

Modeling the Energy Content of Ship-Scraping Waste at Alang – Sosiya, Gujarat, India, Using Multiple Regression Analysis

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Abstract: Alang – Sosiya (Lat 21°5'; 21° 29' N, Long 72°5'; 72°15'E) is the largest ship-scraping yard in the world, established in 1982. Every year an average of 365 ships having a mean weight of $2.10 \times 10^6 \pm 7.82 \times 10^5$ LDT) being scrapped. This yard generates a huge amount of combustible solid waste in the form of scraped wood, plastic, insulation material, paper, hard wood, glass wool, thermocol pieces, sponge, oiled rope, cotton waste, rubber, etc. In this study multiple regression analysis was used to develop predictive models of energy content of ship-scraping solid wastes. The scope of work included qualitative and quantitative estimation of solid waste samples

and performing a stepwise forward selection procedure for isolating variables. Three regression models were developed to correlate the energy content with variables derived from species composition, proximate and ultimate analysis. The performance of these models for this particular waste agrees well with the equations developed by other researchers (Dulong, Steuer, Scheurer-Kestner & Benthos) for estimating energy content of solid waste.

Key words: solid waste, energy potential, Dulong, Steuer, Scheurer-Kestner, Benthos, regression analysis.

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