

INTISARI

Bahan pengisi (*filler*) umumnya digunakan dalam campuran aspal panas (*hotmix*) dapat berupa semen, kapur, debu batu dan *fly ash*. Cangkang kerang memiliki kandungan senyawa yang menyerupai dengan semen, berupa kapur tohor, alumina, kalsium, dan senyawa silika, namun pemanfaatannya di bidang konstruksi masih terbatas. Penelitian yang dilakukan memiliki tujuan untuk meneliti potensi penggunaan cangkang kerang *simping* atau *capiz* (*Placuna placenta*) sebagai alternatif pengganti bahan pengisi (*filler*) pada campuran *Asphalt Concrete-Binder Course* (AC-BC).

Penelitian yang dilaksanakan untuk menganalisa pengaruh serbuk cangkang kerang sebagai bahan substitusi *filler* terhadap uji karakteristik Marshall dan ITS (*Indirect Tensile Strength*) dalam campuran AC-BC. Penggantian cangkang kerang sebagai *filler* yang dilaksanakan dengan variasi 0%, 25%, 50%, 75%, dan 100%. Perancangan campuran menggunakan *Marshall Mix Design Method* dan melakukan pengujian ITS untuk mendapatkan nilai TSR (*Tensile Strength Ratio*).

Hasil penelitian dalam uji metode Marshall dan ITS pada setiap variasi telah memenuhi syarat yang ditentukan. Variasi cangkang kerang 25% dan KAO 5,30% menghasilkan nilai stabilitas dan nilai Marshall Sisa (RMS) tertinggi dengan nilai berturut-turut sebesar 1541 kg dan 93,15%, serta pada pengujian ITS *unconditioned* dan *conditioned*, menunjukkan nilai TSR (*Tensile Strength Ratio*) tertinggi pada variasi cangkang kerang 25% dan KAO 5,30% dengan nilai 93,74%. Penggunaan *filler* serbuk cangkang kerang yang optimum terdapat pada variasi cangkang kerang 25% dengan KAO 5,30%.

Kata kunci: serbuk cangkang kerang, metode Marshall, ITS, AC-BC, KAO

ABSTRACT

Fillers are commonly used in hotmix asphalt mixtures and can include cement, limestone, stone dust, and fly ash. Shells of certain types of marine mollusks, such as the *Placuna placenta* (commonly known as capiz), have chemical compounds similar to cement, such as calcium carbonate, alumina, calcium, and silica compounds. However, their use in construction is still limited. This study aims to investigate the potential use of *Placuna placenta* shells as an alternative filler in Asphalt Concrete-Binder Course (AC-BC) mixtures.

The research conducted aimed to analyze the effect of shell powder as a substitute filler on the Marshall and ITS (Indirect Tensile Strength) characteristics in AC-BC mixtures. The replacement of shell powder as a filler was done with variations of 0%, 25%, 50%, 75%, and 100%. The mixture was designed using the Marshall Mix Design Method, and ITS tests were performed to obtain the Tensile Strength Ratio (TSR) values.

The results of the research showed that the Marshall and ITS testing on each variation met the specified requirements. The variation of 25% shell powder and 5.30% KAO (a type of asphalt) produced the highest stability and Marshall Residual (RMS) values at 1541 kg and 93.15%, respectively. Additionally, the ITS testing on unconditioned and conditioned mixtures showed the highest TSR values at the variation of 25% shell powder and 5.30% KAO with a value of 93.74%. The optimum use of shell powder filler was found at a variation of 25% shell powder and 5.30% KAO.

Keywords: shell powder, Marshall method, ITS, AC-BC, KAO