

Zwitterionic Buffers from AMRESCO (J232, J625, J624, J620, J623, J591, J588, J587, J589, J563, J597, J590, J562, J598, J527)



Many traditional buffering systems, like carbonate and phosphate buffers, while useful for some applications, are often not appropriate for many biological systems. These reagents do not buffer effectively above pH 7.5, and can interfere with some biological reactions. Some of the early alternatives, such as Tris and glycylalcyne, buffer effectively at higher pH levels but often show cytotoxic effects. These buffers are also of very limited use below pH 7.5.

Good et al. (1966) developed a group of zwitterionic buffers that addressed the above limitations. Their pKa values are at or near physiological pH; they are non-toxic to cells; and they are not absorbed through cell membranes. Furthermore, these buffers do not significantly absorb ultraviolet light, and they are relatively inexpensive. These so-called "Good's Buffers" are widely used in cell culture and other biological applications. Since then, additional zwitterionic buffers (AMPSO, CAPSO, DIPSO, HEPPSO, MOPSO, and POPSO) have been developed. These compounds offer even further improvements in water solubility, high chemical stability, and compatibility in a number of biological systems (Ferguson et al., 1980).

Buffer	Code	MW	pH Range	Size
ADA	E232	190.2	6.0-7.2	25 g 100 g
AMPSO	J625	227.3	8.3-9.7	25 g 100 g
AMPSO, sodium salt	J624	249.3	8.3-9.7	25 g 100 g
CAPS, sodium salt	J620	243.3	9.5-11.5	25 g 100 g
CAPSO	J623	272.3	8.9-10.3	25 g 100 g
DIPSO	J591	243.3	7.0-8.2	25 g 100 g
HEPPS/EPPS	J588	252.3	7.5-8.5	25 g 100 g
HEPPSO	J587	268.3	7.1-8.6	25 g 100 g
MOPSO	J589	225.3	6.2-7.4	25 g 100 g
MOPSO, sodium salt	J563	231.2	6.2-7.6	25 g 100 g
POPSO	J597	398.4	7.2-8.5	25 g 100 g
POPSO, disodium salt	J590	346.3	7.2-8.5	25 g 100 g
TAPS	J562	243.3	7.7-9.1	25 g 100 g
TAPS, sodium salt	J598	265.3	7.7-9.1	25 g 100 g
TES, sodium salt	J527	251.2	6.8-8.2	25 g 100 g

References:

- Good, N. E., et al. (1966) *Biochemistry* 5: 467
Ferguson, W. J., et al. (1980) *Anal. Biochem.* 104: 300

