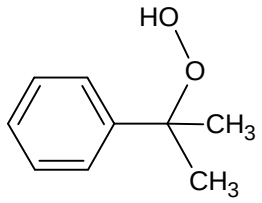
産業技術総合研究所　高エネルギー物質研究グループ
発熱分解エネルギー測定の標準化　　熱分析結果

Cumen hydroperoxide　　$C_6H_5C(CH_3)_2OOH$　　CHP

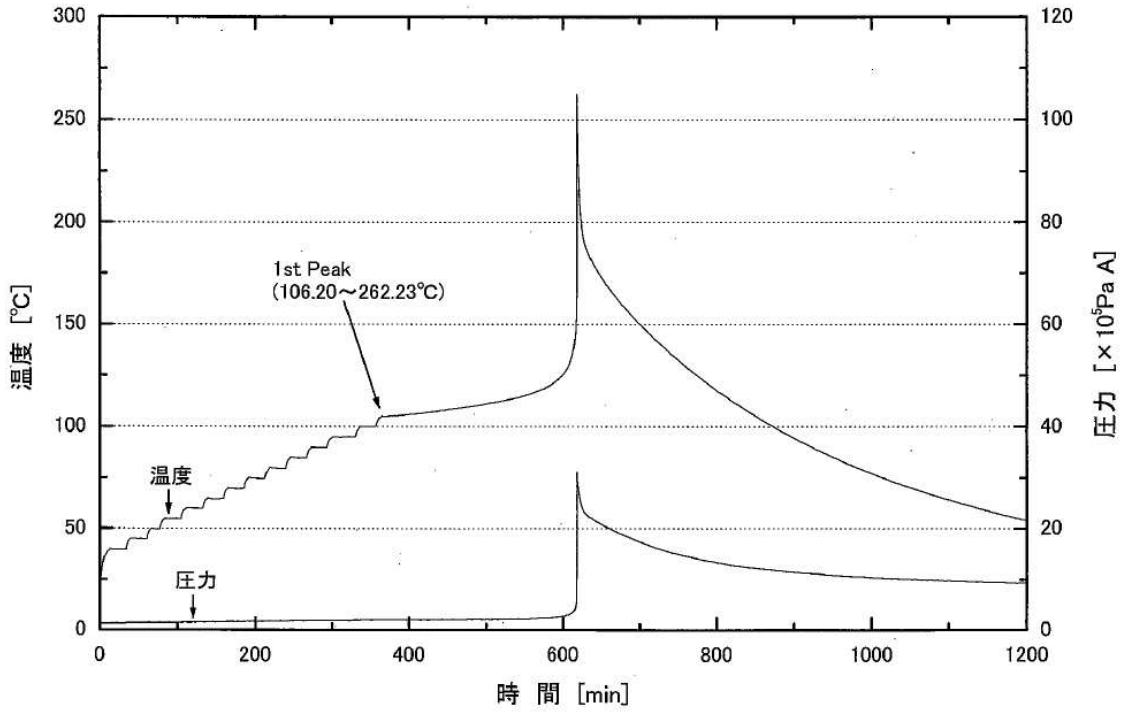


+20% cumen

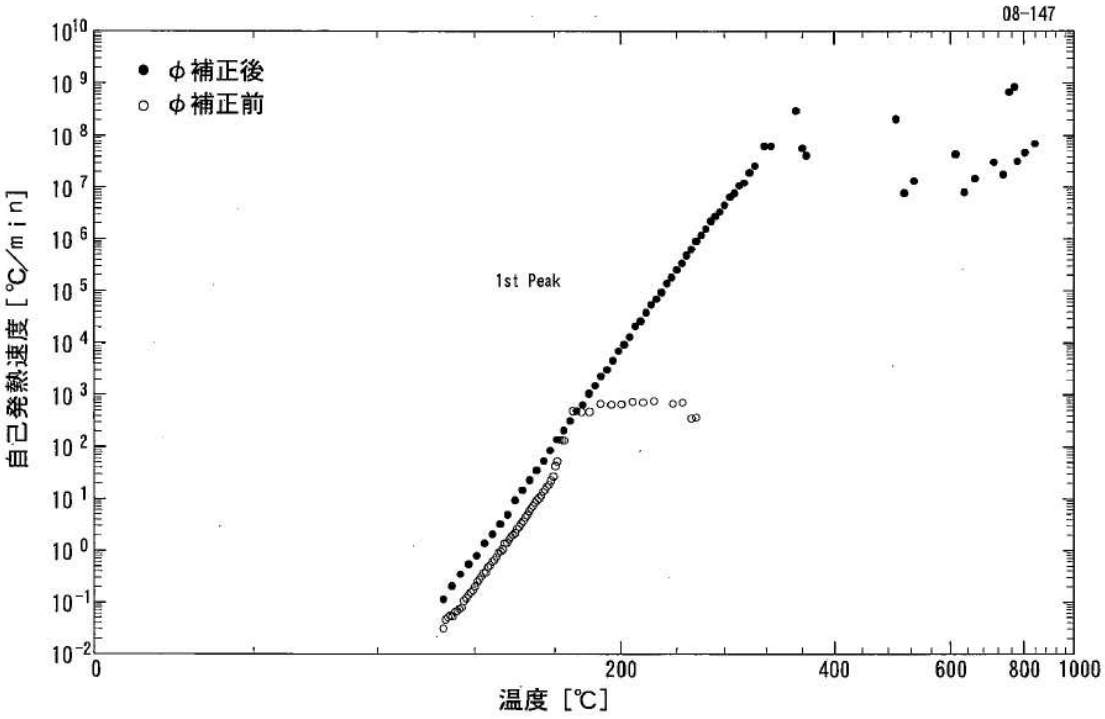
ARC device: ES-ARC (Thermal Hazard Technology)

Date: 2008/12

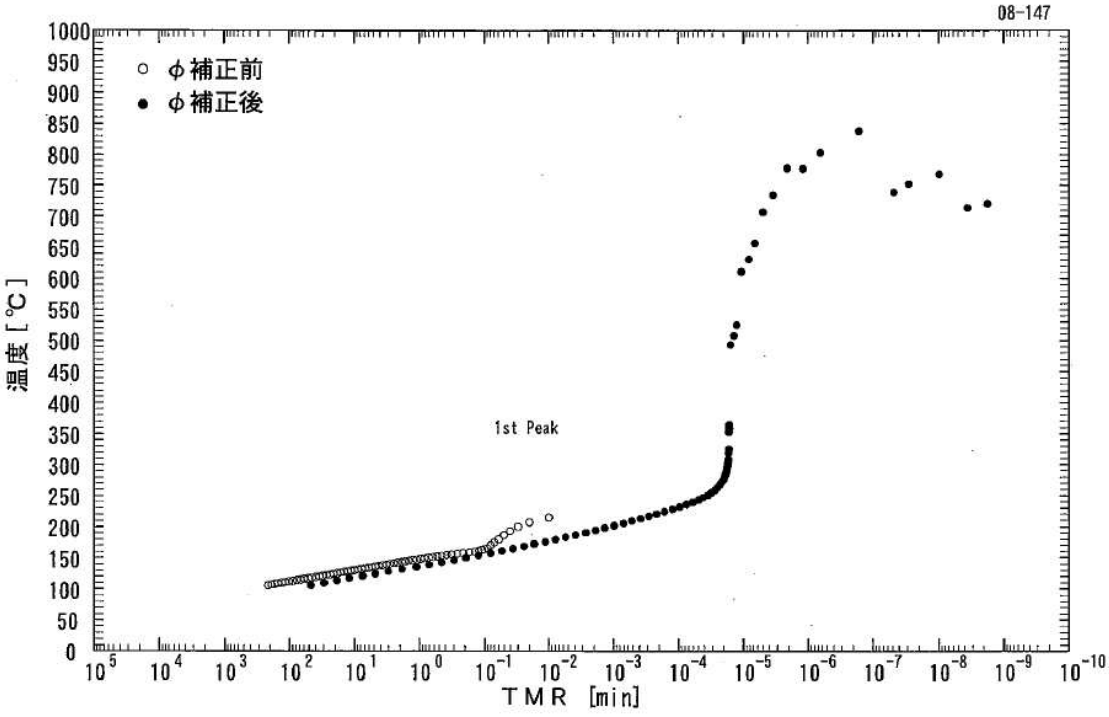
Operator: SCAS



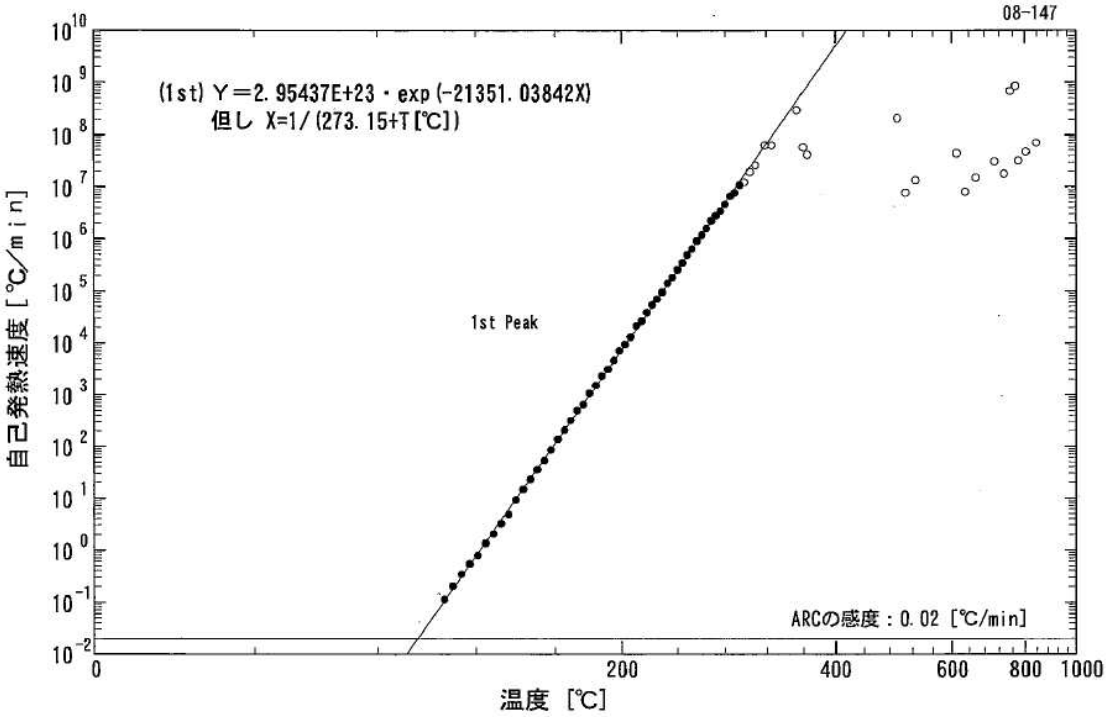
Time vs. Temperature and Pressure



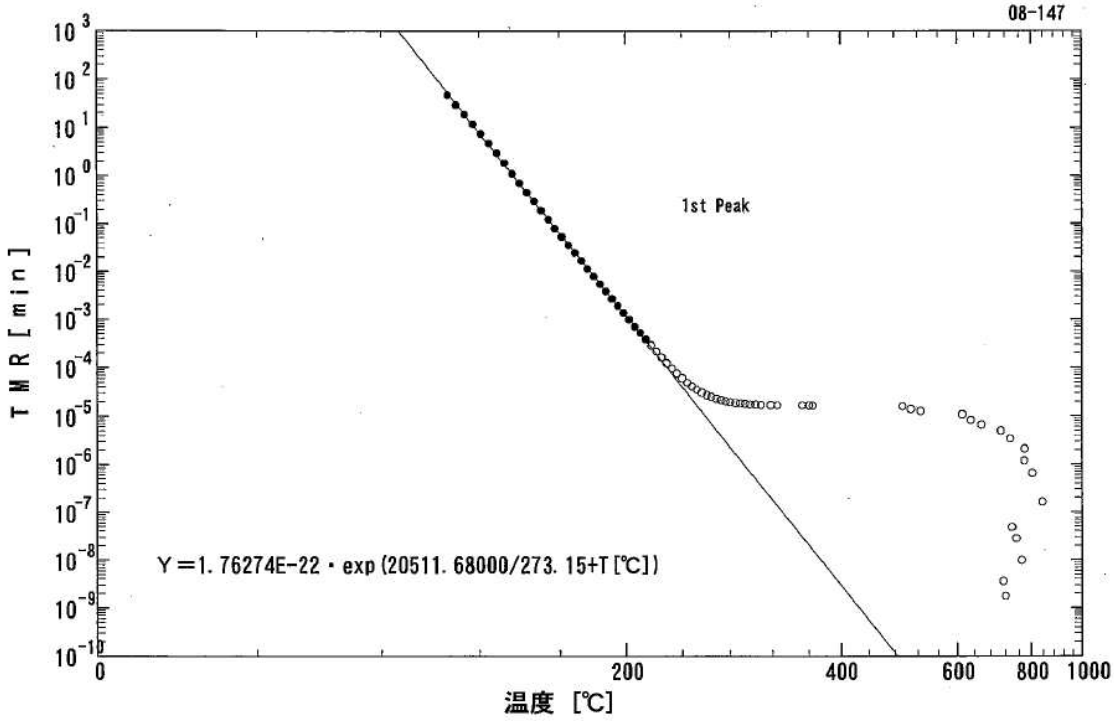
Temperature vs. Self heating rate



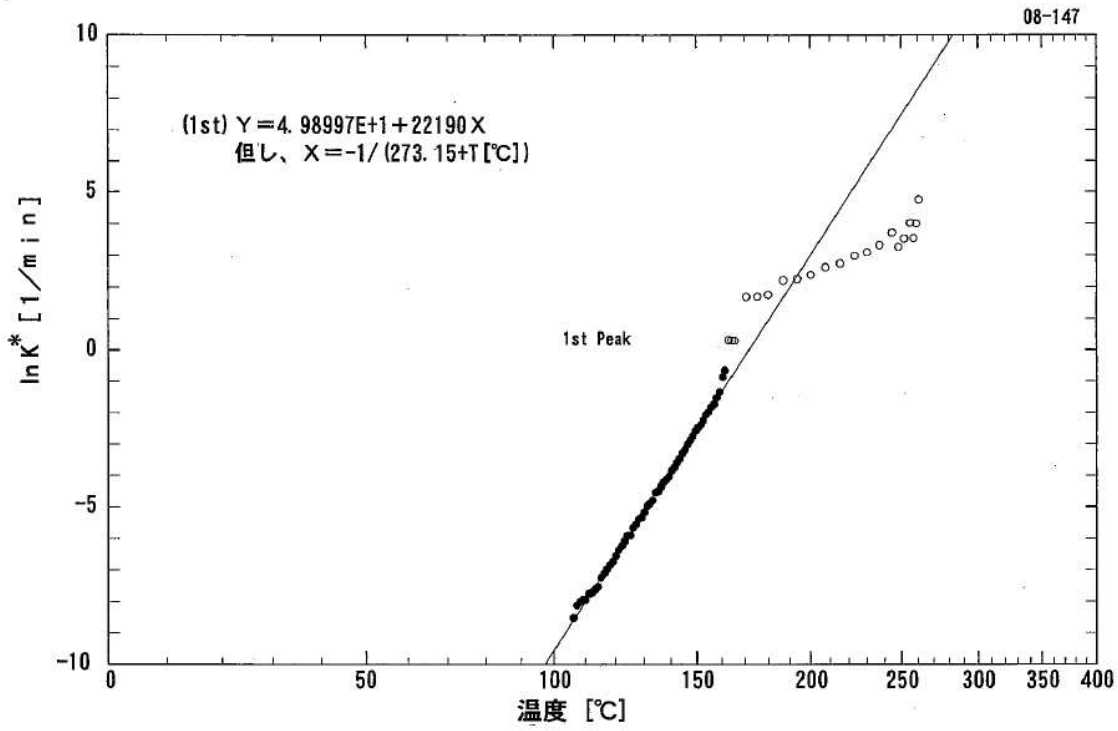
TMR vs. Temperature



Temperature vs. Self heating rate (approximate calculation)



Temperature vs. TMR (approximate calculation)



Arrhenius equation (approximate calculation)

	Date	2008/12/14
Measuring conditions	ARC device	ES-ARC (Thermal Hazard Technology)
	Operating Institute	SCAS
	Operator	SCAS
	Material of Bomb	Hastelloy C
	Weight of Bomb (g)	15.1867
	Volume of Bomb (mL)	about 9
	Weight of sample (g)	1.1379
	Weight of residue (g)	1.0361
	Specific heat of Bomb (J K^{-1} g^{-1})	0.419
	Specific heat of sample (J K^{-1} g^{-1})	2.093
	ϕ facotr	3.672
	Start temperature (℃)	40
	End temperature (℃)	262.23
	Temperature increment (K)	5
	Waiting time (min)	－
	Searching time (min)	10

	Exothermic threshold (K min^{-1})	0.02
	Logging time (℃)	1.0
	Pressure limit (kPa)	20000
	Atmosphere	Air, atmospheric pressure
Results	T_o, Exothermic temperature (℃)	106.20
	Self heating rate at T_o (K min^{-1})	0.031
	Pressure at T_o (kPa)	202.5
	Temperature at maximum self heating rate (℃)	207.72
	Maximum self heating rate (K min^{-1})	778.62
	Pressure at maximum self heating rate (kPa)	2795
	Pressure rising rate at maximum self heating rate (kPa min^{-1})	15785
	Maximum pressure (kPa)	2987
	Maximum pressure rising rate (kPa min^{-1})	21823
	Temperature at maximum pressure rising rate (℃)	164.21
	Time to maximum rate (min)	211.84
	Maximum temperature (℃)	262.23
	Adiabatic temperature rise (℃)	156.03
	Activation energy (kJ mol^{-1})	184.6
	Heat of decomposition (J g^{-1})	1199
Corrected results	T_{ARC}, Exothermic temperature (℃)	95.4
	Time of maximum rate at T_{ARC} (min)	267
	Self heating rate at T_{ARC} (K min^{-1})	0.02
	Maximum self heating rate (K min^{-1})	3.76×10^{9}
	Maximum temperature (℃)	701.5
	Adiabatic temperature rise (℃)	606.1
	Heat of decomposition (J g^{-1})	1269