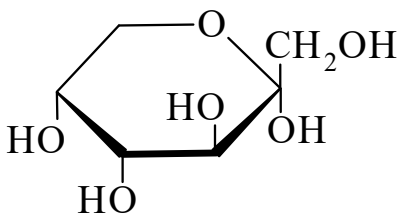
>>**Entry Name: Fructose,** 9CI, 8CI
ENTRY UNDER REVIEW
Synonym(s): Levulose. *arabino*-Hexulose. Fruit sugar. Laevulose. α-Acrose



a-D-Pyranose-*form*

CAS Registry Number: 30237-26-4
Related CAS Registry Numbers(s): 8013-17-0 25339-99-5 27195-16-0 41579-20-8 41612-84-4 41847-51-2 92691-79-7 92691-80-0

Molecular Formula: $C_6H_{12}O_6$
Molecular Weight: 180.157
Accurate Mass: 180.06339
Percentage Composition: C 40.00%; H 6.71%; O 53.28%
General Statement: α-Acrose was apparently an old synonym for the racemate

>>**Variant:** D-form

CAS Registry Number: 57-48-7

Molecular Formula: $C_6H_{12}O_6$
Molecular Weight: 180.157
Accurate Mass: 180.06339
Percentage Composition: C 40.00%; H 6.71%; O 53.28%
General Statement: An aq. soln. at 30°C contains 2% α-pyr, 70% β-pyr, 5% α-fur, 23% β-fur, and 0.7% ketone
Biological Source: Occurs in honey, a large number of fruits, particularly apples and tomatoes, and detected in bull and human semen. Present in polymeric form in the inulins, the energy reserve polysaccharides of many plants, e.g. dahlia and Jerusalem artichoke tubers, and in Levan BVJ72-P which is found in grasses. Sucrose consists of fructofuranose glycosidically linked to the anomeric centre of D-glucopyranose. Prepd. on large scale from invert sugar (hydrol. prod. of sucrose with dil. acid) or hydrolysed natural inulins. Fructose can be separated from glucose by precipitation of its Ca salt complex. Inulin from dandelion roots has also been used as a source
Use/Importance: Fluid and nutrient replenisher, nutritive sweetener
Melting Point: Mp 102-104°
Optical Rotation: $[\alpha]_D$ –133.5. $[\alpha]_D$ –92.4 (c, 4 in H_2O)
pKa Value: pK_{a1} 12.03 (25°)
Other Data: Sweetness =0.84 x sucrose (sometimes stated to be sweeter than sucrose)
Hazard & Toxicity: Gastrointestinal effects by ingestion (large dose)
Aldrich: 14092-9
Fluka: 47740
Sigma: F2543
Supelco: R42-2110

>>**Derivative:** *p*-Nitrophenylhydrazone

Melting Point: Mp 180-181°

>>**Derivative:** Anilide

Melting Point: Mp 147°
Optical Rotation: $[\alpha]_D$ –194 (EtOH)

>>**Derivative:** 1,3,4,5,6-Penta-Ac
Synonym(s): 1,3,4,5,6-Penta-*O*-acetyl-D-fructose

CAS Registry Number: 6341-07-7

Molecular Formula: $C_{16}H_{22}O_{11}$
Molecular Weight: 390.343
Accurate Mass: 390.116215
Percentage Composition: C 49.23%; H 5.68%; O 45.09%
Melting Point: Mp 68-69°
Optical Rotation: $[\alpha]_D$ +34.8 ($CHCl_3$)