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AlternaFuel® CMAX™ Product #346

(For considerations in **biomass saccharification** and other applications)

I. INTRODUCTION:

AlternaFuel® CMAX™ is a liquid cellulase (carbohydrase enzyme) preparation produced by the submerged fermentation of *Myceliophthora thermophila* that can effectively be used for the degradation of various lignocellulosic biomass substrates for conversion of biomass to glucose.

AlternaFuel® CMAX™ also contains additional secondary accessory enzymes such as beta-glucosidases, hemicellulases and arabinases needed to effectively release the maximal amounts of Glucose, Xylose and Arabinose from various lignocellulosic substrates.

II. PHYSICAL PROPERTIES:

Appearance: Medium amber slightly viscous liquid (Note that color does not affect or reflect activity.)
Odor: Slight fermentation odor
pH (1% soln): 6.0±0.5
Activity: >15,000 CMCase/g

III. RECOMMENDATIONS FOR USAGE:

As each lignocellulosic biomass substrate has its own characteristics and there are numerous processes for the pretreatment of the biomass prior to enzyme addition, it is recommended that **AlternaFuel® CMAX™** be tested under laboratory conditions to determine the most effective conditions for its use.

Temperature Range:

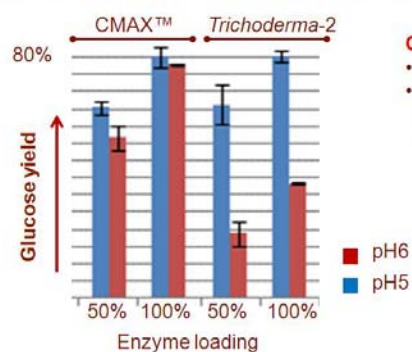
AlternaFuel® CMAX™ is effective in the temperature range of 35°C to 80°C. The optimal temperature for SHF (Separate Saccharification and Fermentation) is 55°C.

pH Range:

AlternaFuel® CMAX™ can be utilized over a broad pH range of 3.5 to 8.0. The optimal pH is 6.0.

AlternaFuel® CMAX™ (Broad Active pH Range)

Dilute acid pre-treated corn stover, 10% DM, 24h saccharification time



Conclusion:

- AlternaFuel® CMAX™
- makes an excellent enzyme mixture for **BOTH** acidic and more neutral processes

IV. DOSAGE:

AlternaFuel® CMAX™ should be dosed between 1.5% to 5% w/w (g enzyme/g cellulose). The actual dosage will depend upon the composition of the biomass, the pretreatment process & the solids loading amount.

V. STORAGE CONDITIONS/ACTIVITY:

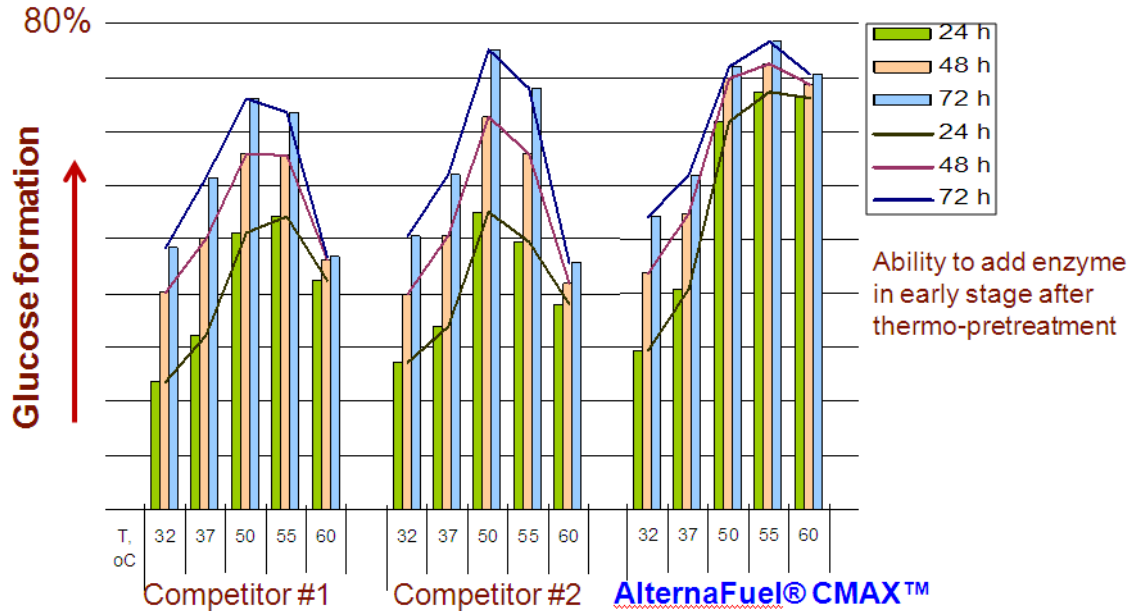
AlternaFuel® CMAX™ retains more than 90% activity after four months when stored at 25°C out of direct sunlight and in the original closed container. **AlternaFuel® CMAX™** also retains more than 90% activity after 1 month when stored at 38°C. Do not let freeze.

VI. PACKAGING:

AlternaFuel® CMAX™ is packaged in 25 kg polyethylene drums and 1,200 kg tote bins.

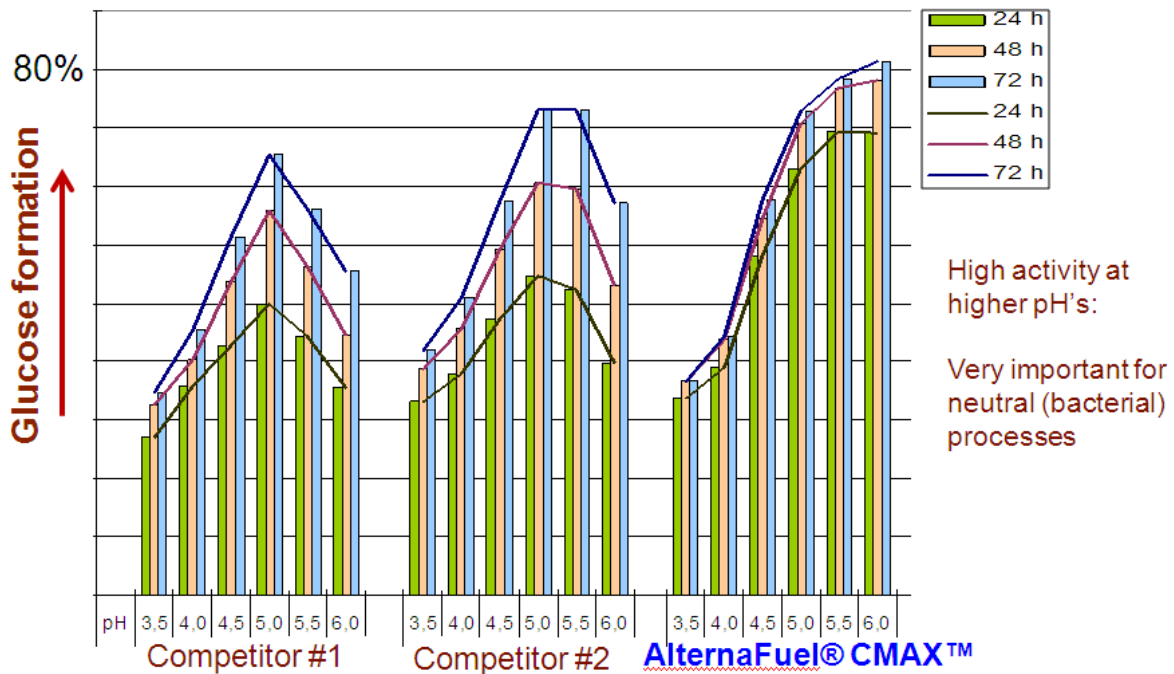
Broad Active Temperature Range

Dilute acid pre-treated corn stover, 10% DM



Broad Active pH Range

Dilute acid pre-treated corn stover, 10% DM



Nothing disclosed is to be construed as a recommendation to use our products in violation of any patents. The information presented is believed to be accurate. However, said information and products are offered without warranty or guarantee, except as to the composition and purity stated herein since the ultimate conditions of use and variability of the materials treated is beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale. The goods described herein are sold as is and with all faults. The seller specifically disclaims all warranties in connection with the sale of the goods, both express and implied, including, without limitation, the warranties of merchantability and fitness for any particular purpose, as those terms are defined in the Uniform Commercial Code of Florida. The seller shall not be liable for any incidental or consequential damages whatsoever.