

## ■ More 'green' cement

Suppliers of construction materials are moving to "greener" pastures in line with the growing awareness of the urgent need to reduce the impact of building endeavours on the environment. While we await the results of the Cement & Concrete Institute's study on the carbon footprint of concrete, a prominent local cement company has developed a model to measure the carbon dioxide (CO<sub>2</sub>) footprint of its cement-production activities countrywide. This will enable it to continue reducing its impact on the environment and position itself as a key participant in the local "green building" movement. AfriSam's CO<sub>2</sub> footprint worksheet for each of its main cement types calculates the CO<sub>2</sub> associated with the production of 1 kg of cement. The initiative is based on the Greenhouse Gas Protocol developed by the World Resources Institute and the World Business Council for Sustainable Development. The world average emission of CO<sub>2</sub>/kg of cement is 890 g as per Cembureau. The actual value of CO<sub>2</sub> associated with producing and transporting each individual product will soon be printed on all of AfriSam's cement bags, and this will be clearly visible to the user.

The bag will carry a CO<sub>2</sub> thermometer; insignia indicating emissions in comparison to the world average of 890 g/kg. The characteristics of low CO<sub>2</sub> cement could include low fuel consumption, high mineral-component extension (fly ash and ground granulated blast-furnace slag or a combination with South African Bureau of Standards requirements) and low clinker content. Mike McDonald, product manager: cement at AfriSam, clarifies the principles behind the AfriSam CO<sub>2</sub> measurement model for *Civil Engineering Contractor*. The system takes a cradle-to-gate approach, which is based on sound principles of world protocol. The CO<sub>2</sub> content is quantified per product per plant and is based on actual process data. This approach was adopted to have a system that can be verified and audited. The model is based on universal cement-manufacturing principles and can, therefore, be adopted by other interested role players. The first scope of the footprint covers raw-material processing, kiln-fuel burning, equipment, and on-site vehicles and related activities. The second scope entails electricity and other activities, and the third comprises coal transport, incoming raw-material trans-



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port and related activities. The results reveal that the carbon footprint of AfriSam's high-strength cement is significantly lower than the world average of 890 g/kg of cement. The production of its all-purpose cement (APC) significantly reduces the associated CO<sub>2</sub> with a value of 542 g/kg at Dudfield. Ulco APC ranks at 733 g/kg, 613 g/kg at Roodepoort and 572 g/kg at Brakpan. Rapid hard cement, however, remains a special-application product with a high CO<sub>2</sub> footprint above the world average.

*For more information on this "green" drive, read the September 2009 edition of Quarry Southern Africa!*