PENGARUH PENGGUNAAN LIMBAH PLASTIK *THERMOPLASTIC* JENIS *POLYSTYRENE* PENGGANTI SEMEN SEBAGAI BAHAN PEREKAT TERHADAP KUAT TEKAN *PAVING BLOCK*

Ajeng Septiawidyanti Putri[1] Dwi Kurniati, S.T., M.T.[2]

Progam Studi Teknik Sipil Fakultas Sains dan Teknologi Universitas Teknologi Yogyakarta;

e-mail: [1]ajengseptiawidianty@gmail.com, [2]dwi.kurniati@staff.uty.ac.id

ABSTRAK

Perkembangan di bidang konstruksi dewasa ini salah satunya ditandai dengan meningkatnya kualitas bahan bangunan dan munculnya bahan bangunan baru. Khusus untuk bahan perkerasan jalan raya, dewasa ini telah banyak digunakan perkerasan kaku (*rigid pavement*) salah satunya adalah *Paving block*. *Paving block* adalah suatu komposisi bahan bangunan yang dibuat dari campuran semen, air dan agregat dengan perbandingan tertentu. Penelitian ini menggunakan plastik *Thermoplastic* berjenis *Polystyrene* sebagai bahan pengganti semen pada *paving block*. Tujuan dari penelitian ini untuk mengetahui apakah *paving block* dengan campuran plastik *Thermoplastic* berjenis *Polystyrene* memenuhi kuat tekan yang direncanakan, dimensi dan pengaruh panas sinar matahari. Penelitian ini dibuat dengan metode *experiment*, *Paving block* dibuat di Kos Putri Amanah, jalan Glagah Sari, Kota Yogyakarta. Dalam penelitian ini perbandingan plastik *Polystyrene* dengan pasir yaitu 1 : 4. Pengujian dilakukan di Laboratorium Bahan Aneka Dharma Persada (ADP), Yogyakarta dan pengujian panas sinar matahari dilakukan di rumah pribadi, Lempuyangan, Kota Yogyakarta. Penelitian ini dimulai dengan perhitungan mix design sehingga diperoleh komposisi pembuatan beton benda uji, yang selanjutnya akan dilakukan pengujian kuat tekan, dimensi dan pengaruh panas sinar matahari. Penelitian ini mengacu pada SNI 03-0691-1996 Bata Beton, *Paving Block*. Hasil penelitian dari 10 benda yang di uji ini menunjukkan kuat tekan terbesar adalah 49,3 MPa, sedangkan kuat tekan terendah terdapat pada nilai 7,6 MPa dan nilai rata – rata kuat tekan yaitu sebesar 36,35 MPa yang dimana dapat diklasifikasikan kedalam mutu A. Hasil pengujian dimensi menunjukan *Paving Block* dengan bahan pengganti plastik *Polystyrene* sesuai dengan syarat *Paving Block* serta hasil pengujian pengaruh panas sinar matahari tidak menimbulkan dampak terhadap paving block baik dari ukuran maupun berat *Paving Block*.

Kata kunci: Dimensi, Kuat Tekan, Panas Sinar Matahari Plastik, Paving Block, Plastik, Polystyrene.

THE EFFECT OF THE USE OF THERMOPLASTIC WASTE PLASTIC TYPES OF POLYSTYRENE REPLACEMENT OF CEMENT AS ADHESIVE MATERIAL ON THE COMPRESSION STRENGTH OF PAVING BLOCKS

Ajeng Septiawidyanti Putri[1] Dwi Kurniati, S.T., M.T.[2]

Civil Engineering Study Program Faculty of Science and Technology University of Technology Yogyakarta;

e-mail: [1]ajengseptiawidianty@gmail.com, [2]dwi.kurniati@staff.uty.ac.id

ABSTRACT

One of the developments in the construction sector today is marked by the increasing quality of building materials and the emergence of new building materials. Especially for road pavement materials, currently rigid pavement has been widely used, one of which is Paving block. Paving block is a composition of building materials made from a mixture of cement, water and aggregate with a certain ratio. This research uses thermoplastic plastic type Polystyrene as a substitute for cement in paving blocks. The purpose of this study was to determine whether paving blocks with a mixture of thermoplastic plastic type Polystyrene meet the planned compressive strength, dimensions and the influence of the heat of the sun. This research was made with an experimental method, Paving blocks were made at Kos Putri Amanah, Jalan Glagah Sari, Yogyakarta City. In this study, the comparison of polystyrene plastic with sand is 1: 4. The test was carried out at the Aneka Dharma Persada (ADP) Materials Laboratory, Yogyakarta and the sunlight heat test was carried out in a private house, Lempuyangan, Yogyakarta City. This research begins with the calculation of the mix design so that the composition of the concrete for the test object is obtained, which will then be tested for compressive strength, dimensions and the influence of the heat of the sun. This research refers to SNI 03-0691-1996 Concrete Brick, Paving Block. The results of the 10 objects tested showed the greatest compressive strength was 49.3 MPa, while the lowest compressive strength was at a value of 7.6 MPa and the average compressive strength was 36.35 MPa which can be classified into grade A. The results of the dimensional test show that the Paving Block with Polystyrene plastic substitute is in accordance with the Paving Block requirements and the results of testing the influence of the sun's heat do not have an impact on the paving block both in terms of the size and weight of the Paving Block.

Keywords: Dimension, Compressive Strength, Plastic Sunshine Heat, Paving Block, Plastic, Polystyrene.