

## NBDA

Bicycro[2.2.1]heptanebis(methylamine), cas 56602-77-8

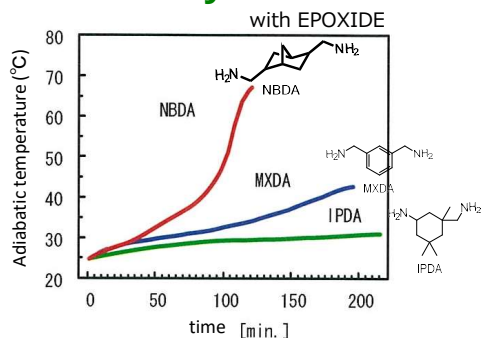


## Workability

Following evaluations are not guaranteed exactly

- **safety**: NOT VOC compound (Low vapor pressure <1Pa @ 20°C, non-GLP)
- **handling**: EASY by both low viscosity 20mPa·s @ 20°C and low solid point <10°C

## Reactivity



Epoxide: jER828 (Mitsubishi Chemical Holdings)  
Reaction ratio (Amino group/Epoxy group: 1.0 (mole ratio) as 100g

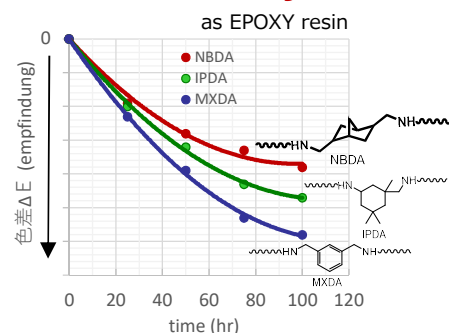
## Chemical resistance

NBDA as EPOXY resin

CHEMICALS	IMMERSION test
Water	◎ NO change
10%-NaOH (aq)	◎ NO change
5%-HCl (aq)	◎ NO change
5%-NaCl (aq)	◎ NO change

test condition: A week at room temperature  
Epoxide: jER828 (Mitsubishi Chemical Holdings)  
Reaction ratio (Amino group of NBDA/Epoxy group: 1.0 (mole ratio), cured by 80°C×2hrs and 120°C×2hrs.

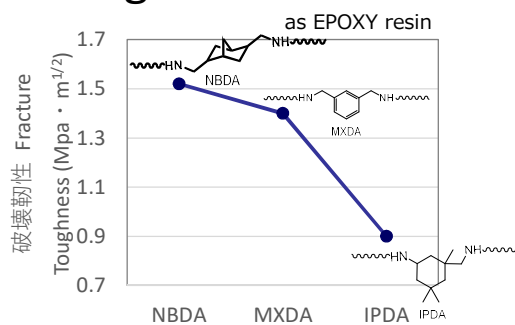
## Weatherability



test condition: UV-irradiation 8hrs and showering 4hrs were repeated  
Epoxide: jER828 (Mitsubishi Chemical Holdings)  
Reaction ratio (Amino group/Epoxy group: 1.0 (mole ratio), cured by 80°C×2hrs and 120°C×2hrs.

## Toughness

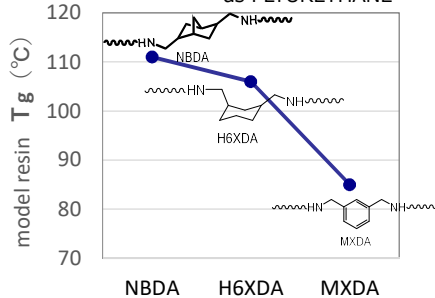
ASTM D5045-91



Epoxide: jER828 (Mitsubishi Chemical Holdings)  
Reaction ratio (Amino group/Epoxy group: 1.0 (mole ratio), cured by 80°C×2hrs and 120°C×2hrs.

## Thermal resistance

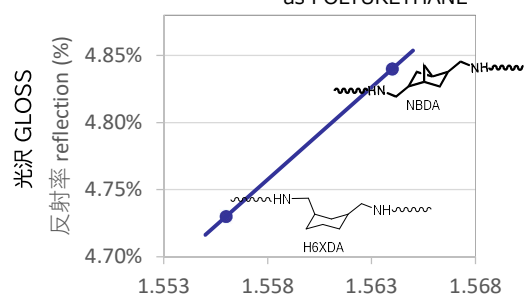
as PLYURETHANE



Model resin having URETHANE bond

## Gloss (reflection)

as POLYURETHANE



屈折率 reflective index of model resin

片面反射率 REFLECTION one-side =  $\{(n_0 - n_1) / (n_0 + n_1)\}^2 \times 100 (\%)$

## Guiding applications

## Concrete repair



## Plant coating



## Anti-corrosion



## Wind power generation



Fiber Reinforced Plastic

## Form Urethane/Urea



## Sealant



## Floor-coating



## Ship inner face coating



## Electron board



CCL(Copper Clad Laminate)