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## Self-healing of an epoxy matrix using latent 2-ethyl-4-methylimidazole initiator

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### ABSTRACT

In this study, repeatable self-healing of a cross-linked epoxy polymer was achieved by incorporating 2-ethyl-4-methylimidazole (24-EMI) into the matrix as a latent polymerization initiator. Following a damage event and infiltration of liquid EPON 8132 epoxy monomer, polymerization occurs in the damaged region in the presence of heat and the latent initiator. Using tapered double cantilever beam fracture specimens, >90% recovery is observed over multiple healing cycles, with up to 11 repeat healing cycles possible in samples containing 10 wt% 24-EMI. Effects of 24-EMI incorporation on the host epoxy fracture toughness, storage/loss moduli, and glass transition temperature were also investigated.