

Statistical Process Control in Quality Assurance of Latex Crepe Production in the Dartonfield Factory, Agalawatta

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Statistical process control is a mechanism of examining the variability of the considered quality parameters. Out of control instances are identified by shifts from the standard mean value and high variability. Evaluation of the quality of latex crepe manufacturing process in the Dartonfield factory was done considering applied dosages of sodium bisulfite, bleaching agent and formic acid. Moving range charts (MR chart), individual value charts (I chart) and cumulative sum (CUSUM) charts were used as tools for quality assurance of latex crepe manufacturing process under this study. MR chart was used to study the stability of the process whereas I charts were used to identify out of control chemical applications. Change point analysis was done for CUSUM charts to detect trends in chemical applications. CUSUM charts can detect fluctuations in properties of quality parameters within a narrow range. Ranked CUSUM charts can be plotted if the variability of the data is high, or error structure of the data is non independent. According to the results, application of sodium bisulfite, bleaching agent and formic acid were done according to the RRI recommendations. Chemical application in crepe rubber manufacturing process was stable and under control except in 13th of May 2022. Although addition of sodium bisulfite has fluctuated during 2021-2022, it has been within standard control limits (computed using 2004 standard data set) according to both individual and moving range charts. According to moving range charts for added bleaching agent and formic acid dosages, they have been within standard limits.

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