The increase in the waste disposal resulting from oilseeds processing such in the oil post-extraction steps is an aggravating problem for the industrial sector. In order to contribute to recovery of such waste, this study aimed to determine and analyze the physical, physicochemical, technological, functional, thermal, and morphological properties as well as the mineral and the amino acid composition of partially defatted Brazil nut flour. The results reveal a fine particle size product with good microbiological stability and high nutritional value (an average of 479.0 kcal per 100 g), especially regarding protein, lipid, and fiber content, 38.54%, 31.68%, and 8.85 g/100 g, respectively. Technological, functional, and thermogravimetric properties reveal a product appropriate for applications in the food industry and which has good thermal stability. With regard to micronutrients, the flour is rich in minerals, especially selenium, magnesium, and manganese, with values close to or above the recommended daily allowances. Its amino acid composition shows the quality of its structural components, especially that of sulfur amino acids such as methionine and cysteine with average values of 26.7 and 8.7 mg / g, respectively, and branched chain amino acids. These results indicate that even being partially defatted, Brazil nut flour has good stability in the face of progressive temperature increase within the range used in food preparation. Its nutritional quality in terms of macro and micronutrients make it suitable for application or use as a raw material base or in partial substitutions as a nutritional enriching compound in the food industry.