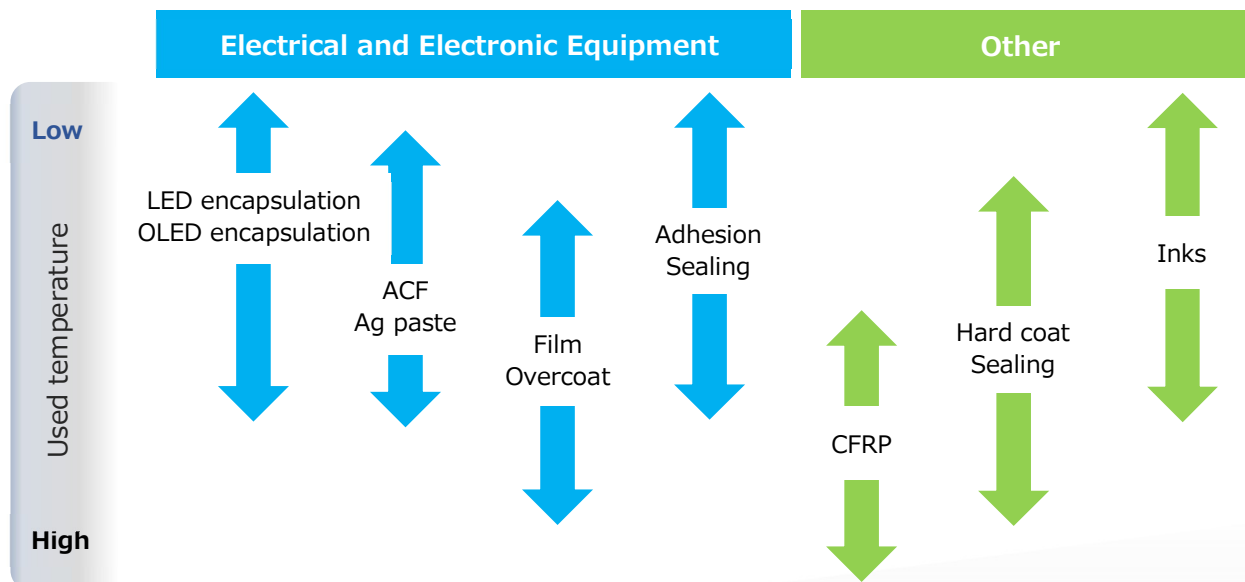


SAN-AID SI series

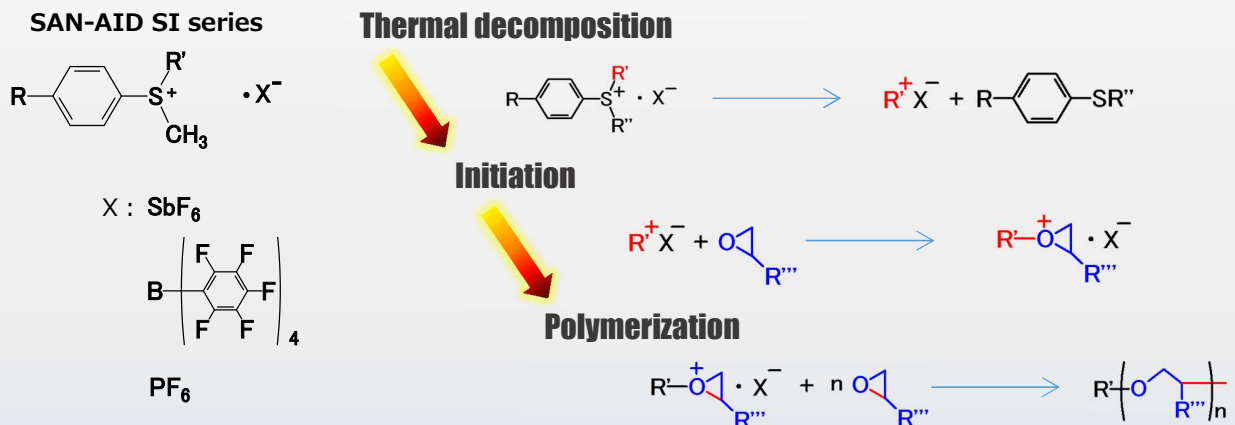
Cationic polymerization Initiator

Profile

- Cured epoxy resin with small amount.
- Desirable as thermal or UV cure. (UV curable with low activity)
- One-part thermosetting type with long pot life.
- Facilitate the process of B-stage.
- Prebaked resin with high stability.
- Hardened sample has high transparency.
- Sb free initiator. (Anion type : Borate, PF6)

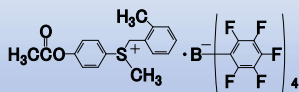


Polymerization reaction

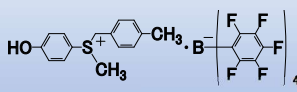


SAN-AID SI series

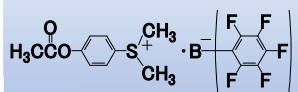
SAN-AID SI-B2A



SAN-AID SI-B7



SAN-AID SI-B5



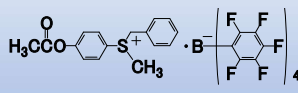
Low temperature

Anion type:

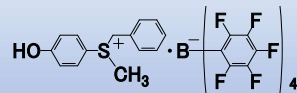
Borate

High temperature

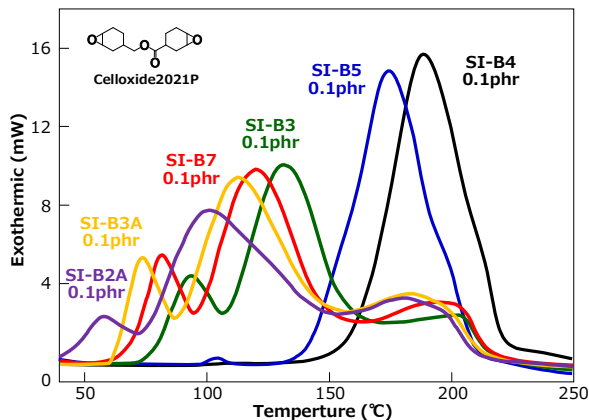
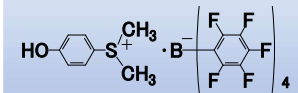
SAN-AID SI-B3A



SAN-AID SI-B3



SAN-AID SI-B4

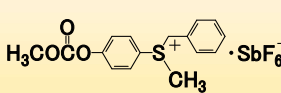


DSC curves : Celloxide2021P / SAN-AID SI (GBL solv.)= 100 / 0.1

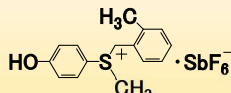
Reflow test (Celloxide2021P) SI-B3 0.01phr



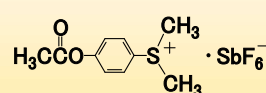
SAN-AID SI-45



SAN-AID SI-80



SAN-AID SI-150



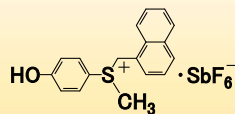
Low temperature

Anion type:

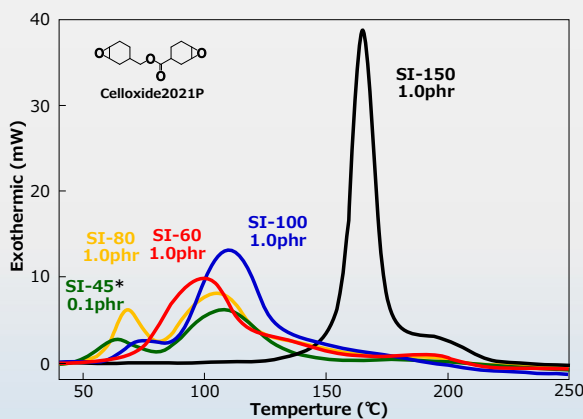
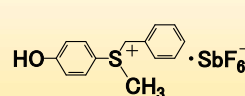
SbF6

High temperature

SAN-AID SI-60



SAN-AID SI-100



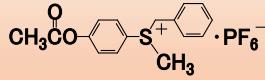
DSC curves : Celloxide2021P / SAN-AID SI (GBL solv.)= 100 / 1.0 * SI-45 : 0.1phr

Reflow test (Celloxide2021P) SI-100 1.0phr

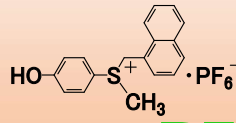


SAN-AID SI series

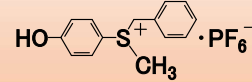
SAN-AID SI-300



SAN-AID SI-360



SAN-AID SI-110

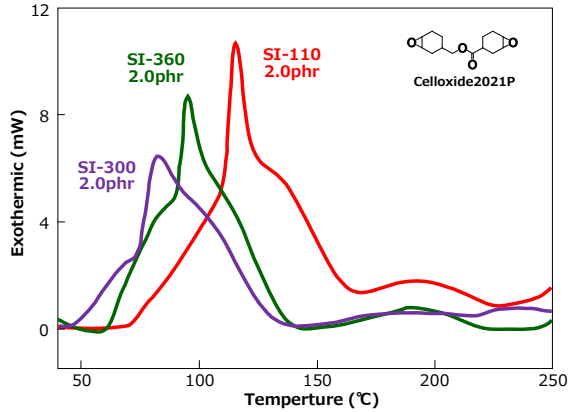


Low temperature

Anion type:

PFG

High temperature



Reflow test (Celloxide2021P) SI-300 2.0phr



DSC curves : Celloxide2021P / SAN-AID SI (GBL solv.)= 100 / 2.0

Desirable materials for SAN-AID SI

Materials	Desirable	Undesirable
Resin	Epoxy Bisphenol A type Alicyclic type Norborene type Vinyl ether type	Epoxy Nitrile degeneration Glycidyl amine type Polysulfide type
Dilution solvent	Ether, Ester, Acetal Non-polar solvent	Alcohol, Ketone Polar solvent (DME, NMP)
Filler	Talc Clay Mica Quartz powder Zinc powder	Calcium carbonate Titanium oxide Barium sulfate Zinc oxide Magnesium oxide
Surface-treatment silica	Vinyl-silane modified Epoxy-silane modified	Amino-silane modified Mercapto-silane modified
Photosensitizer	ANTHRACURE series (Kawasaki kasei chem.,LTD)	Amine type Thiol type
Antioxidant/Stabilizer	Phenol type Benzotriazole type Benzophenone type	Amine type

Initiator solvent effect

Solvent	Cross-linking temp.
GBL (γ-Butyrolactone)	139.1°C
PGE (Phenyl glycidyl ether)	128.8°C
AcOEt (Ethyl acetate)	128.5°C
PC (Propylene carbonate)	129.1°C
PMA (Propyleneglycol mono-methylethacetate)	135.4°C

DSC curves : jER828/SAN-AID SI/Solv.= 100/1.0/1.0

