

Development of Excellent Defoamer for Bioethanol Production Process

San Nopco Limited (HQ: Kyoto, Japan, President: Hiroyuki Tsuruta), a wholly owned subsidiary of Sanyo Chemical Industries, Ltd., (HQ: Kyoto, Japan, President: Takao Ando) has developed a defoamer (anti-foaming agent); NOPTAM 300EZ, which exhibits a superior defoaming property in the sugarcane ethanol production process.

【Background of the development】

Amid the taking measures against global warming, bioethanol is considered a green alternative to gasoline that does not affect the total amount of CO₂ in the atmosphere. It is expected to be carbon-neutral biofuel and its use has been steadily increasing mainly in U.S. and Brazil.

Bioethanol is produced from feedstock crops such as sugarcanes and corns via alcoholic fermentation. Especially sugarcanes give very high bioethanol yield per unit of land; thus bioethanol has been already widely used in Brazil where the largest amount of sugarcane is produced worldwide.

Bioethanol is produced by a decomposition of sugar to ethanol and carbon dioxide through alcoholic fermentation using yeast. Carbon dioxide generated during the fermentation process creates a lot of foams, and the foams cause troubles such as an overflow of the fermentation tank and a pump failure by an air locking. Defoamer plays a crucial role to eliminate such troubles.

Besides, suppressing foams can minimize the dead volume occupied by the foam in the tank, and accordingly increase the productivity of the ethanol.

However, since it is a biological process, foam formation is affected by multiple factors such as temperature, medium composition including impurities (their amount and types) and condition of yeast. Therefore, it was difficult to develop the defoamer to perform effectively regardless such factors.

San Nopco Limited has been developing various defoamers and leading the industry since our establishment in 1966 by leveraging our abundant field experiences and surfactant technologies. We have also developed a lot of original evaluation methods capable of reproducing complex field conditions in the lab. Based on such accumulated expertise, we have developed the defoamer; NOPTAM 300EZ, which is effective for the sugarcane ethanol production process.

【Features of the technology】

NOPTAM 300EZ is a surfactant having excellent water-dispersibility and has features below.

1. Excellent defoamability
 - Eliminates the troubles caused by foams
 - Increases the productivity by utilizing the dead volume occupied by foams
 - Reduces the amount of use compared with conventional defoamer
2. Widely applicable to meet the diverse fermentation conditions (temperature, media composition and yeast)

3. Not inhibit the ethanol fermentation

These features are highly evaluated and NOPTAM 300EZ is increasingly being used in Brazil which is the largest producer of sugarcane ethanol.

【Feature Plan】

The utilization of bioethanol is expected to proceed further as a leading measure against global warming. San Nopco Limited will promote further sales of NOPTAM 300EZ to major sugarcane ethanol producing countries not only Brazil but other countries such as India and Thailand. San Nopco Limited will provide detailed supports globally to the various problems with prompt and proper solutions. And we will contribute to respond quickly to the changes in the times and customer needs, and reduce the environmental load by putting priority on “Environment and Energy”.