

“Analisis pengaruh penambahan unsur Zn terhadap sifat fisis dan sifat mekanik paduan solder bebas timbal Sn-0,7Cu-Ag”

Nama Mahasiswa : Leo Hermanus Kasi
NIM : 06211035
Dosen Pembimbing Utama : Andromeda Dwi Laksono, S.T., M.Sc., Ph.D.
Dosen Pembimbing Pendamping : Hizkia Alpha Dewanto, S.T., M.Sc.

ABSTRACT

The growth of the electronics industry in Indonesia continues to increase in line with the need for more efficient products, reaching 14.59% based on data from the Central Statistics Agency (2023). However, this increase is accompanied by the challenge of environmental pollution due to electronic waste, much of which contains hazardous materials such as lead. Lead-based solder material (Sn-Pb), which is widely used in the electronics industry, is one of the main contributors to this pollution. Exposure to lead has serious impacts on human health and the environment, prompting international policies such as RoHS and WEEE that restrict its use since 2006. As an alternative, lead-free solders based on Sn-Ag-Cu (SAC) alloys have been developed for their mechanical, thermal and electrical properties. the good one. However, the higher melting point of SAC compared to Sn-Pb solder is an obstacle in industrial applications. Other alternatives, such as the Sn-Zn alloy, offer a melting point closer to Sn-Pb solder as well as superior mechanical strength and low production costs. This research aims to analyze the characterization of the Sn-0.7Cu-1.5Ag lead-free solder alloy with varying contents. Zn as an alternative to conventional solder. Mechanical and physical characterization was carried out to ensure this alloy can meet the needs of modern industry. The research results are expected to contribute to the development of lead-free solder materials that are environmentally friendly, high quality and competitive in industrial applications.

Keywords: *lead free solder, e-waste, lead*

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