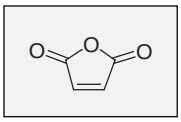
Maleic Monomers

Maleic functional compounds have wide ranging applications as additives to promote adhesion and compatibility, and as retarders for vulcanization. They have also entered the arena of microelectronics; for example, where surface graft copolymerization is used to improve the adhesion between silicon surfaces and dielectric materials such as polyimide and PTFE.[1,2] More recently, radiation-induced, photoinitiator-free polymerization of electron-donor/electron-acceptor (D/A) systems employing maleic monomers as the electron-deficient species have been reported to have greatly reduced sensitivity towards oxygen inhibition as compared to acrylate systems.[3,4]

Highlighted below are some of the recent additions to the list of **maleic monomers available from Aldrich**, along with their applications as reported in the current literature. For our complete product offering, request your FREE copy of the **1998–99 Aldrich Catalog/Handbook** or search our product database on the Web at **www.sigma-aldrich.com**. If you have questions, comments, or would like to make a new product suggestion, please call our Technical Services department at **(800) 231-8327** (USA) or your local Sigma-Aldrich office, or contact us via e-mail at **aldrich@sial.com**.

Maleic Anhydride

- Used in the synthesis of polypropylene–MA block copolymers that serve as interface compatibilizers of reactive PP/Polyamide blends.[5]
- Utilized extensively in the preparation and formulation of organic coatings, including water-reducible alkyds and maleated epoxy esters for spray- or dip-applied steel primers.[6]
- Employed in making unsaturated polyester resins dissolved in styrene for flexible, glass-reinforced plastics.[6]

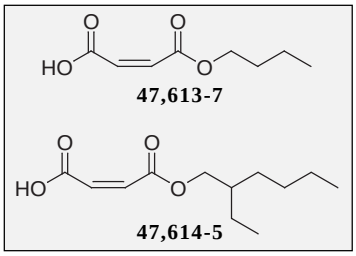


M18-8 **Maleic anhydride**, briquettes, 99% **25g; 1kg; 5kg; 25kg**

NEW! **M62-5** **Maleic anhydride**, powder, 95%; *may contain ca. 5% maleic acid* **25g; 1kg**

Monoalkyl Maleates

- Surface treatment of steel with these monoalkyl maleates is reported to improve adhesion of polymeric coatings.[7]
- Their activity against *C. botulinum* was investigated to determine their potential as preservatives in foods.[8]

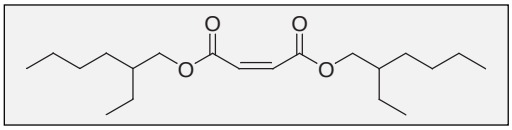


NEW! **47,613-7** ***mono*-Butyl maleate**, 90% (MBM) **100mL; 500mL**

NEW! **47,614-5** ***mono*-2-Ethylhexyl maleate**, tech. (MOM) **100mL; 500mL**

Dioctyl Maleate (DOM)

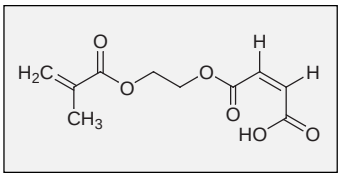
- Polymerizable plasticizer for soft acrylic resin materials that are used in dental applications to overcome plasticizer leaching and resin hardening in aqueous environments.[9]
- Evaluated, in a matrix with poly(vinyl chloride), as ligand-free PVC membrane electrodes for selectivity of basic drugs such as alverine, chloropromazine, and promazine.[10]



NEW! **47,612-9** **Bis(2-ethylhexyl) maleate**, 90% (dioctyl maleate, DOM) **100mL; 500mL**

Difunctional Maleate

- Contributes to the adhesion of methacrylate systems to metal; hence, it is useful as a bonding agent in dental applications.[11]
- Used in the synthesis of trisubstituted organotin salts that posess potential marine antifouling properties.[12]



NEW! **48,372-9** ***mono*-2-(Methacryloyloxy)ethyl maleate**, tech. **100mL; 250mL**

References: (1) Zhang, J. et al. *Chem. Mater*. **1999**, *11*, 1061. (2) Ranby, B. In *Current Trends in Polymer Photochemistry*; Allen, N.S., Edge, M., Bellebono, J.R., Selli, E., Eds.; Ellis Horwood: New York and London, 1995. (3) Hoyle, C.E. et al. In *Photopolymerization: Fundamentals and Applications*; ACS Symposium Series 673; American Chemical Society: Washington, DC, 1997; p 133. (4) Kohli, P. et al. *Macromolecules* **1998**, *31*, 5681. (5) Lu, B.; Chung, T.C. *ibid.* **1999**, *32*, 2525. (6) Wicks, Z.W., Jr. et al. *Organic Coatings, Science and Technology*, 2nd ed.; Wiley Interscience: New York, 1999. (7) Kropacheva, O.I. et al. *Zh. Prikl. Khim (S. – Peterburg)* **1993**, *66*, 1084; *Chem. Abstr.* **1994**, *120*:220408. (8) Dymicky, M. et al. *Appl. Environ. Microbiol.* **1987**, *53*, 110. (9) Parker, S. et al. *Biomaterials* **1998**, *19*, 1695. (10) Kim, Y.-H. et al. *Anal. Sci. Technol.* **1997**, *10*, 453; *Chem. Abstr.* **1998**, *128*:235214. (11) Fukushima, T.; Horibe, T. *J. Dent. Res*. **1990**, *69*, 46. (12) Lecat, J.L.; Devaud, M. *J. Organomet. Chem.* **1983**, *244*, 217.

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