ACETONE

Prepared at the 51st JECFA (1998), published in FNP 52 Add 6 (1998) superseding earlier specifications prepared at the 14th JECFA (1970), published in NMRS 48B (1971) and republished in FNP 52 (1992). ADI "limited by GMP", established at the 14th JECFA in 1970.

SYNONYMS Dimethylketone, propanone

DEFINITION

Chemical names	Propan-2-one
C.A.S. number	67-64-1
Chemical formula	C_3H_6O
Structural formula	CH_3COCH_3
Formula weight	58.08
Assay	Not less than 99.5% (w/w)

DESCRIPTION Clear, colourless, volatile, highly flammable liquid with a characteristic odour; free from sediment and suspended matter

FUNCTIONAL USES Extraction solvent, flavouring agent (see "Flavouring agents" monograph, JECFA no. 139)

CHARACTERISTICS

IDENTIFICATION

Solubility	Miscible in all proportions with water and with ethanol
Specific gravity (Vol. 4)	d^{20}_{20}: 0.790 - 0.793
Refractive index (Vol. 4)	n^{20}_{D}: 1.358 - 1.360

PURITY

Distillation range (Vol. 4)	55.5 - 57.0^{o}
Non-volatile residue (Vol. 4)	Not more than 0.001% (w/w)
Acidity	Not more than 0.002% (w/w) (calculated as acetic acid) See description under TESTS
Phenol	Not more than 0.001% (w/w) Place 3 ml of the sample in a crucible and evaporate to dryness at 60^{o}, add 3 drops of a solution of 0.1 g sodium nitrite dissolved in 5 ml of sulfuric acid and allow to stand for 2-3 min. Carefully add 3 ml 2 N sodium hydroxide. No colour is produced.
Readily oxidizable substances	30 ml of the sample does not discolour 0.1 ml of 3% m/v freshly prepared aqueous potassium permanganate solution when shaken and allowed to

stand at 20° for 15 min.

TESTS

PURITY TESTS

Acidity

Place 100 ml of freshly boiled and cooled distilled water (neutralized to phenolphthalein TS) and a few antibumping granules in a 500 ml conical flask of boro-silicate glass and boil gently for 5 min to eliminate carbon dioxide. Cool slightly and add 100 ml of the sample. Boil gently for a further 5 min. Then seal the flask with a stopper carrying a soda-lime tube and allow to cool. When cold remove the stopper, add 0.5 ml phenolphthalein TS and examine for alkalinity: if not alkaline titrate with 0.1 N sodium hydroxide solution using a micro-burette.
Calculate the acidity as acetic acid (%, w/w) from

$$\% \text{ acidity} = \frac{6 \times T}{d \times 1000}$$

where
T = volume (ml) of 0.1 N sodium hydroxide solution consumed
d = specific gravity of the sample.

METHOD OF ASSAY

Weigh accurately about 1 g of the sample in a flask containing 20 ml of water, and add water to 1,000 ml. Place 10 ml of the solution in a glass stoppered flask, add 25 ml of sodium hydroxide TS, and allow to stand for 5 min. Add 25 ml of 0.1 N iodine, stopper, allow to stand in a cold and dark place for 10 min, and add 30 ml of 1 N sulfuric acid. Titrate the excess iodine with 0.1 N sodium thiosulfate, using starch TS as the indicator. Perform a blank test in the same manner as the sample and make any necessary correction. Each ml of 0.1 N iodine is equivalent to 0.9675 mg of C_3H_6O.