ABSTRAK

PEMANFAATAN BAJA SKD11 SEBAGAI BAHAN ALTERNATIF PAHAT BUBUT

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(2025: xv + 78 Halalam, 6 Gambar, 10 Tabel, 20 Lampiran)

Penelitian ini bertujuan untuk menganalisis kelayakan baja SKD11 sebagai bahan alternatif pahat bubut dengan membandingkan performanya terhadap baja HSS *(High Speed Steel)* berdasarkan uji kekerasan dan keausan. Baja SKD11 dikenal memiliki kandungan karbon dan kromium tinggi yang berpengaruh terhadap kekerasan dan ketahanan aus. Proses perlakuan panas *(heat treatment)* dilakukan melalui tahapan *hardening* dan *tempering*, dengan media *quenching* berupa air dan oli. Pengujian kekerasan dilakukan dengan metode Vickers, sedangkan uji keausan menggunakan metode gesek dengan *Ogoshi Wear Testing Machine*. Hasil penelitian menunjukkan bahwa SKD11 yang dikeraskan dan didinginkan dengan media air menghasilkan kekerasan tertinggi (788,46 VHN), melebihi standar kekerasan baja HSS. Selain itu, ketahanan aus tertinggi juga ditemukan pada SKD11 dengan *quenching* air. Dengan demikian, baja SKD11 terbukti layak digunakan sebagai bahan alternatif pahat bubut karena memberikan kekerasan dan ketahanan aus yang unggul dibandingkan baja konvensional.

Kata kunci: SKD11, *heat treatment*, kekerasan, keausan, *quenching*

ABSTRACT

UTILIZATION OF SKD11 STEEL AS AN ALTERNATIVE MATERIAL FOR LATHE CUTTING TOOLS

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This study aims to assess the feasibility of SKD11 steel as an alternative material for lathe cutting tools by comparing its performance to High Speed Steel (HSS) based on hardness and wear resistance tests. SKD11 steel is known for its high carbon and chromium content, which significantly affect its hardness and wear resistance. The heat treatment process included hardening and tempering stages, using water and oil as quenching media. Hardness testing was conducted using the Vickers method, while wear testing employed the Ogoshi Wear Testing Machine. The results showed that SKD11 hardened and quenched with water achieved the highest hardness value (788.46 VHN), exceeding the typical hardness standard of HSS. Furthermore, the greatest wear resistance was also observed in SKD11 quenched in water. Thus, SKD11 steel is proven to be a viable alternative for lathe cutting tools, offering superior hardness and wear resistance compared to conventional tool steels.

Keywords: SKD11, heat treatment, hardness, wear resistance, quenching