



## INTISARI

Desa Srihardono Pundong, Bantul merupakan sentra produksi tepung tapioka. Proses produksi tepung tapioka dapat mempengaruhi kualitas lingkungan karena adanya limbah gas yang berasal dari penggunaan energi listrik dan bahan bakar serta limbah cair yang tidak mengalami pengolahan langsung dibuang ke lingkungan. Penelitian ini bertujuan untuk mengetahui konsumsi energi yang dibutuhkan, besaran emisi yang dihasilkan, dan potensi dampak pencemaran lingkungan. Objek penelitian adalah industri tepung tapioka dengan berbagai kapasitas produksi, Kelompok A  $\geq 400$  kilogram, Kelompok B 400-150 kilogram, dan Kelompok C  $\leq 150$  kilogram. *Life Cycle Assessment (LCA)* adalah metode yang dapat digunakan untuk mengevaluasi dampak lingkungan yang disebabkan oleh suatu produk selama proses produksi dan aliran bahan yang terjadi di dalam proses produksi dengan empat tahapan antara lain *goal and scope definition*, *life cycle inventory*, *life cycle impact assessment*, dan *interpretation*. Pada penelitian ini emisi yang dihitung adalah gas CO<sub>2</sub>, CO, SO<sub>2</sub>, NO<sub>x</sub>, CH<sub>4</sub> dan N<sub>2</sub>O. Pengukuran dampak lingkungan pada *Global Warming Potential (GWP)*, *Eutrophication Potential (EP)*, dan *Acidification Potential (AP)*. Rata-rata kebutuhan energi dan emisi per 1 kilogram tepung tapioka Kelompok A 1.248,005 MJ/kg emisi 4,480x10<sup>-2</sup> kg, Kelompok B 968,431 MJ/kg emisi 4,501x10<sup>-2</sup> kg, Kelompok C 1.985,799 MJ/kg emisi 6,448 x10<sup>-2</sup> kg. Total nilai dampak lingkungan *Global Warming Potential (GWP)* 15,617x10<sup>-2</sup> kgCO<sub>2</sub>-ekuivalen, *Acidification Potential (AP)* 36,666x10<sup>-7</sup> kgSO<sub>2</sub>-ekuivalen, *Eutrophication Potential (EP)* 19,659x10<sup>-7</sup> kgNO<sub>x</sub>-ekuivalen.

kata kunci : emisi, energi, *life cycle assessment*, tepung tapioka



## ABSTRACT

Srihardono, Pundong, Bantul is a center for tapioca flour production. Tapioca flour production process can affect the environmental quality due to the presence of emission that comes from electricity and fuel usage and untreated liquid waste. Aims of this study is to determine the energy consumption needed, number of emissions produced, and potential impact of environmental damage. The research object is industry with various production capacities, Group A  $\geq 400$  kilograms, Group B 400-150 kilograms, and Group C  $\leq 150$  kilograms. Life Cycle Assessment (LCA) can be used to evaluate the environmental impact caused by a product during the production process and material flow that occurs in the production process with four stages including goal and scope definition, life cycle inventory, life cycle impact assessment, and interpretation. In this study  $\text{CO}_2$ , CO,  $\text{SO}_2$ ,  $\text{NO}_x$ ,  $\text{CH}_4$  and  $\text{N}_2\text{O}$  are calculated. Environmental impacts measurement on Global Warming Potential (GWP), Eutrophication Potential (EP), and Acidification Potential (AP). An average energy consumption and emission of 1 kilogram tapioca flour for Group A 1.248,005 MJ/kg emission  $4,480 \times 10^{-2}$  kilogram, Group B 968,431 MJ/kg emission  $4,501 \times 10^{-2}$  kilogram, Group C 1.985,799 MJ/kg emission  $6,448 \times 10^{-2}$  kilogram. Total environmental impact value of Global Warming Potential (GWP)  $15,617 \times 10^{-2}$   $\text{kgCO}_2$ -ekivalent, Acidification Potential (AP)  $36,666 \times 10^{-7}$   $\text{kgSO}_2$ -ekivalent, Eutrophication Potential (EP)  $19,659 \times 10^{-7}$   $\text{kgNO}_x$ -ekivalent.

Keywords : emission, energy, *life cycle assessment*, tapioca flour