RCC

Roller Compacted Concrete

Roller Compacted Concrete

Roller Compacted Concrete (RCC) is a concrete that has essentially the same ingredients as Conventional Vibrated Concrete (CVC) but in different ratios:

- RCC has lower cement content and a higher fly ash or slag content. This allows for long term strength gain (over 28 days) and a lower heat of hydration.
- RCC has lower paste volume and hence lower workability – the produced mix is drier and has essentially no slump.

RCC has many time and cost benefits over conventional mass concrete; these include higher rates of concrete placement, lower material costs and lower costs associated with post-cooling and formwork.

RCC has much lower shrinkage and a much higher flexural strength for the same nominal compressive strength.

Delivered by dump trucks or conveyors, RCC is spread by small bulldozers or specially modified pavers in successive horizontal layers (15 – 45 cm) and then compacted with vibratory rollers. It has been used to build heavy industrial roads, but it is mostly utilised for the construction of dams.

Classification of RCC mixes:

- Lean paste RCC – less than 100 kg/m³ cementitious content
- Medium paste RCC – between 100 – 150 kg/m³ cementitious content
- High paste RCC – greater than 150 kg/m³ cementitious content

Most RCC dams constructed post 1980 are high paste RCC mixes that comprise fly ash blended with cement.

CHRYSO and RCC

CHRYSO – a global leader in the construction materials industry - has supplied its products and services to a number of RCC projects in South Africa and Lesotho:

- Braamhoek
- Bedford
- Metolong

As well as some international projects like

- Lake Townsend (USA)
- RCC road at the Gentilly Nuclear Plant (Quebec)

Typical **CHRYSO** products that are commonly used in RCC:

- Plasticisers: **CHRYSO®Plast RCC, CHRYSO®Plast CM90, CHRYSO Plast Omega 101**
- Superplasticiser: **CHRYSO® Fluid 423**
- Retarders: **CHRYSO® Tard CE, CHRYSO®Tard CER**

The role of CHRYSO admixtures in RCC

- Compactibility is essential with regard to RCC as it determines the durability, strength, smoothness and surface texture of the concrete. RCC has to be easy to place and compact as well as levelled at a rapid pace. Since RCC has zero slump, **CHRYSO® Plasticisers** and **CHRYSO®Superplasticisers** within **CHRYSO's** Omega and Delta range can be used to achieve the desired compactibility/ workability.
- For additional durability, **CHRYSO** can supply PVC and rubber waterstops that can prevent water from running through concrete joints.

- It is vitally important to obtain an adequate bond between RCC layers. The lack of bonding between layers can be caused by individual layers of RCC that may set before they are compacted. This may result in cold joints. The use of certain **CHRYSO® Retarders** can be used to adjust the setting times of the concrete.

With three production plants and seven branches, **CHRYSO Southern Africa** can guarantee the efficient delivery of products to customers anywhere in Sub-Saharan Africa.

CHRYSO Southern Africa also has an international network of technical experts as well as its own laboratories that assist in delivering the best possible customer support while manufacturing innovative, quality products that are integral components of RCC mix designs.

CHRYSO Southern Africa (Pty) Ltd.
Gauteng (Head Office): 26 Malcolm Moodie Crescent, Jet Park - T: +27(0)11 395 9700 - F: +27(0)11 397 6644 - W: www.chryso.com
Sharecall facility: 0861 CHRYSO
Issued for Chryso Southern Africa, Johannesburg / Further info: Kirsten Kelly, tel (011) 395 9700 / www.chryso.com