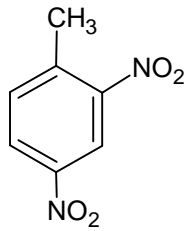


2,4-dinitrotoluene

$(\text{NO}_2)_2\text{C}_6\text{H}_3\text{CH}_3$

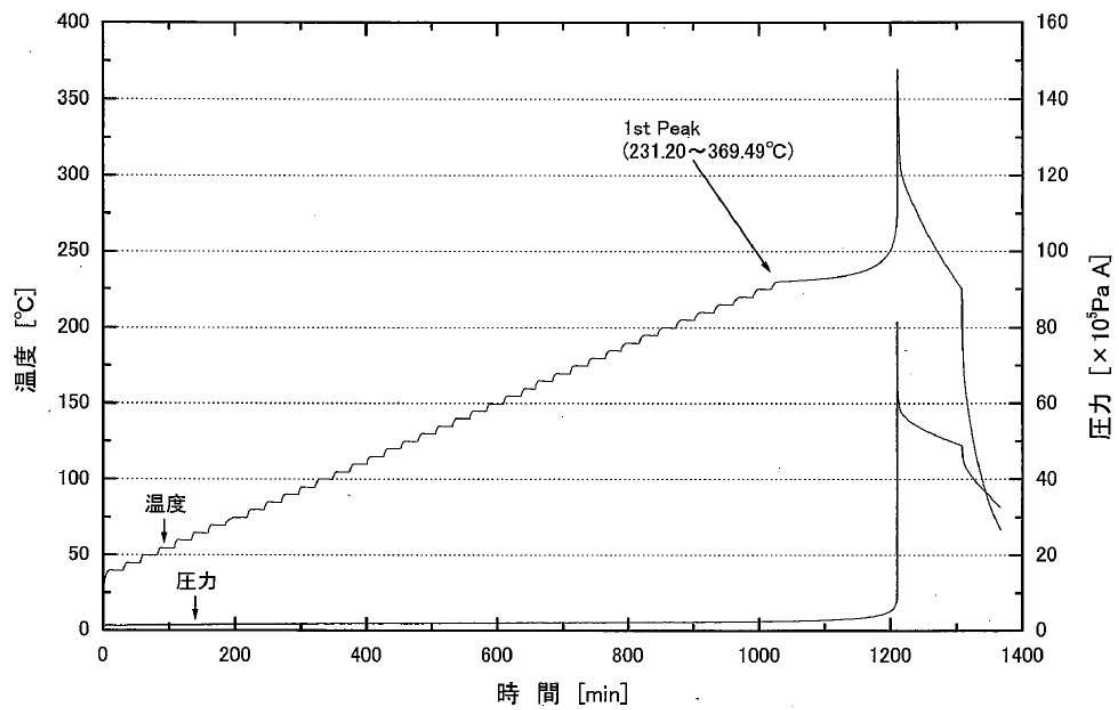
DNT



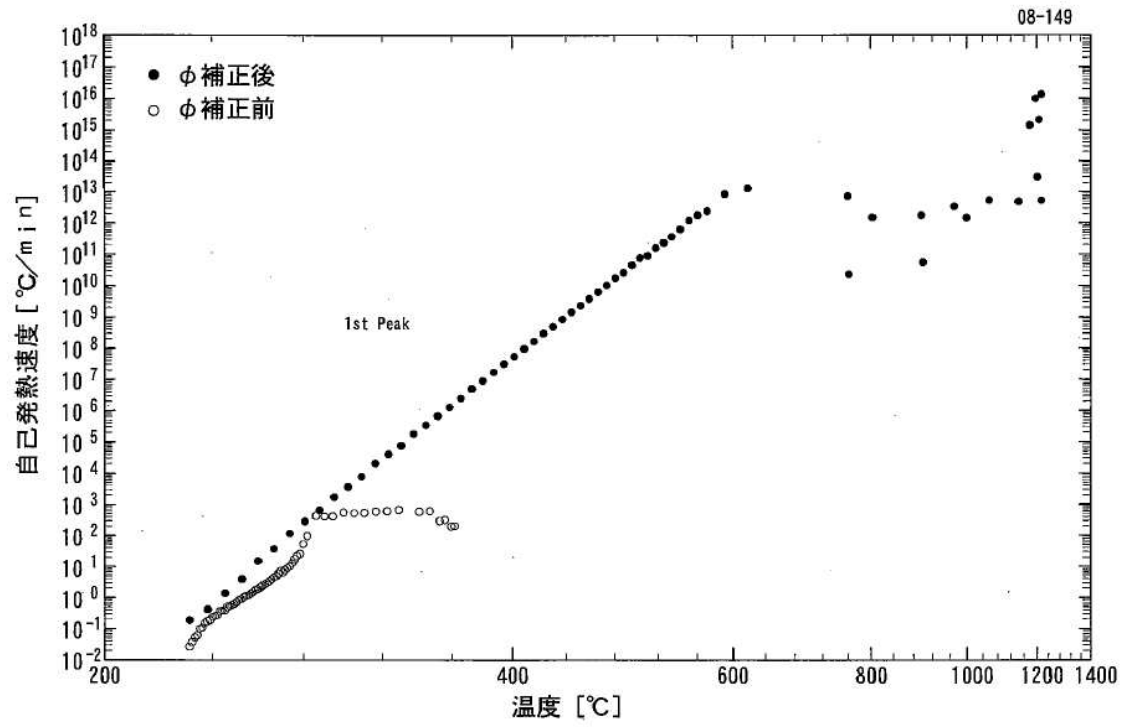
ARC device: ES-ARC (Thermal Hazard Technology)

Date: 2008/12

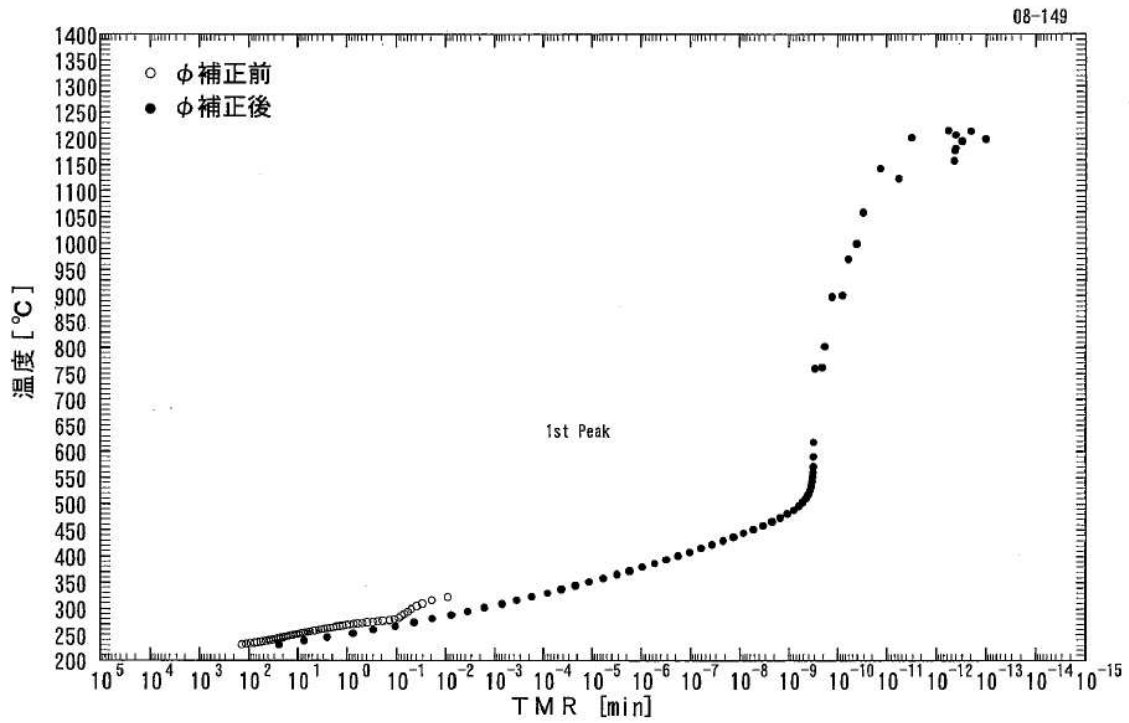
Operator: SCAS



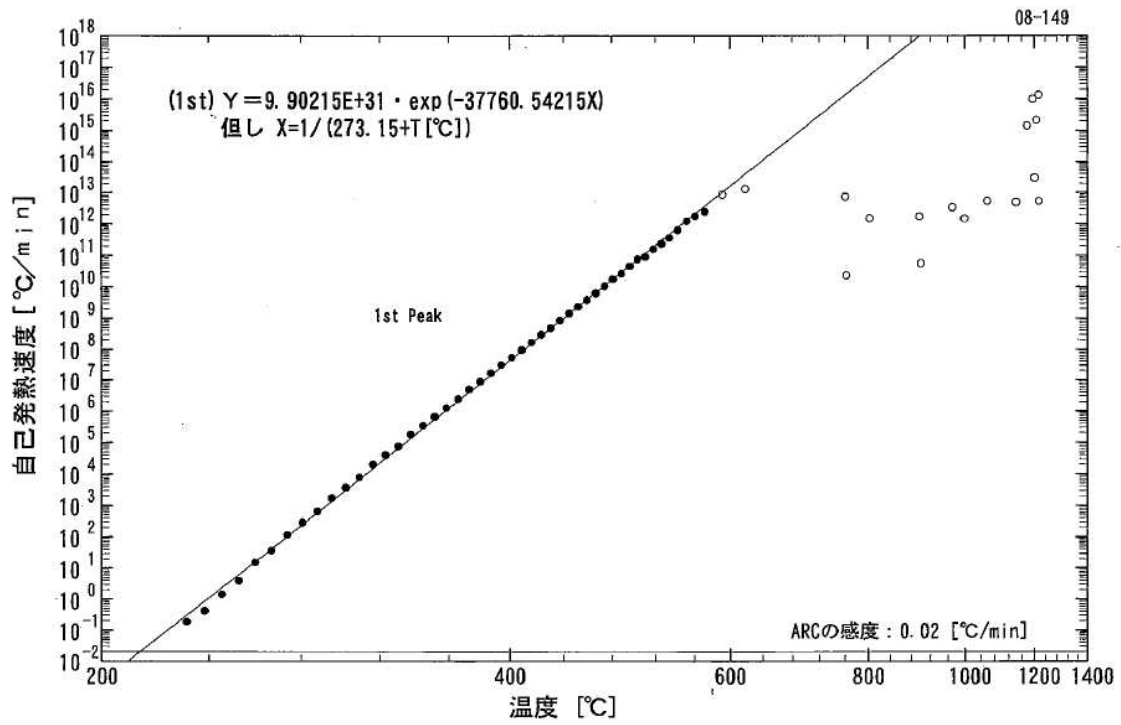
Time vs. Temperature and Pressure



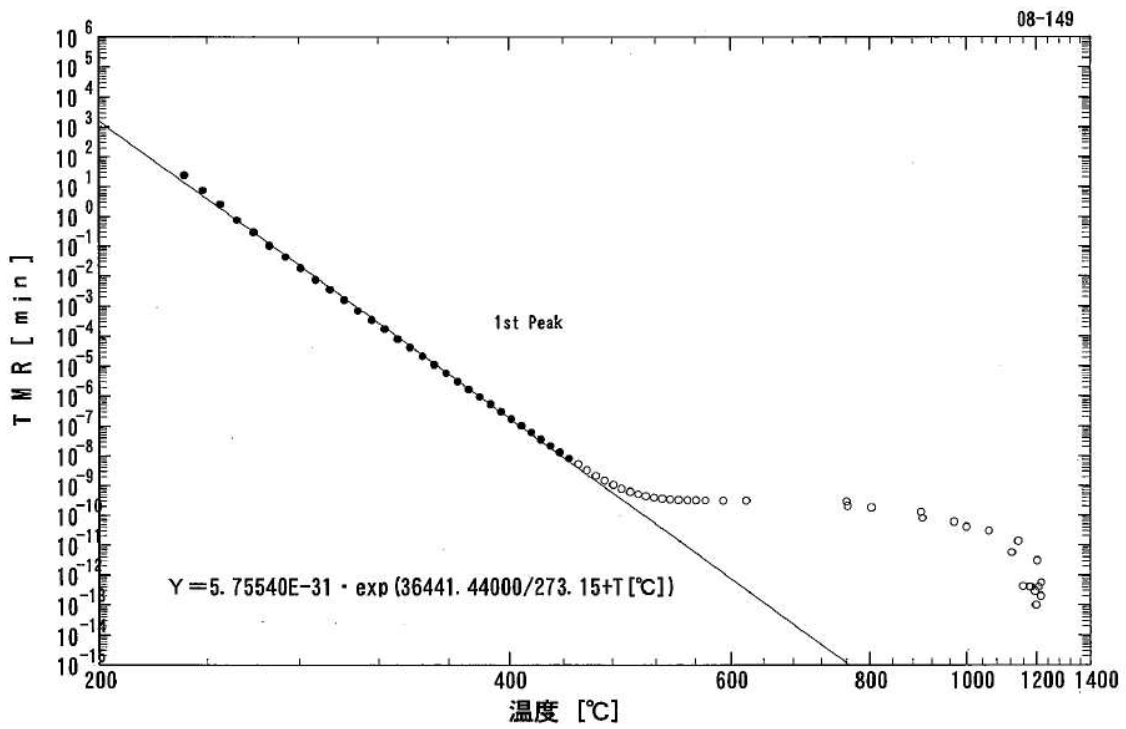
Temperature vs. Self heating rate



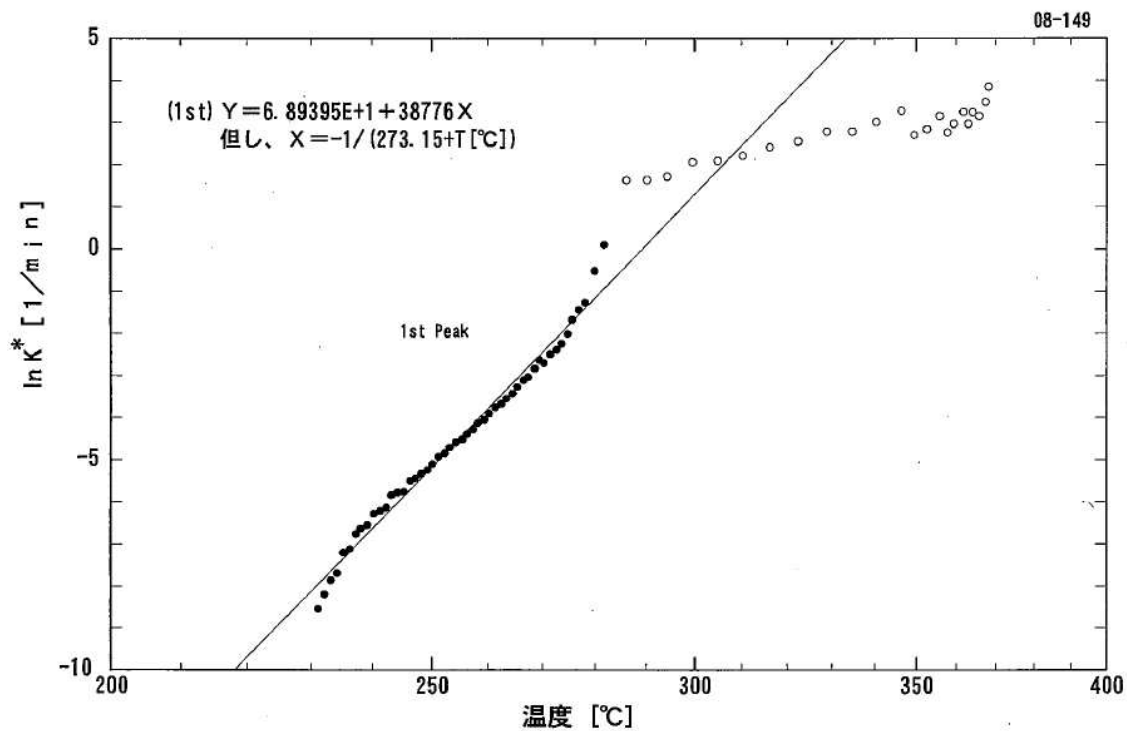
TMR vs. Temperature



Temperature vs. Self heating rate (approximate calculation)



Temperature vs. TMR (approximate calculation)



Arrhenius equation (approximate calculation)

	Date	2008/12/17
Measuring conditions	ARC device	ES-ARC (Thermal Hazard Technology)
	Operating Institute	SCAS
	Operator	SCAS
	Material of Bomb	Hastelloy C
	Weight of Bomb (g)	15.1884
	Volume of Bomb (mL)	about 9
	Weight of sample (g)	0.5017
	Weight of residue (g)	0.1401
	Specific heat of Bomb ($J K^{-1} g^{-1}$)	0.419
	Specific heat of sample ($J K^{-1} g^{-1}$)	2.093
	ϕ facotr	7.061
	Start temperature ($^{\circ}C$)	40
	End temperature ($^{\circ}C$)	369.49
	Temperature increment (K)	5
	Waiting time (min)	—
Searching time (min)	10	

	Exothermic threshold (K min^{-1})	0.02
	Logging intervals ($^{\circ}\text{C}$)	1.0
	Pressure limit (kPa)	20000
	Atmosphere	Air, atmospheric pressure
Results	T_o , Exothermic temperature ($^{\circ}\text{C}$)	231.20
	Self heating rate at T_o (K min^{-1})	0.027
	Pressure at T_o (kPa)	256.8
	Temperature at maximum self heating rate ($^{\circ}\text{C}$)	328.84
	Maximum self heating rate (K min^{-1})	662.13
	Pressure at maximum self heating rate (kPa)	8144
	Pressure rising rate at maximum self heating rate (kPa min^{-1})	57258
	Maximum pressure (kPa)	6716
	Maximum pressure rising rate (kPa min^{-1})	24.267
	Temperature at maximum pressure rising rate ($^{\circ}\text{C}$)	68595
	Time to maximum rate (min)	136.74
	Maximum temperature ($^{\circ}\text{C}$)	369.49
	Adiabatic temperature rise ($^{\circ}\text{C}$)	136.74
	Activation energy (kJ mol^{-1})	322.6
Heat of decomposition (J g^{-1})	2044	
Corrected results	T_{ARC} , Exothermic temperature ($^{\circ}\text{C}$)	213.7
	Time of maximum rate at T_{ARC} (min)	190
	Self heating rate at T_{ARC} (K min^{-1})	0.02
	Maximum self heating rate (K min^{-1})	3.71×10^{16}
	Maximum temperature ($^{\circ}\text{C}$)	1213.7
	Adiabatic temperature rise ($^{\circ}\text{C}$)	1000.0
	Heat of decomposition (J g^{-1})	2093