

Alginates are just the salts of alginic acid. They are available in different forms such as ammonium alginate, sodium alginate, propylene glycol alginate, and calcium alginate. These are also available in different compositions and molecular grades; their patterns are M and G blocks. Due to such special features, it clarifies water solubility, sol-gel properties, and biological and physiochemical properties. The molecular form influences greatly as it ranges from 33,000 to 400,000 g/mol.

The preparation of alginate composite microparticles or polyglutamic acid microparticles can be done by coating or dropping the alginate mixture into a CaCl_2 solution. This is performed rapidly, but the disadvantage is that the size of the microparticle is not controllable. This uncontrolled and rapid formation is caused by Ca^{2+} ions. For this, the encapsulation method is the most suitable to prepare the alginate composite microparticles.

3.4 Characteristics of Alginate Salts

- *Presence of water.* Calcium salts and sodium salts generally have the same decomposition temperature of about 458 K and weight loss. Water content varies with salt. This means that there are two water molecules in the calcium and sodium salts of alginates, but in other salts, the amount decreases.
- *Crystallinity.* Compared to sodium salts, other salts do not have greater influence. There is no more change on the addition of other salts. To know this property, characterization is done by X-ray diffraction technique.
- *Measurement of mechanical strength.* This can be studied during storage or before wound dressing. Mechanical tensile stress involves Young's modulus, fracture stress, and fracture strain.

3.5 Properties

Alginate is well known for its properties like nontoxicity, biodegradability, cross-linking capability, pH sensitivity, and versatile chemical nature.

- Processes like preparation, purification, product formation, swelling, and degradation require pH at a specific range, which means pH should be maintained. pH variation is responsible for the change in swelling and polymer chain expansion. pH also affects the ionized and unionized form of carboxylic group.