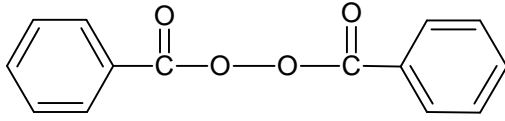


Benzylperoxide



BPO

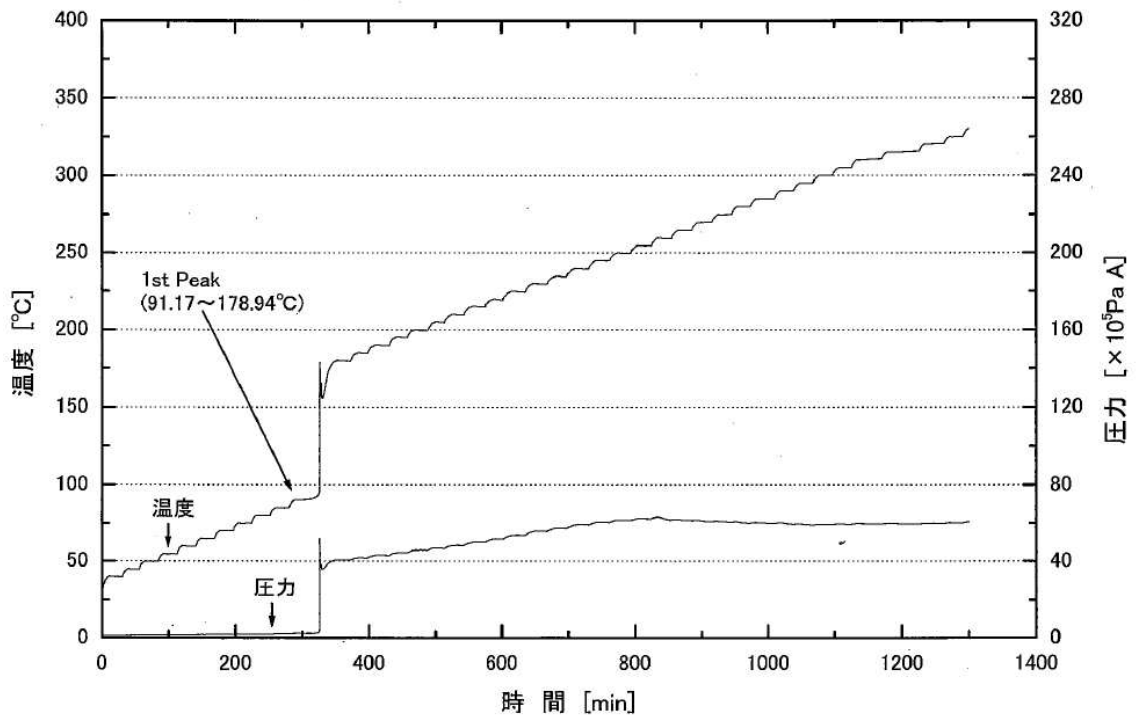


ARC device: ES-ARC (Thermal Hazard Technology)

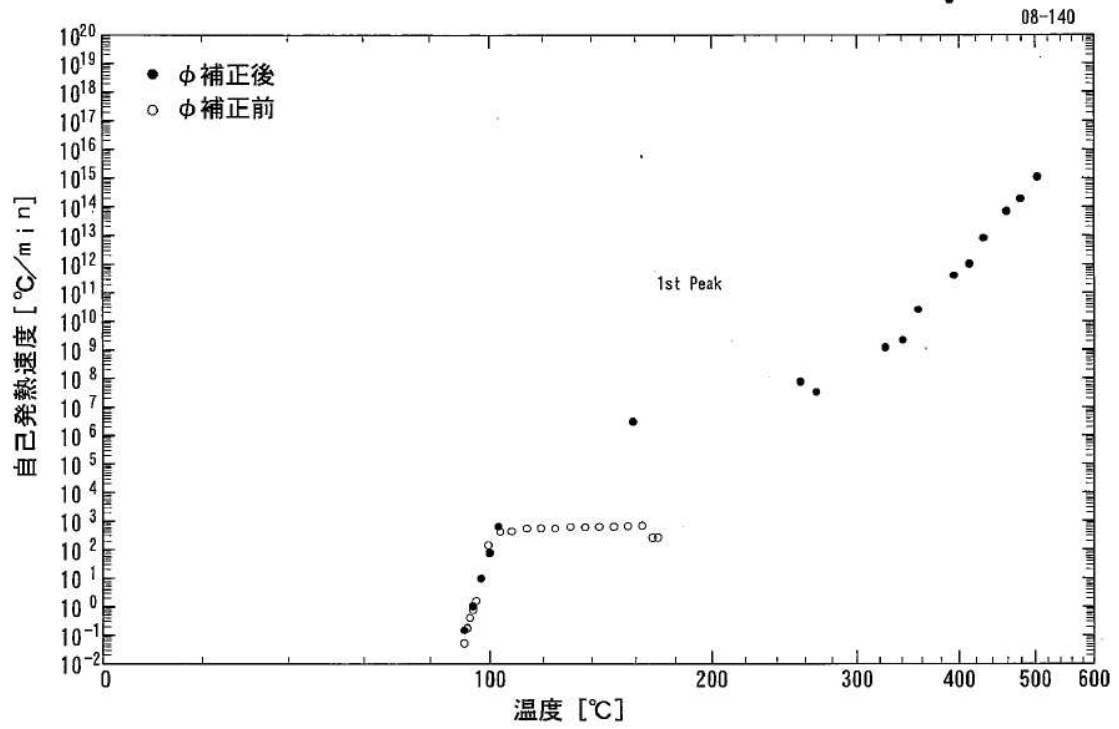
Date: 2008/12

Operator: SCAS

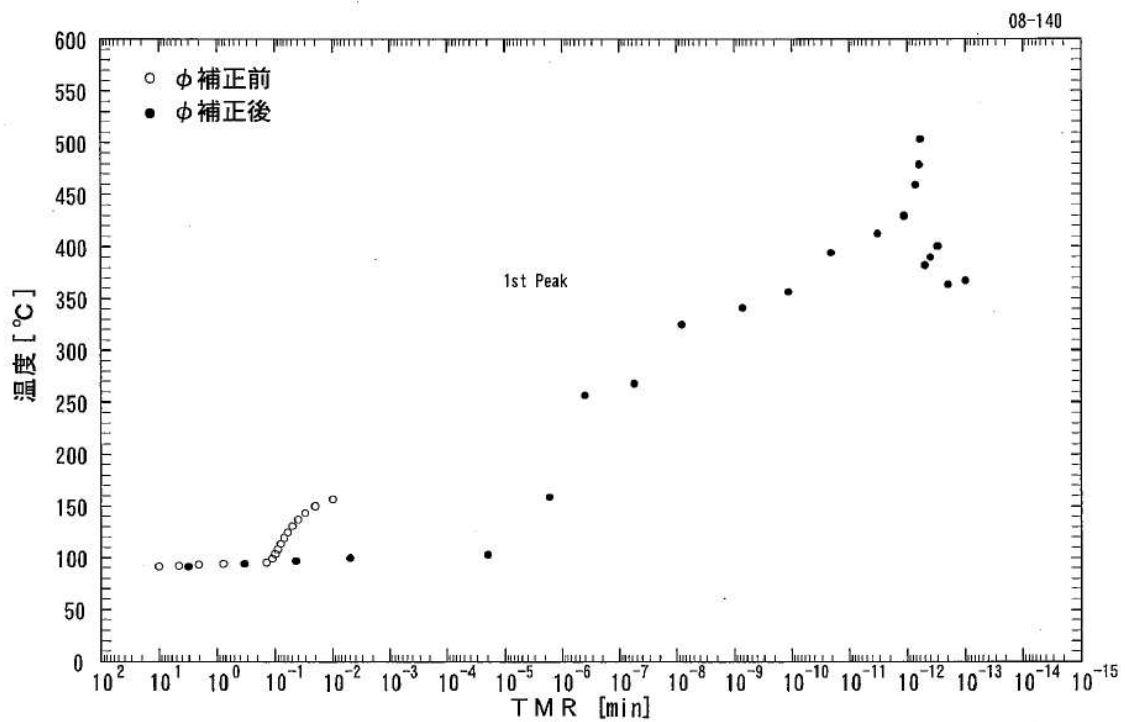
a) Weight of sample: 1.6424 g



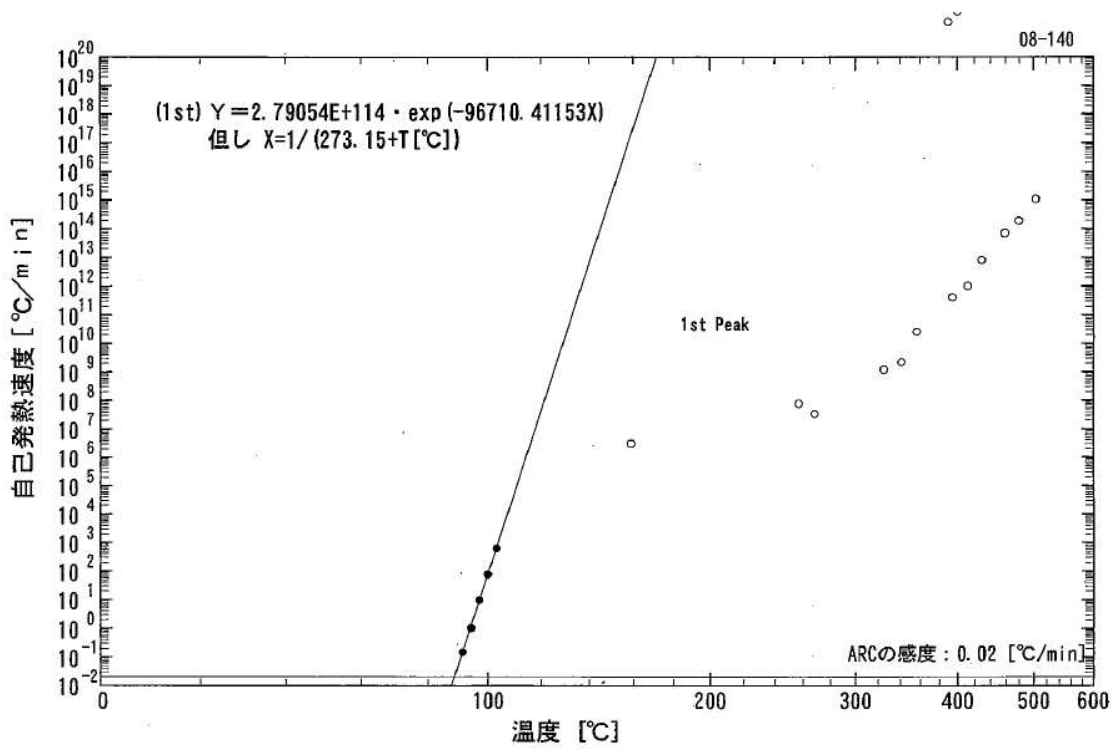
Time vs. Temperature and Pressure



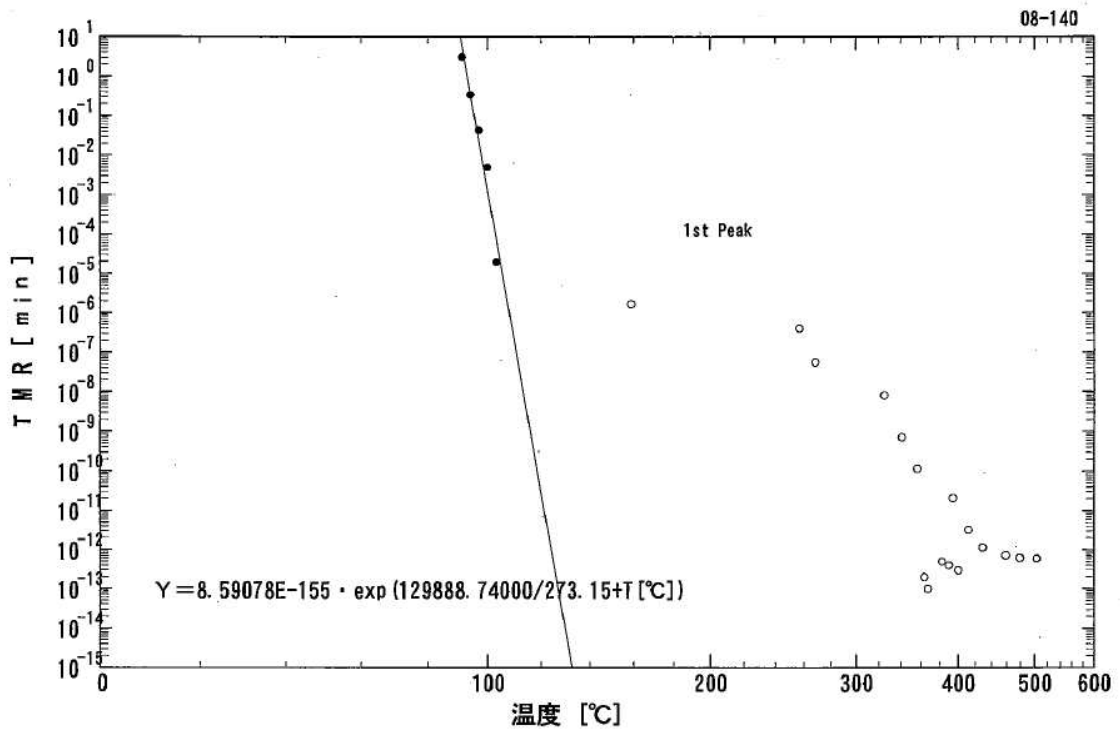
Temperature vs. Self heating rate



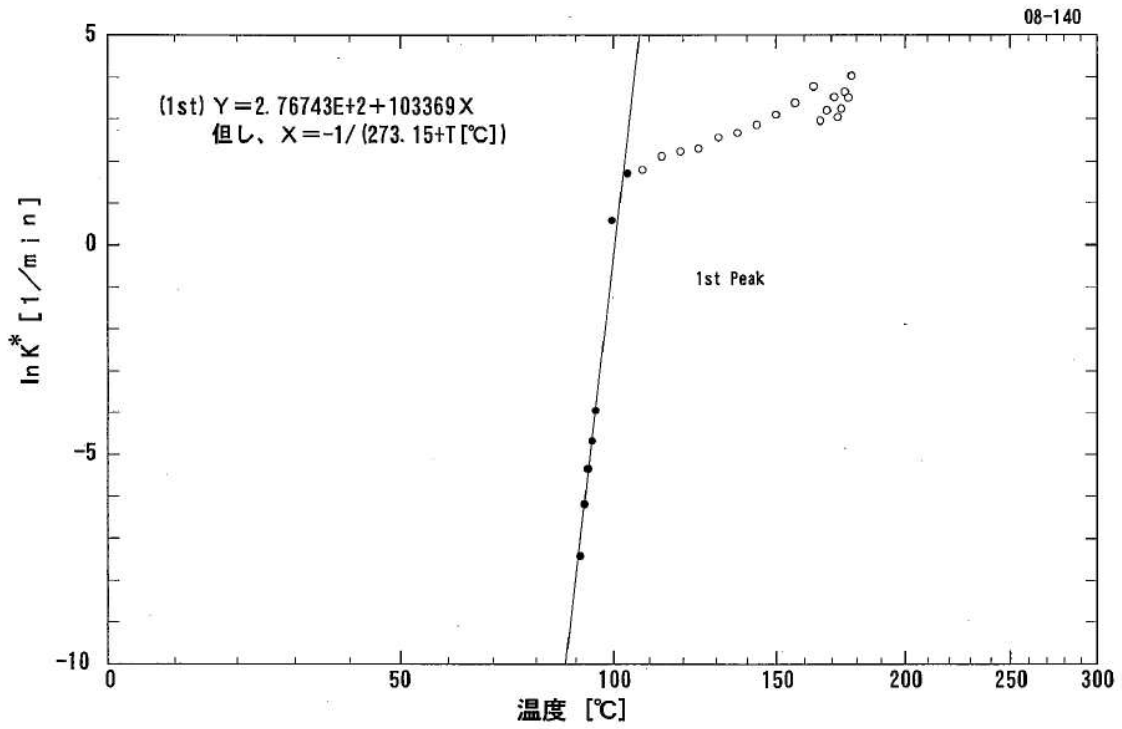
TMR vs. Temperature



Temperature vs. Self heating rate (approximate calculation)

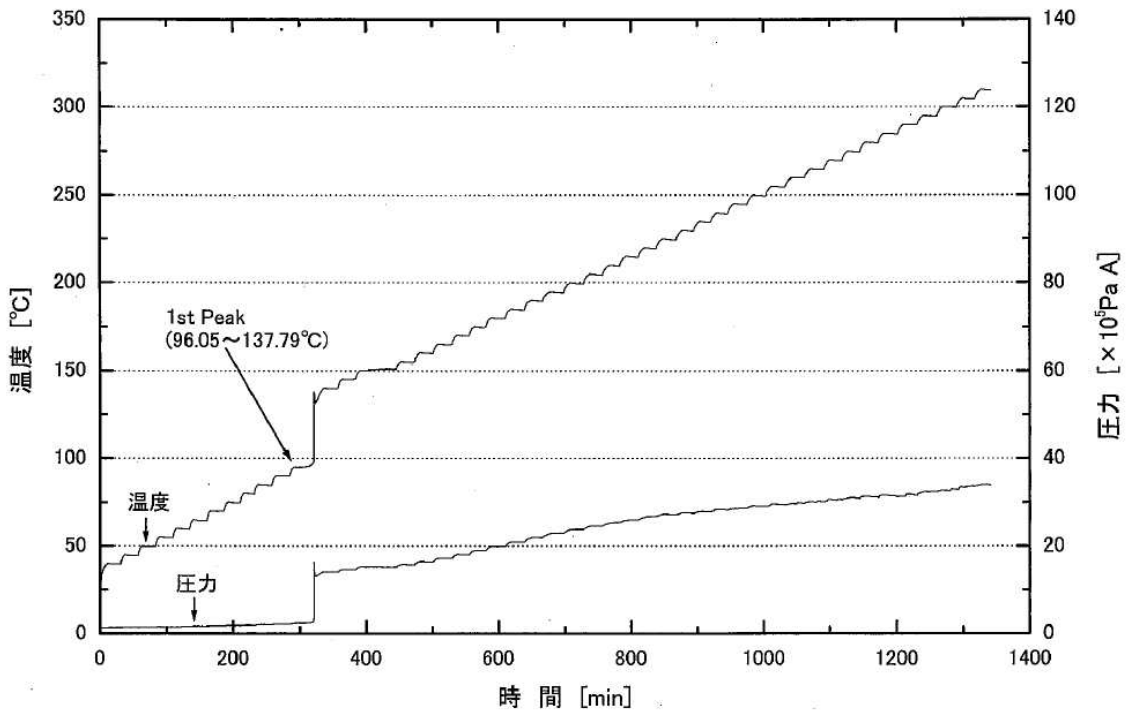


Temperature vs. TMR (approximate calculation)

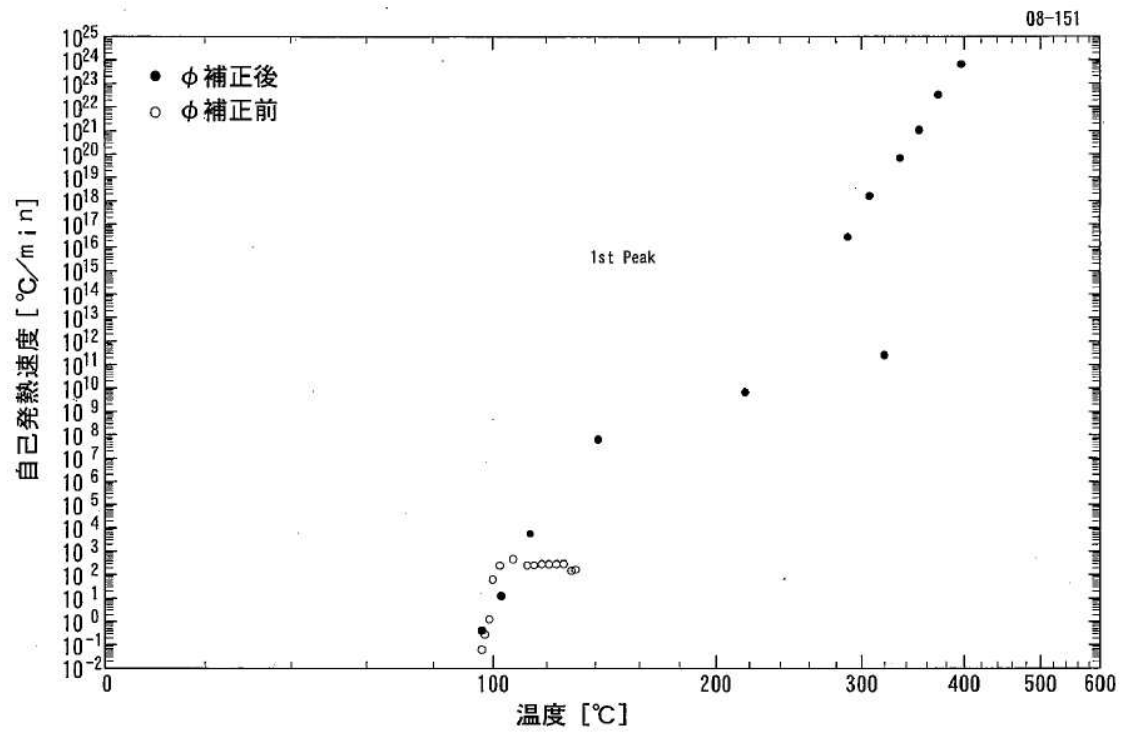


Arrhenius equation (approximate calculation)

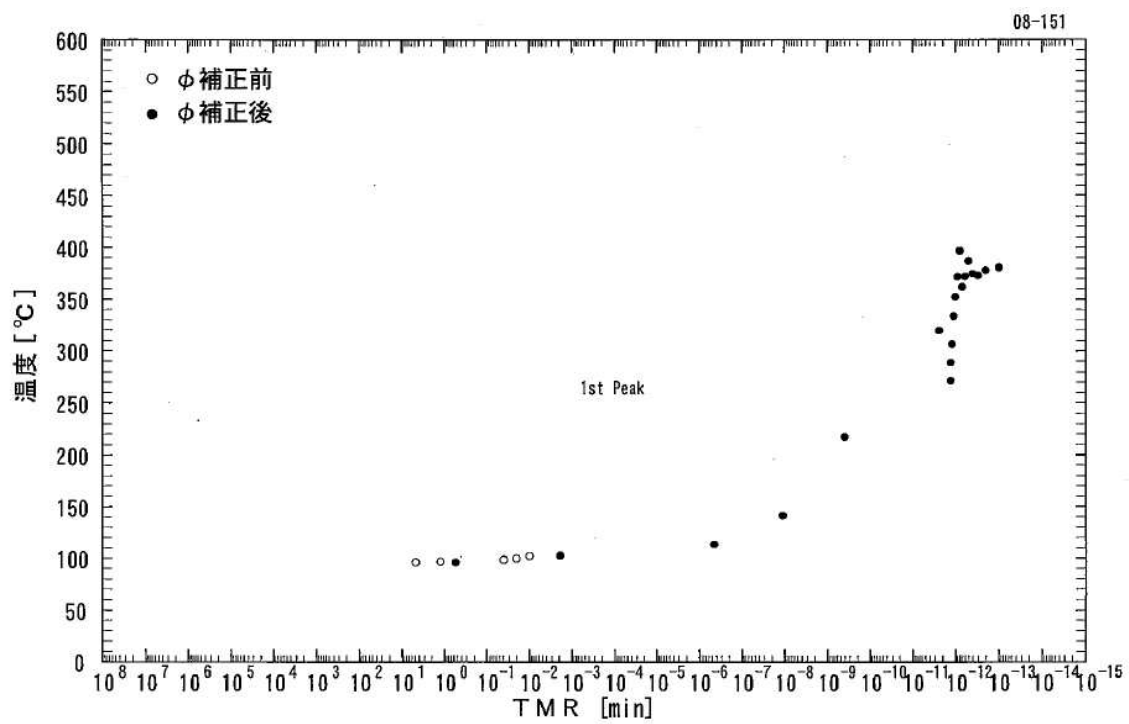
b) Weight of sample: 0.5278 g



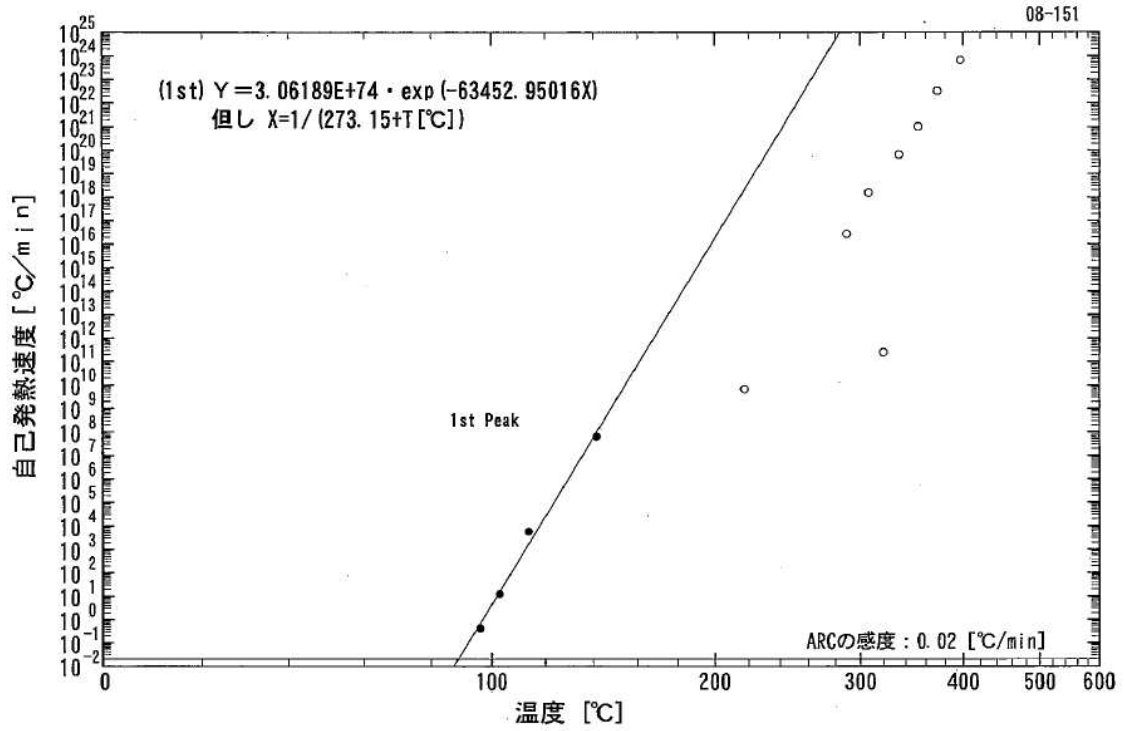
Time vs. Temperature and Pressure



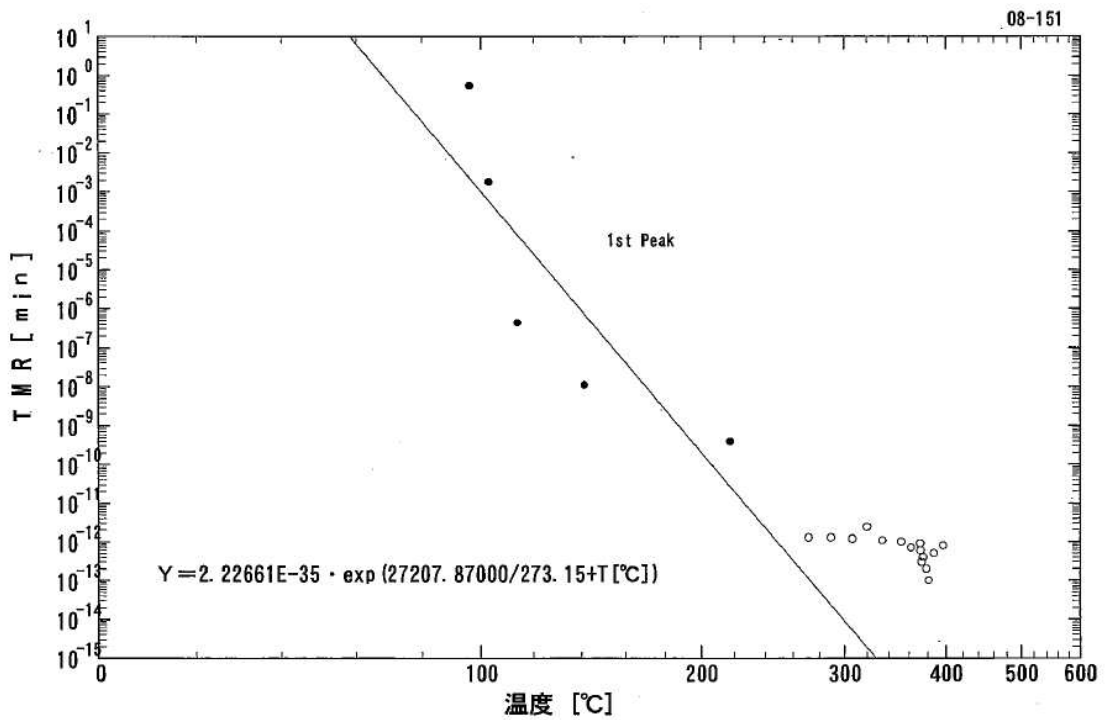
Temperature vs. Self heating rate



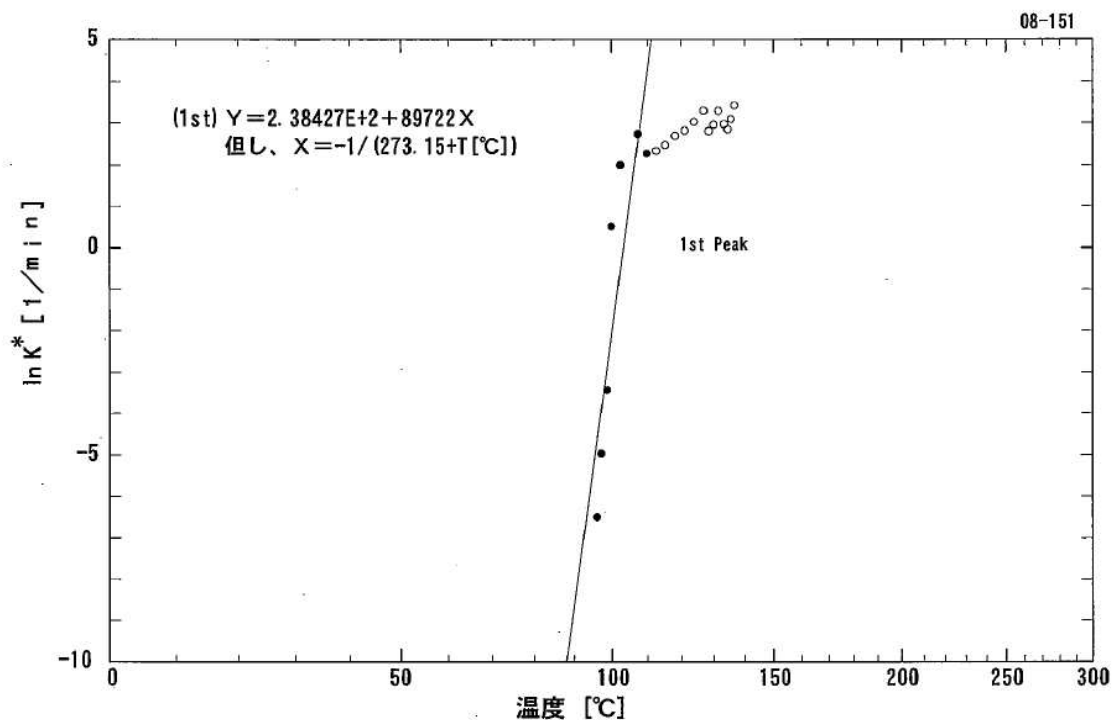
TMR vs. Temperature



Temperature vs. Self heating rate (approximate calculation)



Temperature vs. TMR (approximate calculation)



Arrhenius equation (approximate calculation)

a) Weight of sample: 1.6424 g

	Date	2008/12/8
Measuring conditions	ARC device	ES-ARC (Thermal Hazard Technology)
	Operating Institute	SCAS
	Operator	SCAS
	Material of Bomb	Hastelloy C
	Weight of Bomb (g)	15.1187
	Volume of Bomb (mL)	about 9
	Weight of sample (g)	1.6424
	Weight of residue (g)	1.0305
	Specific heat of Bomb ( $J K^{-1} g^{-1}$ )	0.419
	Specific heat of sample ( $J K^{-1} g^{-1}$ )	2.093
	$\phi$ facotr	2.843
	Start temperature ( $^{\circ}C$ )	40
	End temperature ( $^{\circ}C$ )	329.95
	Temperature increment (K)	5
	Waiting time (min)	—
Searching time (min)	10	

	Exothermic threshold (K min <sup>-1</sup> )	0.02
	Logging intervals (°C)	1.0
	Pressure limit (kPa)	20000
	Atmosphere	Air, atmospheric pressure
Results	T <sub>o</sub> , Exothermic temperature (°C)	91.17
	Self heating rate at T <sub>o</sub> (K min <sup>-1</sup> )	0.053
	Pressure at T <sub>o</sub> (kPa)	256.9
	Temperature at maximum self heating rate (°C)	163.29
	Maximum self heating rate (K min <sup>-1</sup> )	685.60
	Pressure at maximum self heating rate (kPa)	4791
	Pressure rising rate at maximum self heating rate (kPa min <sup>-1</sup> )	-13428
	Maximum pressure (kPa)	4446
	Maximum pressure rising rate (kPa min <sup>-1</sup> )	49301
	Temperature at maximum pressure rising rate (°C)	99.52
	Time to maximum rate (min)	10.13
	Maximum temperature (°C)	178.94
	Adiabatic temperature rise (°C)	87.77
	Activation energy (kJ mol <sup>-1</sup> )	859.9
Heat of decomposition (J g <sup>-1</sup> )	522.4	
Corrected results	T <sub>ARC</sub> , Exothermic temperature (°C)	88.6
	Time of maximum rate at T <sub>ARC</sub> (min)	86
	Self heating rate at T <sub>ARC</sub> (K min <sup>-1</sup> )	0.02
	Maximum self heating rate (K min <sup>-1</sup> )	4.18 × 10 <sup>24</sup>
	Maximum temperature (°C)	503.5
	Adiabatic temperature rise (°C)	414.9
	Heat of decomposition (J g <sup>-1</sup> )	868.4

b) Weight of sample: 0.5278 g

	Date	2008/12/23
Measuring conditions	ARC device	ES-ARC (Thermal Hazard Technology)
	Operating Institute	SCAS



	Operator	SCAS
	Material of Bomb	Hastelloy C
	Weight of Bomb (g)	15.1852
	Volume of Bomb (mL)	about 9
	Weight of sample (g)	0.5278
	Weight of residue (g)	0.3837
	Specific heat of Bomb ( $\text{J K}^{-1} \text{g}^{-1}$ )	0.419
	Specific heat of sample ( $\text{J K}^{-1} \text{g}^{-1}$ )	2.093
	$\phi$ factor	6.760
	Start temperature ( $^{\circ}\text{C}$ )	40
	End temperature ( $^{\circ}\text{C}$ )	309.50
	Temperature increment (K)	5
	Waiting time (min)	–
	Searching time (min)	10
	Exothermic threshold ( $\text{K min}^{-1}$ )	0.02
	Logging intervals ( $^{\circ}\text{C}$ )	1.0
	Pressure limit (kPa)	20000
	Atmosphere	Air, atmospheric pressure
Results	$T_o$ , Exothermic temperature ( $^{\circ}\text{C}$ )	96.05
	Self heating rate at $T_o$ ( $\text{K min}^{-1}$ )	0.063
	Pressure at $T_o$ (kPa)	248.2
	Temperature at maximum self heating rate ( $^{\circ}\text{C}$ )	126.85
	Maximum self heating rate ( $\text{K min}^{-1}$ )	297.28
	Pressure at maximum self heating rate (kPa)	1522
	Pressure rising rate at maximum self heating rate ( $\text{kPa min}^{-1}$ )	-3846.4
	Maximum pressure (kPa)	1449
	Maximum pressure rising rate ( $\text{kPa min}^{-1}$ )	40962
	Temperature at maximum pressure rising rate ( $^{\circ}\text{C}$ )	107.24
	Time to maximum rate (min)	4.84
	Maximum temperature ( $^{\circ}\text{C}$ )	137.79
	Adiabatic temperature rise ( $^{\circ}\text{C}$ )	41.74

	Activation energy (kJ mol <sup>-1</sup> )	746.4
	Heat of decomposition (J g <sup>-1</sup> )	590.7
Corrected results	T <sub>ARC</sub> , Exothermic temperature (°C)	88.7
	Time of maximum rate at T <sub>ARC</sub> (min)	—
	Self heating rate at T <sub>ARC</sub> (K min <sup>-1</sup> )	0.02
	Maximum self heating rate (K min <sup>-1</sup> )	2.90 × 10 <sup>35</sup>
	Maximum temperature (°C)	396.9
	Adiabatic temperature rise (°C)	300.8
	Heat of decomposition (J g <sup>-1</sup> )	629.6