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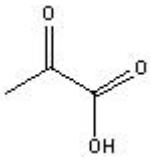
# TECHNICAL INFORMATION

Catalog Number: 102782, 102785, 102926, 1682049, 194734, 199011
**Pyruvic acid**

**Structure** (free acid)**:**



| | *Free acid* | *Sodium Salt* | *Potassium Salt* |
|---|---|---|---|
| **Molecular Formula:** | $C_3H_4O_3$ | $C_3H_3O_3Na$ | $C_3H_3O_3K$ |
| **Molecular Weight** | 88.1 | 110.04 | 100.0 |
| **CAS #** | 127-17-3 | 113-24-6 | 415-33-1 |
| **Physical Appearance:** | Yellowish liquid | | |
| | | | White powder |
| **Density** | ~1.267 g/ml | n/a | n/a |

**Synonyms:**

*Free Acid:* a-Ketopropionic acid; 2-Oxopropionic acid; Acetylformic acid; Pyroracemic acid; Brenztraubensure

*Sodium Salt:* Sodium a-Ketopropionic acid; Sodium 2-Oxopropionic acid; Sodium Pyruvate

*Potassium Salt:* Potassium a-Ketopropionic acid; Potassium 2-Oxopropionic acid; Potassium Pyruvate

**Solubility:**

*Free Acid:* Miscible with water, ethanol or ether. Polymerizes and decomposes on standing unless kept pure and in a container with an airtight closure.1

*Sodium Salt:* Soluble in water (1 M [110 mg/ml] - clear, colorless solution).

*Potassium Salt:* Soluble in water (1 M [100 mg/ml] - clear, colorless solution).

**Formulation (for 16820):**

| ***Component*** | ***mg/liter*** | ***Mol. Wt.*** | ***Mol. (mM)*** |
|---|---|---|---|
| Sodium Pyruvate | 11004.00 | 110 | 100.0 |

**Description:** An intermediate in sugar metabolism and in enzymatic carbohydrate degradation (alcoholic fermentation) where it is converted to acetaldehyde and $CO_2$ by carboxylase.[1] In muscle, pyruvic acid (derived from glycogen) is reduced to lactic acid during exertion, which is reoxidized and partially retransformed to glycogen during rest.[1] Improves coliform recovery when present in culture medium.[4] Involved in a metabolic regulatory pathway activated by mitochondrial oxidants.[7] Pyruvate is

involved in respiratory regulation in plants by interacting with alternative oxidase at a conserved cysteine residue.[3] May help prevent hydrogen peroxide mediated cell death.[6]

**Availability:**

| Catalog Number | Description | Size |
|---|---|---|
| 102782 | Pyruvic acid, free acid, purity approximately 95% | 10 g<br>25 g<br>100 g<br>500 g |
| 102785 | Pyruvic acid, free acid, technical grade, purity approximately 75-80% | 25 g<br>100 g<br>250 g<br>500 g |
| 102926 | Pyruvic acid, sodium salt, purity approximately 99% | 5 g<br>25 g<br>100 g<br>500 g |
| 194734 | Pyruvic acid, sodium salt, cell culture reagent, purity approximately 99% | 25 g<br>100 g<br>500 g |
| 1682049 | Sodium Pyruvate, 100 mM solution (11 mg/ml water) | 100 ml |
| 199011 | Pyruvic acid, potassium salt | 5 g<br>25 g<br>100 g<br>500 g |

**References:**


– *Merck Index*, **12th Ed.**, No. 8205.
– Alexeeva, S., de Kort, B., Sawers, G., Hellingwerf, K.J. and de Mattos, M.J., "Effects of limited aeration and of the ArcAB system on intermediary pyruvate catabolism in *Escherichia coli*." *J. Bacteriol.*, **v. 182:17**, 4934-4940 (2000).
– Joseph-Horne, T., Babij, J., Wood, P.M., Hollomon, D. and Sessions, R.B., "New sequence data enable modelling of the fungal alternative oxidase and explain an absence of regulation by pyruvate." *FEBS Lett.*, **v. 481:2**, 141-146 (2000).
– Lee, R.M. and Hartman, P.A., *J. Food Protect.*, **v. 52**, 119 (1989).
– Li, Y., Chen, J., Liang, D.F., Lun, S.Y., Rui, X.S. and Gong, X.Y., "[Effect of nutritional conditions on the fermentative production of pyruvic acid by Torulopsis glabrata.]" *Sheng Wu Kung Cheng Hsueh Pao*, v. 16:2, 225-228 (2000).
– Miwa, H., Fujii, J., Kanno, H., Taniguchi, N. and Aozasa, K., "Pyruvate secreted by human lymphoid cell lines protects cells from hydrogen peroxide mediated cell death." *Free Radic. Res.*, **v. 33:1**, 45-56 (2000).
– Nemoto, S., Takeda, K., Yu, Z.X., Ferrans, V.J. and Finkel, T., "Role for mitochondrial oxidants as regulators of cellular metabolism." *Mol. Cell. Biol.*, **v. 20:19**, 7311-7318 (2000).
– Thompson, S.N., "Pyruvate cycling and implications for regulation of gluconeogenesis in the insect, Manduca sexta L." *Biochem. Biophys. Res. Commun.*, **v. 274:3**, 787-793 (2000).
– Zhao, W., Devamanoharan, P.S. and Varma, S.D., "Fructose induced deactivation of antioxidant enzymes: preventive effect of pyruvate." *Free Radic. Res.*, **v. 33:1**, 23-30 (2000).