Pore size distribution of an alkali activated cementitious (AACM) mortar

MANGAT, Pal <http://orcid.org/0000-0003-1736-8891> and OJEDOKUN, Olalekan <http://orcid.org/0000-0002-9573-4976>

3rd World Congress on
Materials Science & Engineering
August 24-26, 2017, Barcelona, Spain

Pore Size Distribution of an Alkali Activated Cementitious (AACM) Mortar

P.S. Mangat and Olalekan O. Ojedokun

This paper reports an investigation on the size and distribution of capillary and gel pores in an alkali activated cementitious (AACM) mortar and comparative OPC mortar. These pore properties were determined from the cumulative and differential pore volume curves obtained by mercury intrusion porosimetry (MIP). The classification and distribution of these pores provides a useful insight to the properties of hardened concrete such as the durability, fire resistance and mechanical properties.

The results show that AACM mortar mixes possess a bimodial pore size distribution while OPC concrete has unimodial pore sizes distribution. The intrudable porosity is lesser in AACM mortar than OPC mortar. The volume of the capillary pores was higher in AACM mortar compared with OPC mortar. However, the volume of the gel pores was much lower in AACM mortar than OPC mortar.

The distribution of bimodal pores in AACM mortar is greatly influenced by the effects of curing type and the activator dilution. The distribution of unimodal pores in OPC mortar is similarly influenced by the curing type.

Biography:

Professor Pal Mangat is a chartered civil and structural engineer. He received his PhD degree from Sheffield University and was a senior lecturer in the Department of Engineering at Aberdeen University. He was appointed Professor of Construction Materials at Sheffield Hallam University in 1993. He has published over 100 peer reviewed publications on many novel aspects of concrete materials including accelerated curing of concrete, cement replacement materials, fibre reinforced concrete, marine durability of concrete and alkali activated cementitious materials.