

ATR-FTIR SCREENING OF INDUSTRIAL PVC

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Industrial poly(vinyl chloride) (PVC) materials used in cable insulation and sheathing can differ due to supplier/feedstock variability and recycling-related changes, complicating incoming quality control and material traceability. This work evaluates Attenuated Total Reflectance–Fourier Transform Infrared spectroscopy (ATR-FTIR) as a rapid screening tool to capture chemical fingerprints and support grouping of industrial PVC samples. ATR-FTIR spectra were analysed using chemometric methods, including Principal Component Analysis (PCA) and supervised classification, to separate predefined groups (e.g., supplier/feedstock origin and material state such as original, scrap, and reprocessed). Future work will integrate ultrasonic guided waves (UGW) to link chemical variation with structural/functional indicators.