

KES

Analysis for Hydro Carbon
Type in Petroleum Products

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1. Scope of Application

This standard shall specify the method to measure saturated hydrocarbon (Hereinafter referred to as saturated powder) along anti-directional olefin hydrocarbon (Hereinafter referred to as olefin) and along directional hydrocarbon (Hereinafter referred to as directional powder) among the out-flowed petroleum products below 316 °C.

Remark Chemicals, which consist of directional olefin hydrocarbon, de-olefin hydrocarbon, sulfur, nitrogen or oxygen, are determined as a directional powder.

2. Summary of Test Method

0.75 ml of specimen is inserted to the absorbing pipe, which is filled by minute silica gel and silica gel with absorbing small amount of fluorescent dyes. Then, the specimen is taken off by adding isopropyl alcohol and run down to the bottom of absorbing pipe. Hydrocarbon is separated to each film of directional hydrocarbon olefin hydrocarbon and saturated hydrocarbon by the difference of absorption and chemical attraction. Fluorescent dyes are optionally separated as components of hydrocarbon and film boundary of each component is clearly seen under the ultraviolet rays. Each hydrocarbon powder (Volume %) is calculated by measuring the length of each film at the measured region of absorbing pipe.

3. Apparatus

3.1 Absorbing pipe

Glass type of absorbing pipe, whose shape and measurement are shown on figure 1 or 2, is employed. Absorbing pipe is composed of inlet region, neck region, separating region, measuring region and front-end region.

Tapered region inside of absorbing pipe is supposed to be smooth.

Bottom-end of measuring region is slenderized to support the silica gel.

3.1.1 I-type absorbing pipe

Measuring region selects the uniform inner diameter of pipe (¹) and there should be not leak on the connecting region between separating region and measuring region.

Note(¹) According to each measuring region, if the measurement of outer diameter is more than 0.5 mm, then the inner diameter is also considered as non-uniform. Thus, this kind of pipe is prohibited.

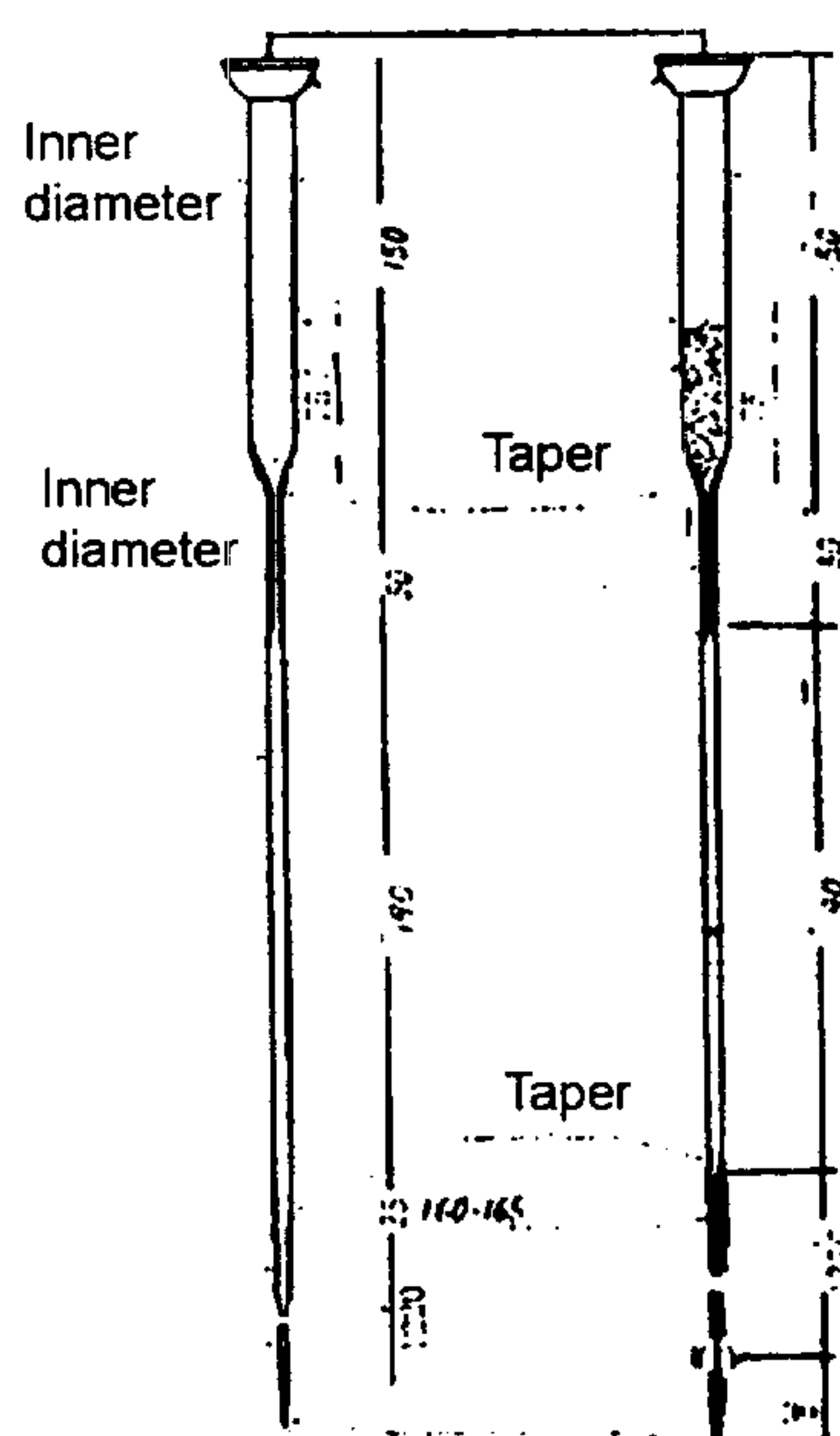
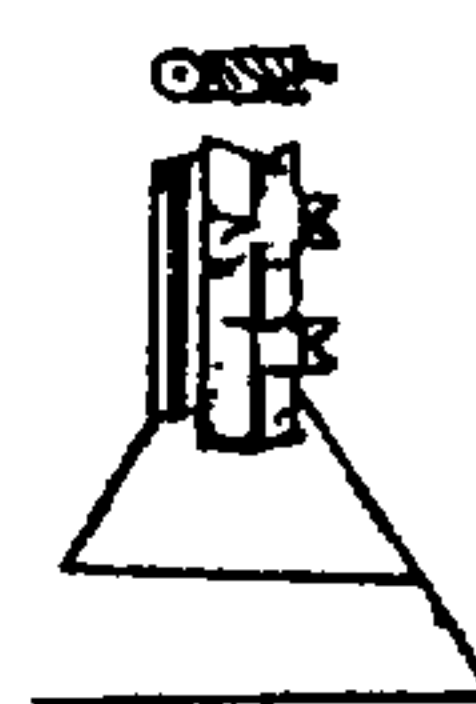
3.2.2 II-type absorbing pipe

The inner diameter of measuring region is 1.00 ~ 1.65 mm. Mercury is inserted in the pipe for length of 100 mm. When this is moved to measure the length, all measuring regions should not have difference of more than 0.3 mm.

3.2 Film length measurer (²)

As shown on figure 3, the length of each film is measured by the gears, which is able to have indication clips on mobile metals.

Note(²) The boundary positions of each film are marked by glass pencil and the length of film is measured by meter ruler with setting the measuring region horizontally.



Unit : mm

Figure 1. I-Type Absorbing Pipe

Figure 2. II-Type Absorbing Pipe

Figure 3. Measurer of Film Length (Example)

3.3 Light source

Normal mercury light or ultraviolet ray on the market (Black light or chemical light), which has approximately 3650 Å, is employed.

A transmitting visible ray should be weak enough not to interrupt the measurement due to the reflection of glass surface on absorbing pipe.

It is convenient to stick one or multi ultraviolet ray light source perpendicularly along the absorbing pipe. At this moment, it is desirable that the length of ultraviolet ray on light source region is 915 mm or 1220 mm. The position of fluorescent light is adjusted to have the optimal view of film boundary for each component.

3.4 Electric vibrator

It is employed to fill the absorbing pipe with the silica gel. It vibrates either each of absorbing pipe or the supporting bar, which multi absorbing pipes are hung.

3.5 Syringe

The syringe bottle with 1 ml of volume of, 0.01 ml or 0.02 ml of minimum notch mark is employed. The length of needle is 100 mm and the outer diameter is 1 mm.

4. Reagent

4.1 Silica gel

Olefin polymerization is not performed as least as possible and the ones, which have passed the sieve test of table, are employed. Prior to the use, silica gel is put on the plate and dried at 175 °C for 3 hours. This hot & dried silica gel is moved to the desiccator and kept out of the moisture in atmosphere.