

# **Kinetic study of Anaerobic Adhesive curing on copper and iron base substrates**

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## **Abstract-**

**Anaerobic adhesives (AAs) cure at room temperature in oxygen-deprived spaces between metal substrates. The curing process is significantly influenced by the type of metal ions present. This study investigates the curing kinetics of a high-strength AA on iron and copper substrates using differential scanning calorimetry (DSC). The activation energy and kinetic parameters were determined with different empiric models, revealing that curing on copper is faster and more complete compared to iron. The findings suggest that copper ions lower the activation energy required for curing, enhancing the adhesive's performance. This research addresses the gap in understanding how metal ions affect AA curing kinetics, offering valuable insights for optimizing adhesive formulations for industrial applications.**

**Index Terms-** anaerobic adhesives; curing rate; model-free kinetics; Kamal model; Kissinger model; torsion test

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