

Title: Cork industry wastewater characterization assessment of the biodegradability, reuse and of the relationship between BOD, COD and tannins with TOC

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Abstract: Cork processing involves a boiling step to make the cork softer, which consumes a high volume of water and generates a wastewater with a high organic content, rich in tannins. An assessment of the final wastewater characteristics and of the boiling water composition along the boiling process was performed. The parameters studied were pH, color, total organic carbon (TOC), chemical and biochemical oxygen demands (COD, BOD5, BOD20), total suspended solids (TSS), total phenols and tannins (TP, TT). It was observed that the water solutes extraction power is significantly reduced for higher quantities of cork processed. Valid relationships between parameters were established not only envisaging wastewater characterization but also to provide an important tool for wastewater monitoring and for process control/optimization. Boiling water biodegradability presented decreasing values with the increase of cork processed and for the final wastewater its value is always lower than 0.5, indicating that these wastewaters are very difficult to treat by biological processes. The biodegradability was associated with the increase of tannin content that can rise up to 0.7 g/L. These compounds can be used by other industries when concentrated and the clarified wastewater can be reused, which is a potential asset in this wastewater treatment.

Author Keywords: Biodegradability; Cork boiling water; Tannins; Wastewater reuse

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