Feasibility study of solvent recycle in carbon-spin on hard mask material

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In manufacturing process of semiconductor, there are numerous types of process materials used to photo lithography. Each type of process material has a unique role in accordance with different types of PR. Therefore, manufacturing process of semiconductor materials is obtained as a form of batch in small scale. In order to obtain a high purity product, it is required to pass through multiple processes of purification. Since most of by-products of the purification process are organic solvent, a cost effective production process will be proposed in this paper by developing a process to recycle the residues. In case of the Carbon-Based Resin that we are producing, 10 purification and 7 solvent exchange processes are required to produce a half ton of the Resin. Throughout the entire manufacturing process, approximately 11 tons of solvent byproducts are emitted and which accounts for a considerable portion of manufacturing cost. In this study, a process for obtaining high purity solvent was proposed by purifying organic solvent waste emitted from manufacturing process of Carbon-Based Resin with analyzing economic efficiency of the proposed process.