Carbon number at 5% distillation point

ASTM D 6352 – 04

"Carbon number" is number of carbon atoms in a molecule. Determine the boiling point distribution of the sample by gas chromatography. Individual hydrocarbons are separated on a non-polar open tubular capillary column using a linear temperature program in the order of their increasing boiling points. Detector response for each paraffin shall be close to unity.

Gas chromatography

Column:	Non-polar wall-coated open tubular column (5 m x 0.53 - 0.75 mm, i.d.) stationary phase, 100% dimethylpolysiloxane, 0.1 µm, or equivalent
Carrier gas:	Helium, at a flow rate of 18 ml/min
Detector:	FID; temperature 450˚
Oven program:	50˚ - 10˚/min - 400˚
Injector:	On-column or temperature programmable vaporizing injector.
Injection volume:	0.5 µl
Calibration mixture:	Prepare a mixture of hydrocarbons with known boiling points covering the range of the sample (e.g. from C10 to C90). Each component should be present at approximately 0.5 - 2.0%, dissolved in a suitable viscosity-reducing solvent such as carbon disulfide or cyclohexane.

Procedure:

Column resolution: Resolution is determined using C50 and C52 paraffins from a calibration mixture. Resolution shall be between 2 and 4 for satisfactory column performance.

Sample analysis: Using the schedule and temperature program used for the calibration mixture, cool the column and injector to the initial starting temperature. Inject the sample, diluted to approximately 1% in Carbon disulfide or hexane, and record the chromatogram. Inject a baseline blank, standard mixtures and samples in a predetermined order. Use the baseline blank to determine baseline drift and perform baseline subtraction from runs of samples and standards.

Calculation: Collect data, calculate the sample total area, normalise to area percent after background subtraction. Determine the initial and final boiling points by calculating 0.5% and 99.5% of the area counts, respectively. Use linear interpolation to determine the retention time associated with 5% and read the corresponding boiling temperature from the calibration curve.