Oxidation of Benzoin to Benzil with Nitric Acid

You may use as much of your benzoin as you would like, scaling other reagents appropriately. You should save ~20 mg of benzoin for IR, mp and tlc.

Combine 800 mg of benzoin and 2.8 mL of concentrated nitric acid in the large test-tube provided to you. Heat this in a beaker of boiling water for about 11 min. Be sure all the benzoin gets washed down inside the tube and is oxidized. Be careful not to contact the highly corrosive brown NO\textsubscript{x} gasses. When the reaction has been removed from the heat, carefully add 16 mL of water to the reaction mixture, cool to room temperature, and stir the mixture for one or two minutes to ensure product precipitation. Make sure your organic product is a solid and not an oil.

Isolate the solid by vacuum filtration, and rinse the yellow material with 16 ml of water. Be sure to dispose of this filtrate in the jug labeled Acid Waste. Do not discard the large test-tube – return it clean and dry.

Dissolve the solid in ~4 ml of hot ethanol, and add water dropwise to the hot solution until it appears to be cloudy, indication it is saturated. Heat the mixture to bring the product completely into solution and allow it to cool slowly to room temperature, then in ice. Isolate the product by vacuum filtration, rinse with a small amount of ice-cold ethanol and pull air through the funnel to help dry your product. Ethanolic filtrate can be disposed of in the jug labeled Organic Waste.

Analyze the product by thin layer chromatography (tlc) using dichloromethane as a solvent. If residual benzoin is visible on the tlc, purify by column chromatography, as outlined in Mayo, Pike and Trumper.

Analyze the final product as usual.