Synthesis and Properties of Aromatic Heat-resistant Resin.

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1. Introduction.

In making to electronics in the car technology, at first, the optimum control theory in the engine-system for the exhaust gas countermeasure was a center. Afterwards, it has developed into the safety and the comfortable control system, and telecommunication system for the navigation system. The high performance and low-cost various sensors are requested for these systems. This research examined the relation of physical properties of the high heat-resistant resin and the friction characteristic of the resister type sensor

2. Result.

2-1 Synthesis of the aromatic heat-resistant resin.

We have developed the high heat-resistant and moisture stability resin for an automotive sensor under the design concept of figure 1.
Acetylene terminated Poly(ether ketone) (PEK) was synthesized by the aromatic nucleophilic reaction of fluorine-terminated monomer and 3-ethynylphenol using anhydrous potassium carbonate as base.

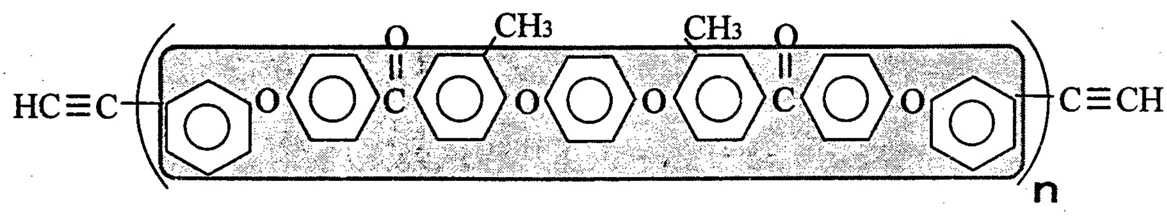

Fig. 1 Molecular Design

2-2. Relation of the curing temperature and the heat-resisting property.

. The relation between the curing temperature and the heat-resisting property is shown in figure 2. The thermolysis temperature rises by the curing temperature of the product. The product shows an almost linear relation though a market polyimide resin rapidly decreases weight at 600℃ or more. It has been understood that the temperature of the weight loss on heating of 90% is 750℃ high.

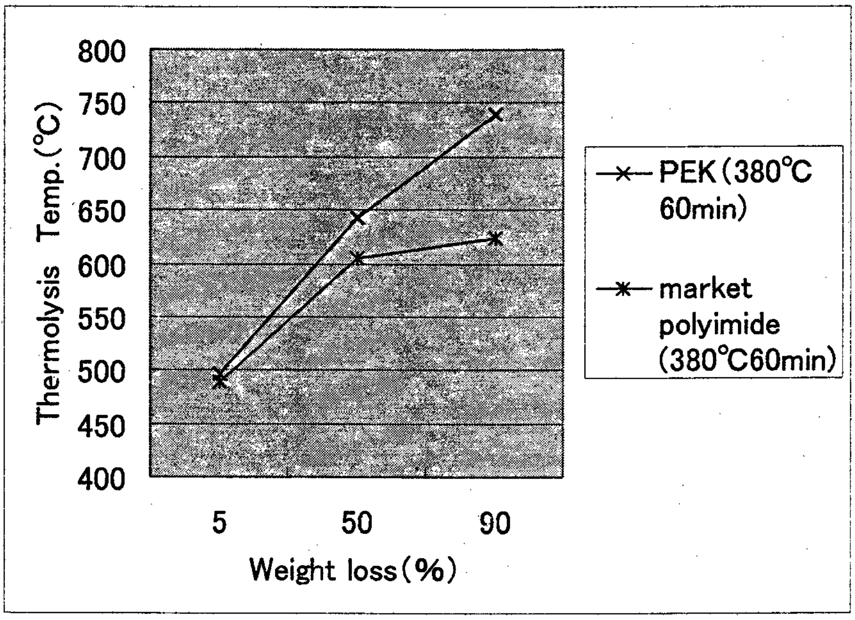

Fig.2 The relation of the thermolysis temperature and the weight loss on heating.

The thermolysis temperature and the curing time in 5% weight loss on heating are shown in figure 3. The thermolysis temperature and the curing time show a straight line relation. This result shows that the curing reaction of the product progresses at the curing time. The curing reaction of the terminated acetylene group have formed the structure of a linear and three dimensions.

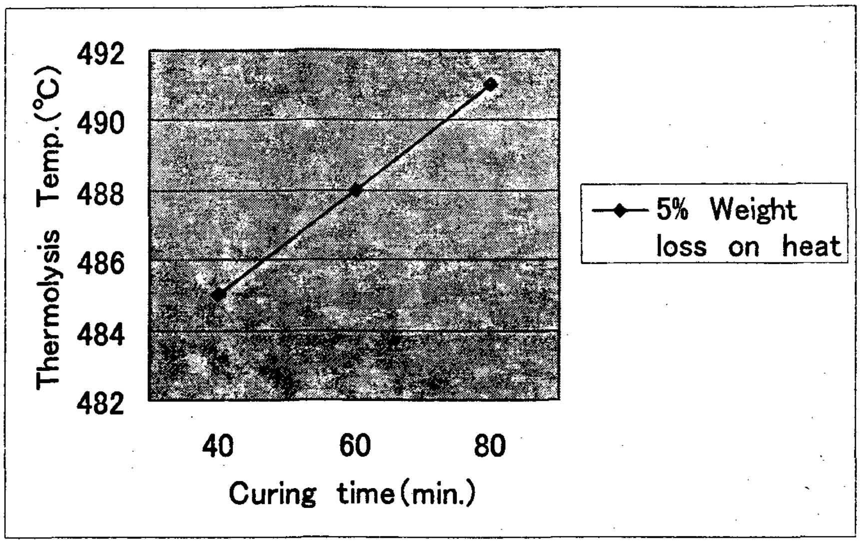

Fig.3 The relation of the thermolysis temp. and the curing time.

3. Conclusion

It was actually different that the friction characteristic under the high temperature was advantageous like the resin that a heat-resistant temperature is high. It has been understood that the reason is to remain the stress when the curing reaction. We will discuss in details with the relation between physical properties and the friction characteristic of the product.