

# ABSTRACT

## Technology for obtaining 2-ethylhexanoic acid

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The aim of the doctoral thesis was to develop an effective, low-waste and energy-saving method for the production of 2-ethylhexanoic acid using the existing technical infrastructure and raw materials available in Grupa Azoty.

2-Ethylhexanoic acid is widely used in various industries, including the production of plastics, the automotive industry (as an anti-corrosion agent), in the production of paints, cosmetics and pharmaceuticals.

In this work, based on the presented papers and patents review, the process of oxidation of 2-ethylhexanal with oxygen or air in the presence of *N*-hydroxyphthalimide as a catalyst was proposed as a method for obtaining the acid with implementation potential. Basic research and then development were carried out on a scale from 2 cm<sup>3</sup> to 2000 cm<sup>3</sup> of solvent. The effect of the type and amount of solvent, amount of catalyst, temperature and reaction time on the conversion of aldehyde and selectivity to 2-ethylhexanoic acid was determined. On the scale of 2000 cm<sup>3</sup>, studies on recovery and reuse of the catalyst and solvent from the reaction products along with purification of crude 2-ethylhexanoic acid were carried out.

It has been demonstrated that it is possible to oxidize 2-ethylhexaldehyde to 2-ethylhexanoic acid with *N*-hydroxyphthalimide as a catalyst, in isobutanol as a solvent under mild conditions with high selectivity.