Thermokinetics parameters as determination of sulphuric acid reaction with titanium raw materials

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Almost every day around the world, many of products of the chemical industry are produced by using of potentially hazardous reactions. These reactions as results of disadvantageous reaction conditions we can expect: thermal explosions, large economic losses, unreacted reaction mass and sometimes even fatalities [1]. These events show how to important are the conditions for conducting of the process, that in the future prevent of similar situations.

A thorough analysis of character of the reaction is the first step towards risk reduction to an acceptable level. This analysis can be carried out by laboratory research and with the use a conventional hazard analysis process. The data obtained from the tests carried out, such as the: variation of energy, temperature, or pressure in function of time, allow for real use this information to understand certain limits, obtained in laboratory tests. These restrictions relate mainly to problems of increasing scale and an acceptable safety margin for industrial operations in relation to laboratory scale [1].

This paper proposes the use of a thermodynamic parameters which can be used to the term aid the risk of thermo explosion.

[1] D.J. Leggett, Thermochimica acta, 367-368 (2001) 351-365