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Active Structural Materials for the Neutrinoless Double Beta Decay Experiment, LEGEND¹ BRENNAN HACKETT, University of Tennessee, Knoxville, LEGEND COLLABORATION — With current half lives of neutrinoless double beta decay ($0\nu\beta\beta$) surpassing 10^{26} yrs, the next generation of experiments must diminish background values to increase experimental sensitivities. Backgrounds in these experiments should be reduced by pursuing both ultra-pure materials and efficient background identification with active vetos. Background identification can be further improved by replacing inactive structural components with transparent, radio-pure plastic scintillators. Poly(ethylene-2,6-naphthalate) (PEN) has been identified as a prospective material for structural scintillator components as it has strong mechanical properties, significant scintillation light yield in the 400 nm region. PEN structural components have been manufactured and their radioactivity and optical properties have been measured as a part of the LEGEND collaboration RD program. This presentation will provide updates from this characterization and describe efforts being made to synthesize PEN for future tonne-scale $0\nu\beta\beta$ experiments.

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