

**KES**

Analysis of Nylon Resin  
by Gas Chromatograph.

KES T – M063

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## 1. Scope of application

This standard shall prescribe quantitative analysis of nylon resin element and grade.

## 2. Equipment

(1) Gas chromatograph (Hereinafter referred as G.C.)

(2) Pyrolysis

## 3. Analysis condition

### 3.1 Column

(1) Length and inner diameter : 2 m × 3 φ

(2) Charge material : PEG 20 m 10 wt (%)

(3) Support : Shimatite

(4) Support Taoist : 60 ~ 80 mesh

(5) Temperature of column : 50 ~ 220 °C

(6) Raising rate of temperature of column : 15 °C / min

### 3.2 Detector

(1) Sort : FID

(2) Range :  $10^3$

(3) Attenuation : 5

(4) Temperature : 230 °C

### 3.3 Carrier gas.

(1) Sort : HE

(2) Flow rate : 50 ~ 50 mL / min

(3) H<sub>2</sub> flow amount : 0.6 kg / cm<sup>2</sup>

(4) Air flow amount : 0.5 kg / cm<sup>2</sup>

3.4 Others

- (1) Injecting temperature : 230 °C
- (2) Chart speed : 5 mm / min
- (3) Amount of sample : 0.43 mg
- (4) Pyrolysis temperature : 590 °C × 10 sec

4. Operation

- (1) Control G.C and pyrolysis according to condition of (3) phrase.
- (2) Put sample 0.43 mg to pyrolysis club for pyrolysis for 10 seconds then operate GC.  
In this operate recorder together.
- (3) 40 minutes is to be ending hour after analysis.

5. Report

Report consistency of each element or grade of nylon according to figure1, 2, 3, 4 and table 1 of analysis result.

Table 1 Main consistency and peak time.

| Grade    | Peak time(Min.) | Element                  | Structure formula                                                                                                  |
|----------|-----------------|--------------------------|--------------------------------------------------------------------------------------------------------------------|
| Nyoln 6  | 13.75 ~ 13.90   | Caprolactam              | $\begin{array}{c} \text{CH}_2-\text{CH}_2-\text{CH}_2 \\ \text{CH}_2-\text{CH}_2-\text{CO} \end{array} \text{>NH}$ |
| Nyoln 66 | 4.95 ~ 5.05     | Cyclopentamone           |                                                                                                                    |
| Nyoln 11 | 11.25 ~ 11.44   | C <sub>11</sub> -Nitrile |                                                                                                                    |
| Nyoln 12 | 12.15 ~ 12.25   | C <sub>12</sub> -Nitrile |                                                                                                                    |