

Analysis of Endotoxin Using Analytical Conditions of Optical Density in Metalworking Fluid Sample

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Abstract

This study was performed to identify the proper analytical conditions of endotoxins regarding optical density in the workplace where metalworking fluids are used. This study found that "onset time method" was more accurate than "time to V_{max} method". Reproducibility and accuracy analyzed by "onset time method" was greatly higher than the "time to V_{max} ". The optical density of "0.03" was the most appropriate analytical condition among "onset time method". In this analytical condition, linearity of 0.998 was obtained and recovery rate ranged from 88 % to 105 % at the endotoxin concentrations below 5 EU/mL. No significant difference of endotoxins was observed between the optical densities of "0.03" and "0.05". However, correlation coefficients were different with statistical significance($p < 0.01$). This study confirmed that either the optical densities "0.03" or "0.05" should be used to analyze endotoxin. Of these optical density values, OD with correlation coefficient higher than 0.98 should be used to analyze endotoxin in environmental samples.