

STUDI EKSPERIMENTAL PENGARUH TEGANGAN TEKAN SELAMA PROSES PRODUKSI TERHADAP KUAT TEKAN *DRY CONCRETE*

ABSTRAK

Dry concrete merupakan campuran yang terdiri agregat halus dan agregat kasar yang diikat oleh matriks semen. Dalam pembuatannya, *dry concrete* menggunakan nilai faktor air semen (FAS) yang terukur sehingga campuran *dry concrete* tersebut memiliki workabilitas yang rendah dan proses hidrasi semen menjadi kurang optimal. Untuk mengoptimalkan proses hidrasi semen tersebut, tegangan tekan pada proses produksi diharapkan dapat membuat air bebas bereaksi dengan butiran semen yang belum terhidrasi dan dapat mengurangi rongga udara dalam campuran *dry concrete* sehingga tercipta campuran *dry concrete* yang rapat dan diperoleh kuat tekan yang optimal.

Penelitian ini menggunakan 2 (dua) jenis *mix design* dengan faktor air semen sebesar 0,4 dan 9 jenis variasi tegangan tekan selama proses produksi yaitu mulai 0 MPa sampai dengan 40 MPa. Hasil penelitian menunjukkan bahwa tegangan tekan selama proses produksi berpengaruh terhadap kuat tekan *dry concrete*. Semakin besar tegangan tekan yang diberikan maka kuat tekan *dry concrete* yang dihasilkan meningkat. Peningkatan tersebut terjadi secara berangsur-angsur hingga mencapai tegangan tekan optimum, yaitu 35 MPa. Laju peningkatan kuat tekan dan tegangan tekan optimum kedua *mix design* tersebut sama, hal tersebut disebabkan kedua *mix design* tersebut menggunakan faktor air semen yang sama.

Kata Kunci : *Dry concrete*, tegangan tekan, hidrasi semen, kuat tekan.

**THE INFLUENCE OF COMPRESSION APPLIED DURING PRODUCTION
TO THE COMPRESSION STRENGTH OF DRY CONCRETE,
AN EXPERIMENTAL STUDY**

ABSTRACT

Dry concrete is basically a cementitious material, consisting of aggregates imbedded in a cement matrix that function as the binding agent. The water cement factor during this production is customary kept low, since from the economic point of view, speed in production is favored. A low water-cement-factor will result in a FAster unmolding of elements. As a consequence, the probability of the hydration process is not at optimum. A technique of optimizing the hydration process is to apply a compression stress to the dry concretes, during the hydration stage. This stress is aimed to reduce the air voids in the mixture and to enable the entrapped water within the mortar to optimize the reaction with the cement. The application of compression stress is not only freed the entrapped water, but also creates a more dense material so it will provides a better performance of the dry concrete.

This study uses 2 types of mix design with a water-cement ratio of 0.4 and 9 types of compressive stress variations during the production process from 0 MPa to 40 MPa. The experimental test showed that the compressive stress during the production process affect the compressive strength of dry concrete. The greater compressive stress given during the production process increase the compressive strength of the dry concrete. This increase occurred gradually until it reaches the optimum compressive stress, which is 35 MPa. The rate of increase in compressive strength and the optimum compressive stress on both the mix design is in the same point, it is due to both the mix design using the same water-cement ratio.

Keywords: Dry concrete, compressive stress, hydration of cement, compressive strength.