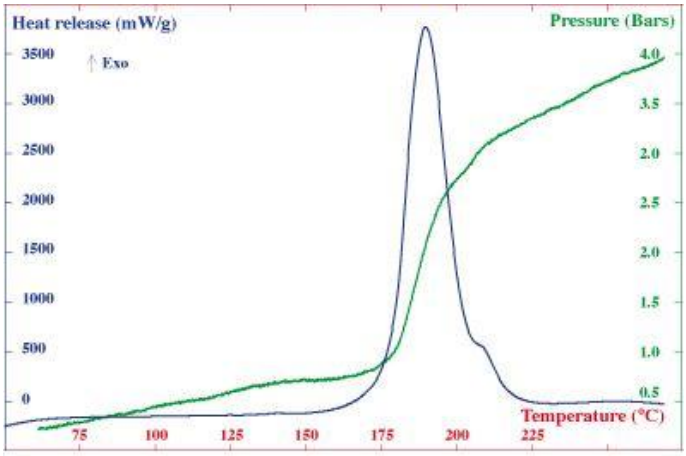
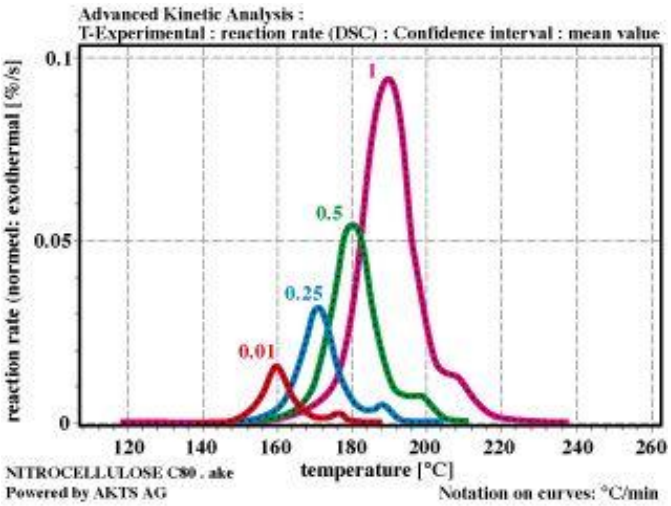
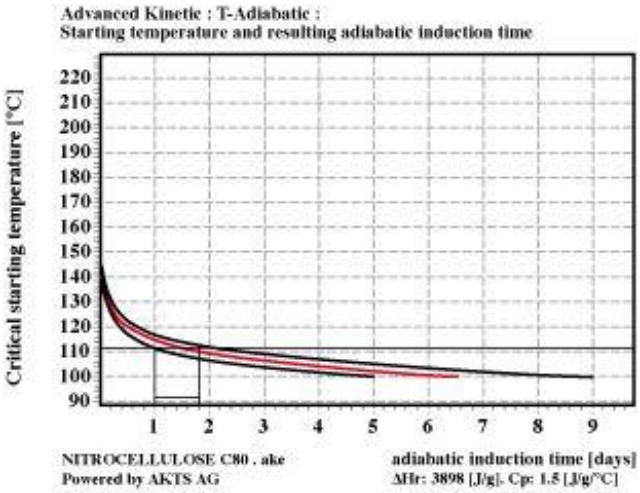
C80 and AKTS : Thermal stability and decomposition



C80 : Decomposition of a nitrocellulose and nitroglycerine based samples



C80 + AKTS: Decomposition of nitrocellulose and nitroglycerine based samples performed at 0.10, 0.25, 0.5 and 1°C/min



C80 + AKTS: Simulation of adiabatic conditions

Experimental

Decomposition of a nitrocellulose based sample performed at 0.10, 0.25, 0.5, 1°C/min with C80 equipped with cells with pressure measurement.

Results and conclusions

The excellent resolution of the C80 enables to detect the multi-stage decomposition of a nitrocellulose and nitroglycerine based substance. Equipped with pressure sensor cells, it can also evaluate the quantities of gas emitted and the gas release rate.

When applied to the above system, the AKTS method allows adiabatic conditions to be predicted. The variation in the runaway time under adiabatic mode is plotted as a function of temperature. The critical value TMRad=24 hours, commonly accepted as the safety limit on the industrial scale, is obtained at 114°C.

C80
Ambient to 300°C

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