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Durability test of Poly-Ethylen-Terephthalate (PET) film for Backsheet

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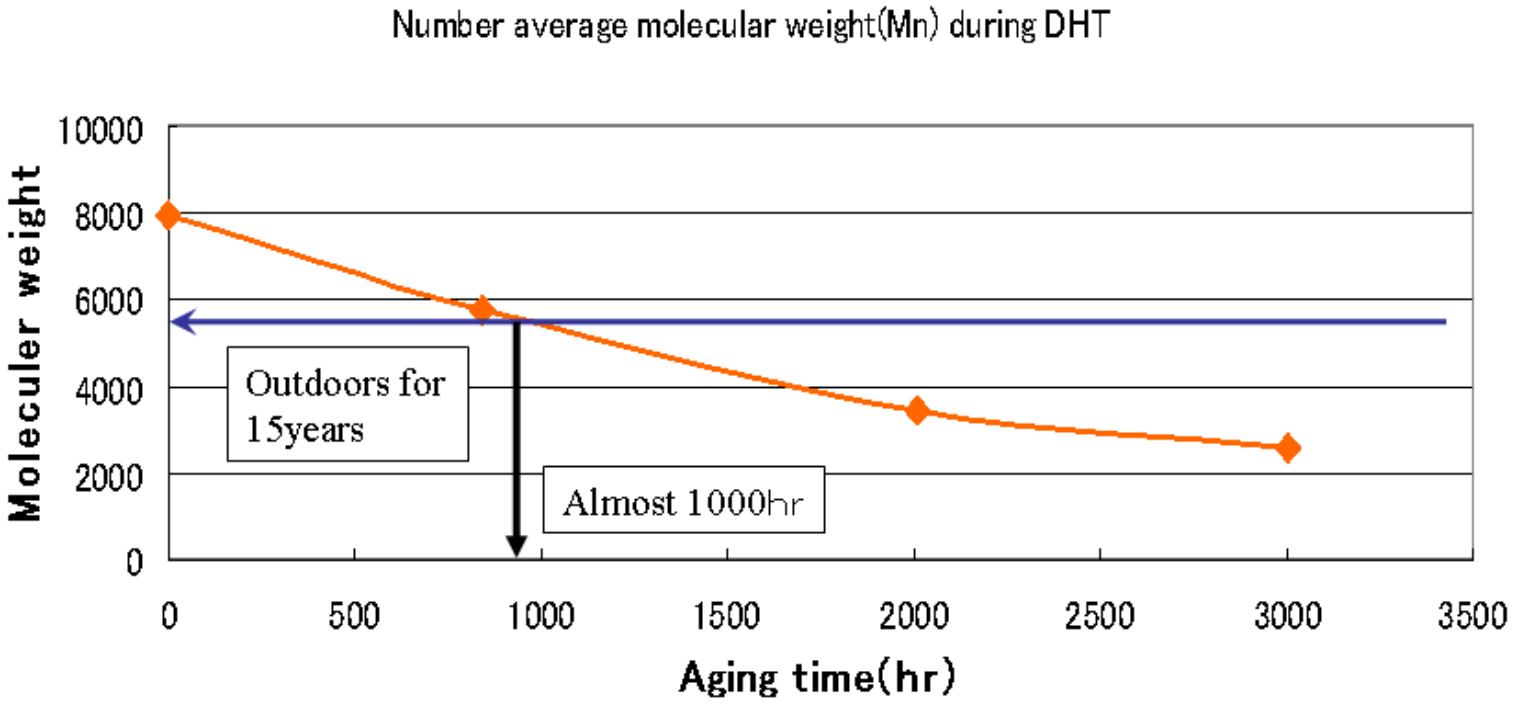

Fig.1 Molecular weight of typical PET film after DHT
Test conditions; 85deg.C 85%RH

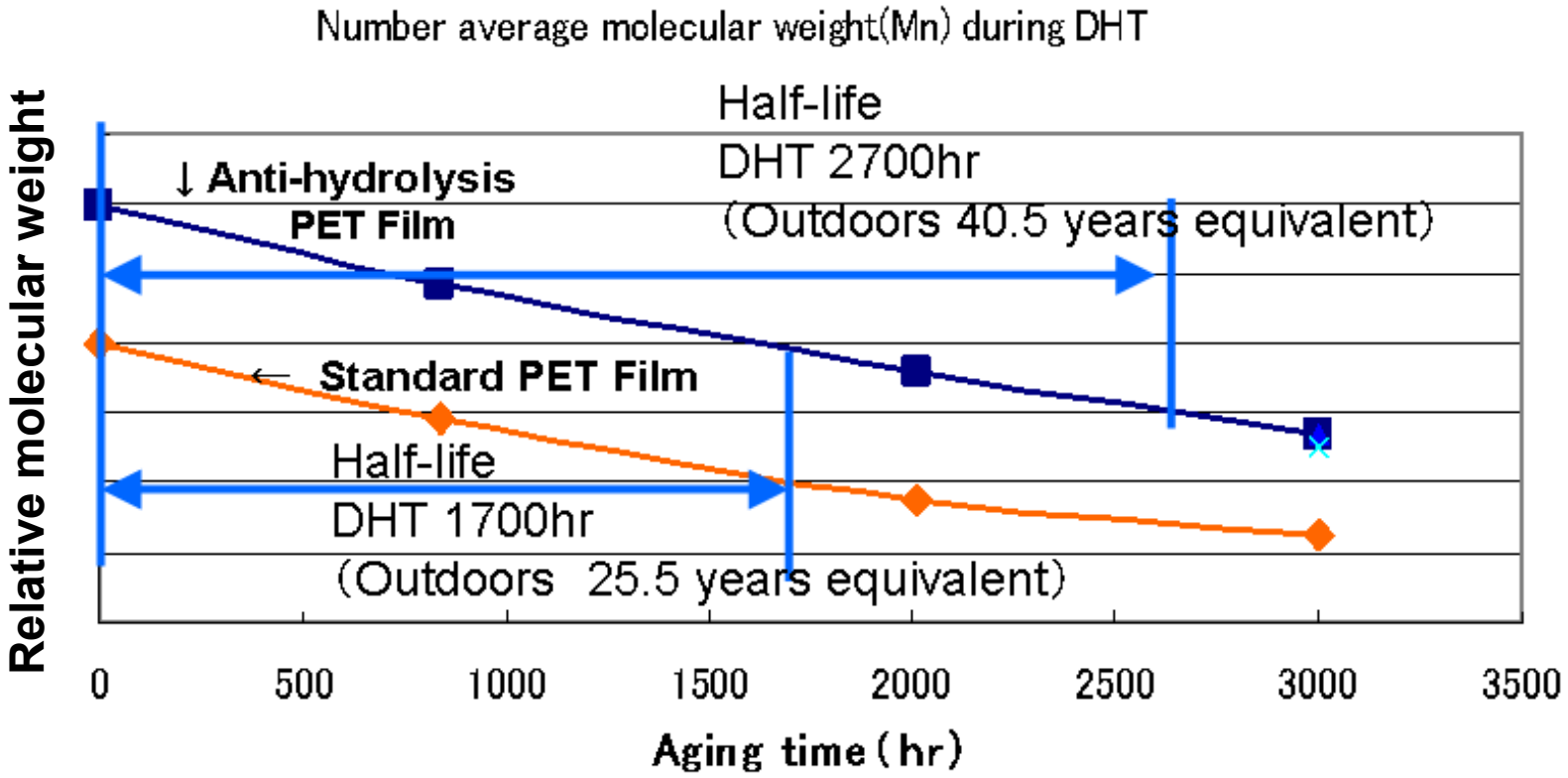

Fig.2 molecular weight half-life model for PET films

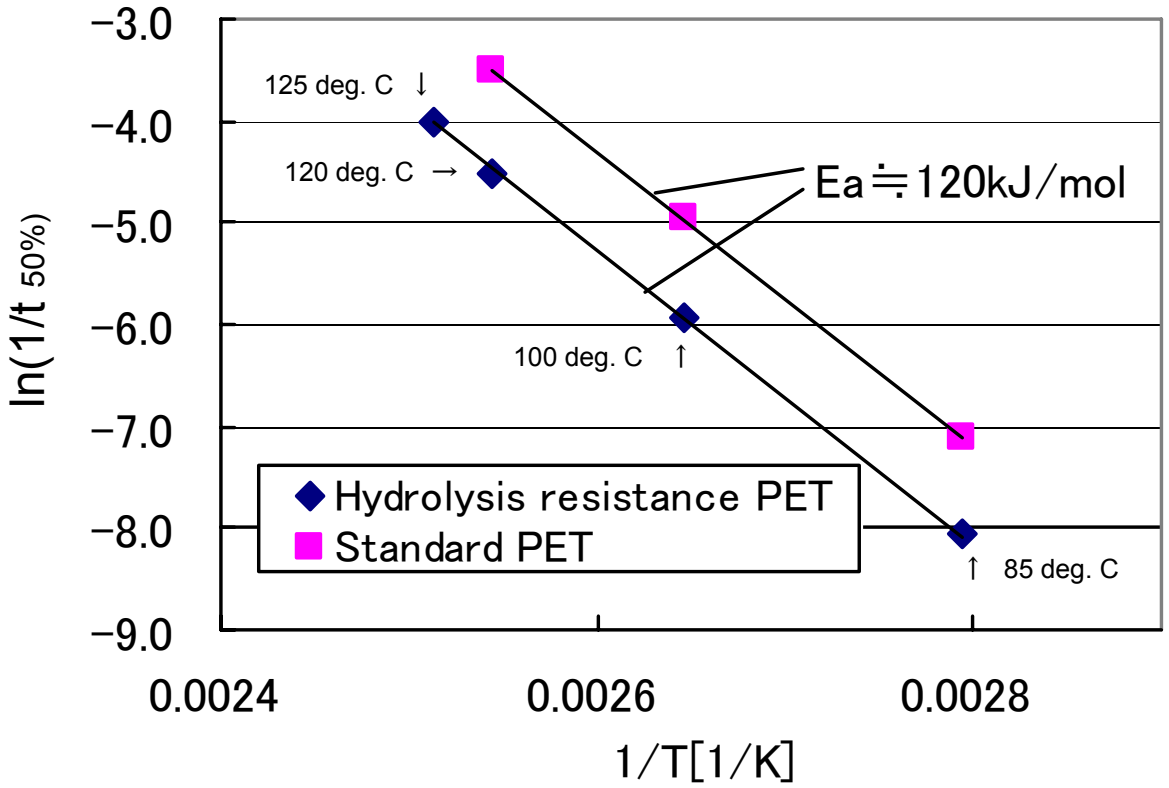

Fig.3a Arrhenius plot of elongation at break (Half-life) of PET films

DHT：85deg. C 85%RH ,

PCT：105deg, C 100%RH, 120deg.C 100%RH and 125deg. C 100%RH

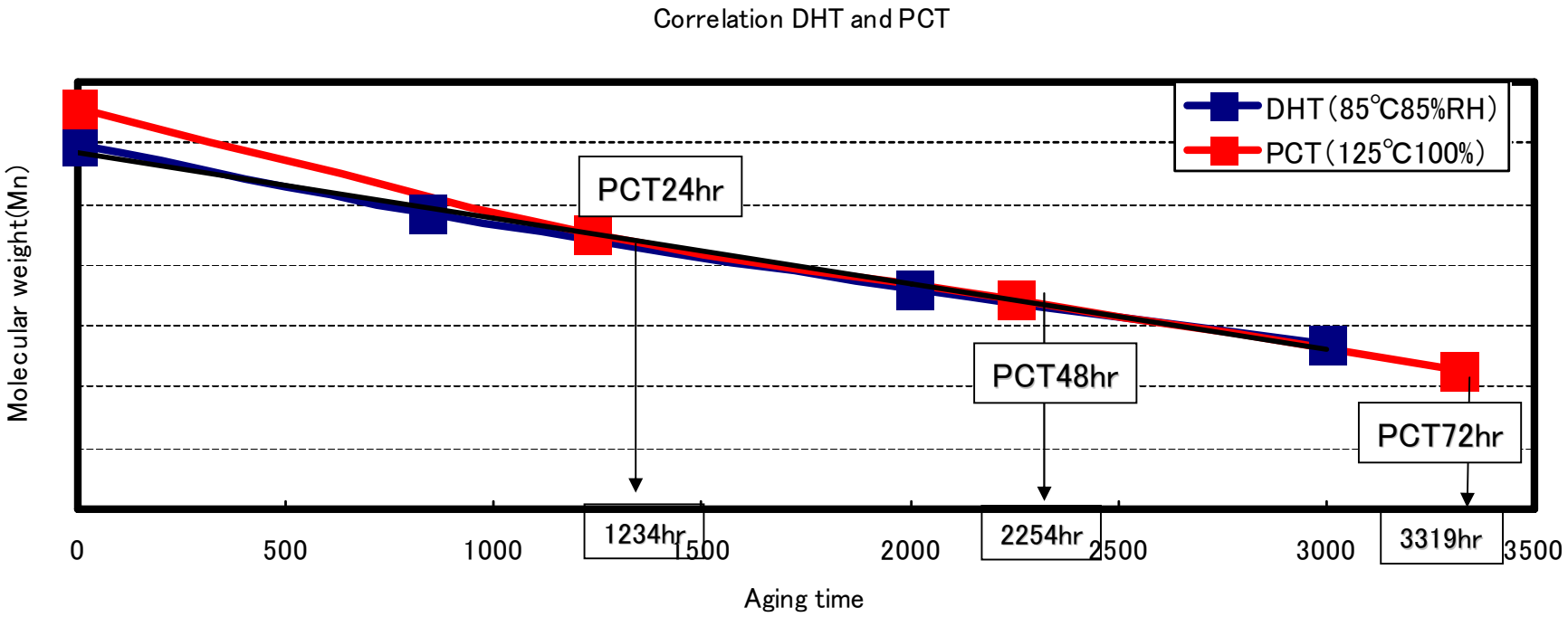

Fig.3b Correlation between DHT and PCT

Conditions; DHT：85deg. C 85%RH ,
PCT：125deg. C 100%RH in 2.5atm.

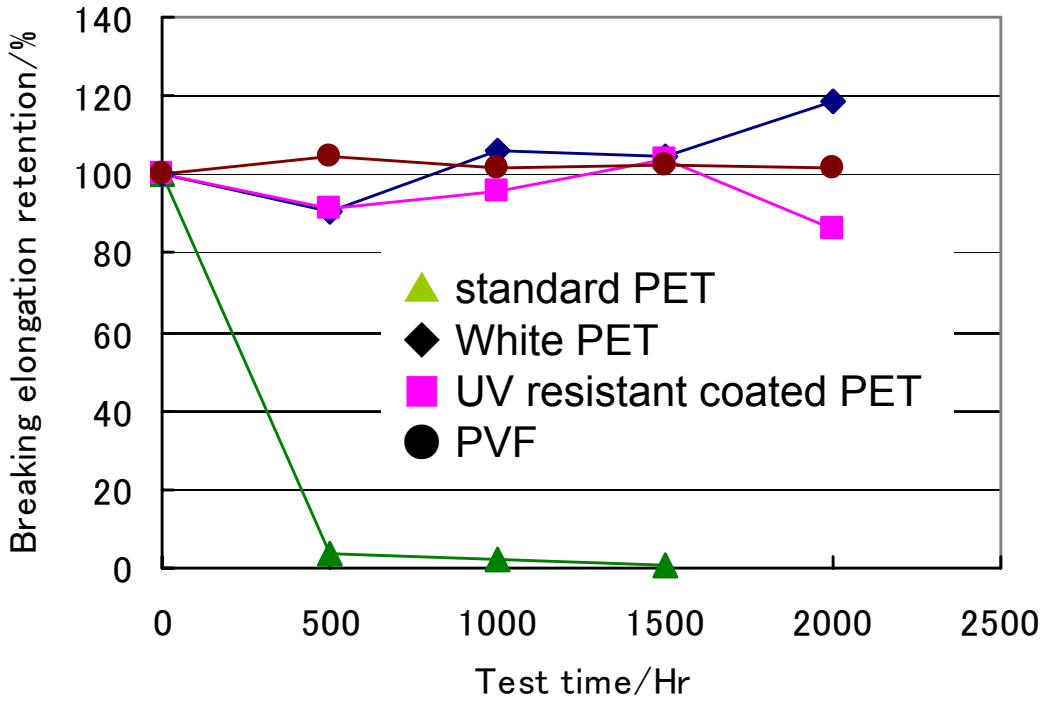

Fig.4. Elongation at break after xenon lamp irradiation

Light Intensity 60W/m2
Black Panel temperature 60deg. C
Relative Humidity 50%RH

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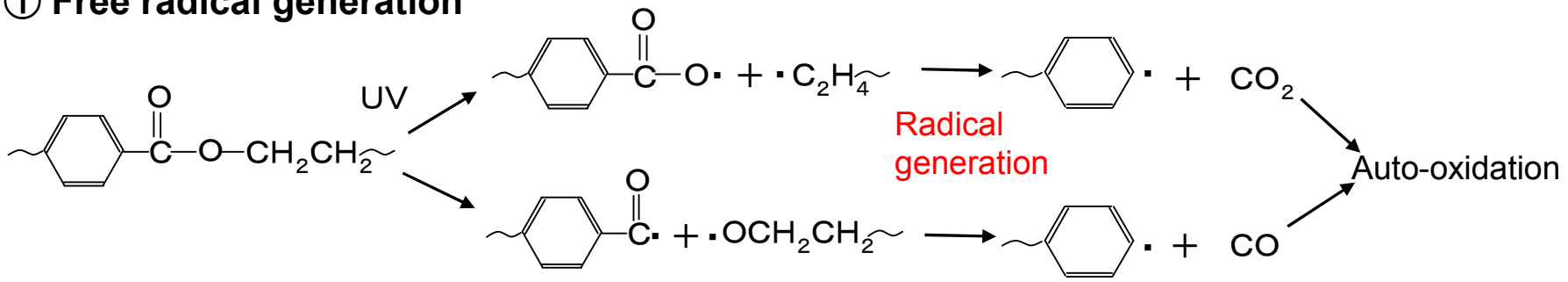
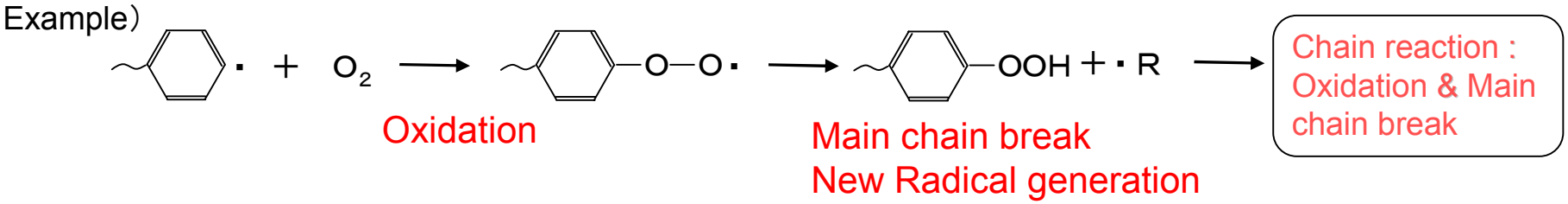
Degradation mechanism by UV light

【Norrish Ⅰ Type】 ～ Free radical generation & Auto-oxidation ～

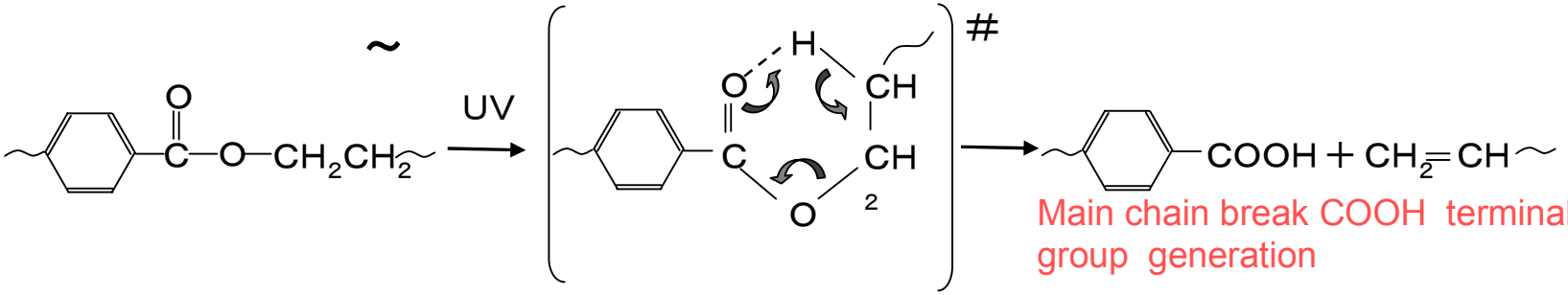
① Free radical generation



②Chain reaction of oxidation : Auto-oxidation



【Norrish Ⅱ Type】 ～ COOH terminal group generation



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Hydrolysis mechanism of the PET

【Proton dissociation of the terminal group】w

【Hydrolysis reaction】

【New terminal group generation】w