U.S. DEPARTMENT OF ENERGY
REQUEST FOR INFORMATION (RFI) / DE-FOA-0001615
CELLULOSIC SUGAR AND LIGNIN PRODUCTION CAPABILITIES

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Category 1: Lignocellulosic Sugars

Question #1 - To which types of research entities are you willing and able to sell your lignocellulosic sugar (e.g. university researchers, national laboratories, industry/private sector)? Are there any types of research entities to whom you are not willing and able to sell your lignocellulosic sugar?

Clariant is willing and able to sell lignocellulosic sugar to universities, national labs and industry/private sector upon understanding from the customer what will the lignocellulosic sugars will be used for.

Question #2 – What are the maximum and minimum quantities of lignocellulosic sugar you are willing and able to sell (kg)?

1kg to 1 (or more) metric ton.

Question #3 – What is the sugar concentration of your product?

Sugar concentration can be delivered based on the customer requirements up to 50% concentration.

Question #4 – What physical form do you sell your sugars (e.g. solid or liquid)?

We sell concentrated sugar solution in the above mentioned concentration as a liquid.

Question #5 – How do you package your lignocellulosic sugars for shipping? Do you ship in bulk?

Clariant can ship bulk samples and larger quantities in e.g. IBC containers.

Question #6 – What type(s) of biomass do you use to produce lignocellulosic sugars?

Clariant is flexible on the biomass source, so this depends on the needs and requests from the customer. The Clariant conversion technology (called sunliquid®) has been optimized for commercial production of lignocellulosic sugars using agricultural residues such as corn stover, wheat straw, sugarcane bagasse and straw, barley straw, rice straw and others. However, Clariant has tested over 25 different biomass feedstock in the past at different scales of production.

Question #7 – What process do you use to produce lignocellulosic sugar?

The Clariant sunliquid technology utilizes a chemical-free steam explosion pre-treatment technology with enzymatic hydrolysis using Clariant proprietary optimized enzymes solutions that are produced integrated in the process.

Question #8 – What details of the scale of your process are you willing to share (e.g. batch and/or continuous/volumetric productivity)?

Clariant produce cellulosic sugar in a continuous productivity.

Question #9 – What is the typical composition of your sugar stream (e.g. glucose, galactose, mannose, xylose, arabinose) and what is the purity?

We produced C5 and C6 mixed sugar stream in a ratio of approximately 30/70.

Question #10 – Do you routinely test your cellulosic sugar for consistency within and between lots and between feedstocks (if applicable)?

Yes.

Question #11 – What impurities are percent in your lignocellulosic sugar process and what testing do you perform to determine the presence of impurities?

The main impurities are mainly organic acids and salts in the sugar solution. Details can be shared with each customer depending on the used feedstock upon request.

Question #12 – Does your process include a purification step?

Yes, if the customer wants the sugars purified this can be done. However, this will add costs compared to non-purified sugar.

Question #13 – What is the highest concentration in gram/litre you can provide?

We could provide the concentration of up to 50% sugar content sample, ~500 g/L total sugar.