European users of pozzolanas there is little information about the chemical resistance of concrete containing pozzolanas, apart from a paper on Sulphate Resistance by Davis, Hanna and Brown. Alkali-aggregate reaction is not a problem in Europe, and the admirable accounts in other papers of the effects of pozzolanas when used to control expansion are only of minor interest to European workers.

A further complication is the fact that the work inevitably relates to natural pozzolanas of American origin, which are mostly of a different character from the trass, burnt clays and other substances used in Europe. A paper by Moran and Gilliland summarizes methods for determining pozzolanic activity and notes that most tests have attempted to relate activity with strength of the concrete but that future tests should be to evaluate the effect pozzolanas are likely to have in controlling expansive reactions.

The recent literature on pozzolanas is so scanty that this volume will be welcome as a substantial contribution in this field. Although much of the work which is described is of local interest, there is also much, particularly in the description of the large-scale experimental assessment of pozzolanas, which is worth careful reading.