



## ZeaChem Products

A unique differentiator of ZeaChem's technology is the ability to produce a range of products to serve a variety of market sectors. While corn ethanol and competing cellulosic ethanol technologies are captive to single or limited markets, ZeaChem's approach can produce many chemicals and fuels within the carbon chain product groups.

ZeaChem Carbon Chain Product Groups			
C2 Chain	C3 Chain	C4 Chain	C6 Chain
Acetic Acid Ethyl Acetate Ethanol Ethylene Ethylene Glycol	Lactic Acid <ul style="list-style-type: none"><li>• Propylene Glycol</li><li>• Acrylic Acid &amp; Esters</li><li>• Propionic Acid</li><li>• Propylene</li><li>• Methacrylic Acid &amp; Esters</li><li>• Diluent</li></ul>	Butanol	Hexanol Hexene

Production facilities will be capable of producing the products that will yield the best margin. Should market conditions change, a ZeaChem facility will have the option of changing the products produced which provides flexibility that is simply not available to a biorefinery that is captive to a single market. ZeaChem's ability to locate a commercial plant close to the customer will generate synergy and a cost competitive business model that will strengthen the customer's market position. This model minimizes transportation and handling expenses, speeds the time to market, and ensures the viability of long term offtake agreements with key customers.

The Renewable Fuel Standard (RFS2) established by the U.S. government sets a renewable fuel production level of 36 billion gallons per year (GPY) by 2022. Of this amount, 16 billion is expected from cellulosic biofuel, a market which ZeaChem is poised to dominate with the highest theoretical yield of 156 gallons per bone dry ton (gal/BDT) and with an expected yield of approximately 135 gal/BDT. The RFS2 will ensure that a solid market is in place for ethanol production.

The availability of worldwide markets for the C2, C3, C4 and C6 carbon chains further represent significant opportunities for the ZeaChem technology. ZeaChem has completed discussions with major players in the chemical commodity markets confirming that offtake agreements and new competition will be welcomed over the current fossil fuel-based product offerings.

The available markets for ZeaChem's products, along with the government mandated RFS2, create a unique opportunity that only ZeaChem is poised to capitalize on.