



SIXIN® Defoamers for Fermentation

For more than 27 years, SIXIN has helped its customers by perfecting their products and processes through the formulation of defoamers and antifoams that meet their specific needs. SIXIN was founded in 1992 by Dr. William Tsao in the city of Nanjing, China, with a focus on research and development, production and sales of defoamers and antifoams. In order to gain a global reach, the International Sales Offices was opened in Oregon in the United States.

SIXIN has a worldwide presence with more than 2000 clients around the world (China, Europe, Africa, Southeast Asia, Australia, India, Russia, the Middle East and the Americas). Within its staff, it has more than 30 professionals of the Chemical Sciences and Engineering, collaborating with universities with the aim of providing the latest technology in defoamers and antifoams.

If your company has a specific challenge for foam destruction, we have the experience and laboratory capabilities to formulate a unique solution. SIXIN seeks to provide you with a professional, focused and specific service, assuring you that our products offer optimal performance and competitive prices.

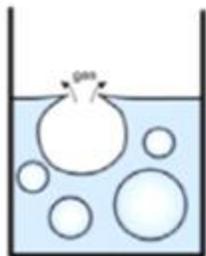


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Foam Generation

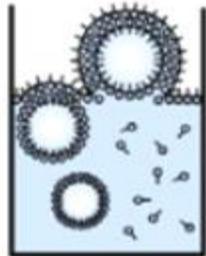
Pure liquid vs. foam

- A pure liquid does not foam.
- The foam is a dispersion of gas bubbles in a continuous matrix (liquid or solid) stabilized by the action of a surfactant or by the viscosity of the matrix.
- The foam forms structures of defined geometries by unions that repeat their arrangement and morphology in different directions and sizes. These joints are contours of thin films of surfactant through which the continuous matrix circulates.



PURE LIQUID

A pure liquid does not foam.

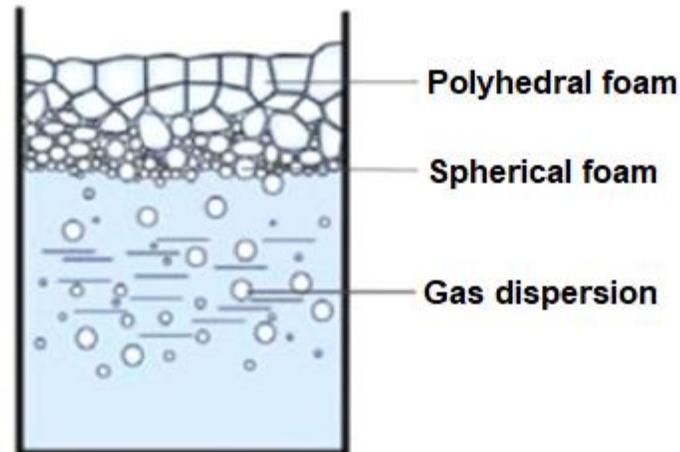


LIQUID WITH SURFACTANT

Stable foam.

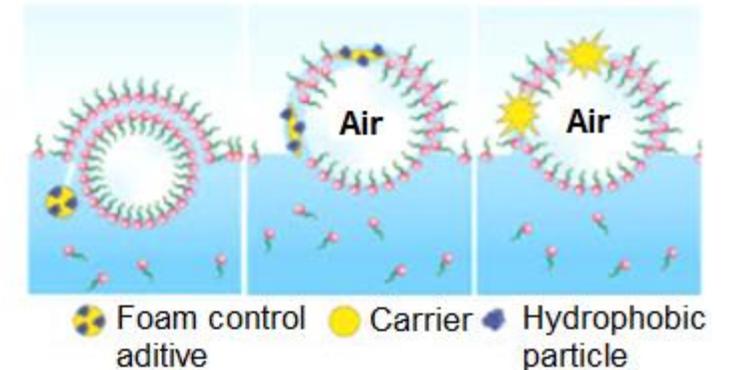
Foam stabilization mechanisms

- The bubbles must migrate to the surface to break.
- The drainage of the continuous matrix surrounding the foam bubbles leads to their rupture.
- Foam stability comes from a surfactant or surfactant films that prevent drainage, causing foam stabilization. It is at this point where the addition of foam control additives is required.



Defoamers' action

- Defoamers destabilize the foam by the following means:
 - They enter the surface of the foam bubble.
 - They extend along this surface and they thin the liquid film forcing the drainage of the matrix.
 - And finally, they join the liquid layers to break the bubble.
- This process is governed by surface tension.
- The surface tension of the defoamer drops should be lower than that of the continuous matrix.



Fermentation background

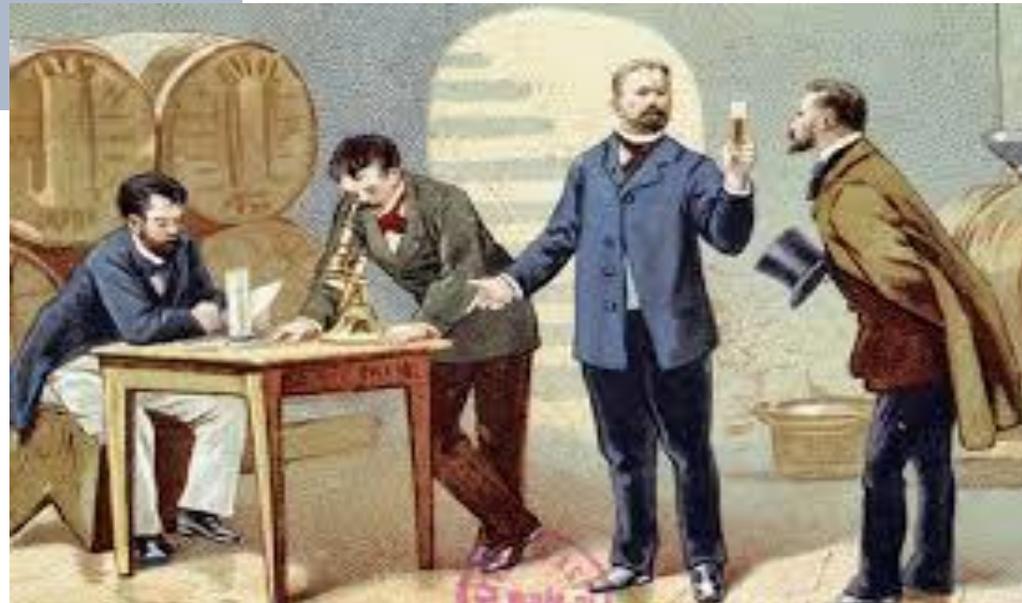
Microbial Fermentation:

The word "fermentation" has undergone many changes in meaning during the past hundred years. According to the derivation of the term it signifies merely **a gentle bubbling** or boiling condition.

The term was first applied when the only known reaction of this kind was the production of wine, the bubbling, of course, being caused by the production of carbon dioxide.

It was Pasteur, however, who marked the birth of chemical microbiology with his association of microbes with fermentation in 1857. The term "fermentation" thus became associated with the idea of cells, gas production, and the production of organic byproducts.

It was not until Gay-Lussac studied the chemical aspects of the process that the meaning was changed to signify the breakdown of sugar into ethanol and carbon dioxide.



SIXIN Defoamers for the fermentation industry

Polyether concentrate

- Formulated from the polymerization of epoxypropane, oxirane, propylene glycol under the catalysis of potassium hydroxide.
- Used in alcohol production from sugar beets, yeast and antibiotics production.
- Recommendation: CS-4809C.

Silicone defoamers (polysiloxanes)

- PDMS and modified-PDMS (via modification with polyethers or other polymers) have very high spreading characteristics.
- Applications include wine production, sugar, and vitamin C production.
- Recommendations: X-1030FT, X-1040FK & X-1050FK.



SIXIN defoamers benefits



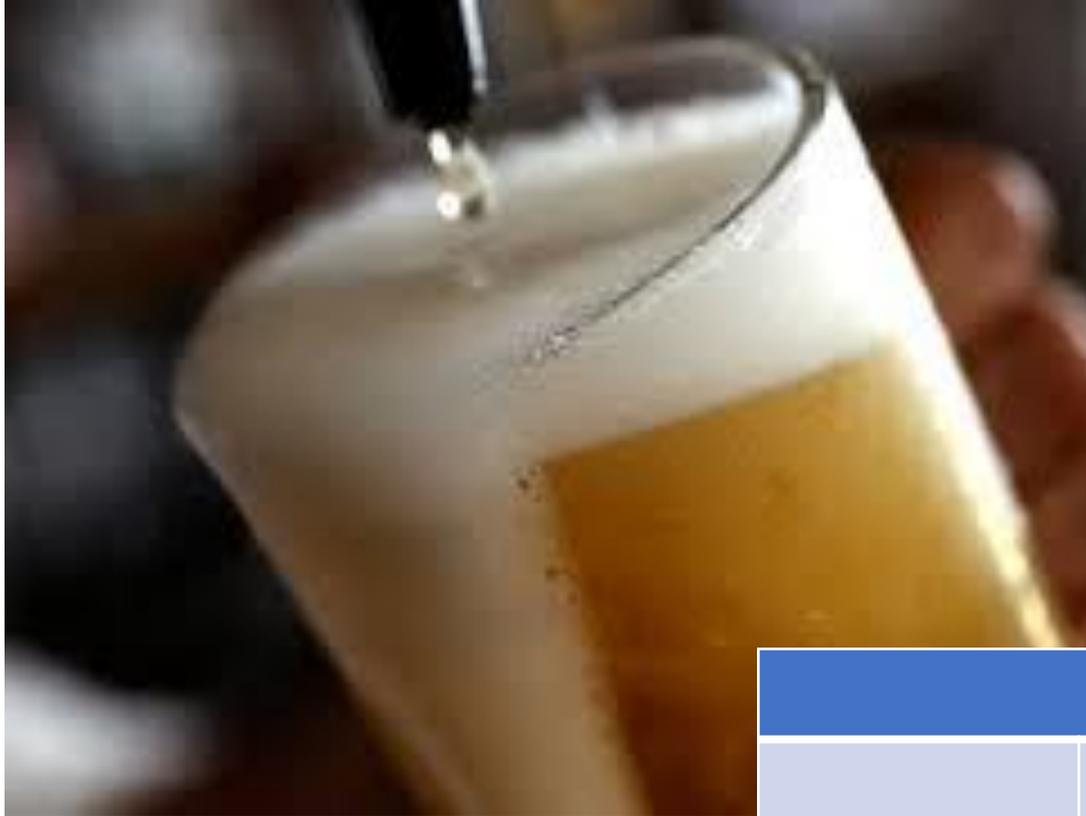
Our defoamers are scientifically designed to optimize fermentation processes and complying with all the relevant food grade approvals (**HALAL and KOSHER**).

Our high performance antifoams products effectively control the foam produced in a wide range of fermentation process applications, including and not limited to citric acid, yeast, antibiotic, alcohol, glutamic acid, enzyme, protein, pharmaceutical, nucleotide and cider production.

Our antifoams are of low order toxicity and have neutral odor and taste.

They can be used in small amounts and with the potential for increased productivity. SIXIN products are the ideal cost effective processing aid.

The exact dosage required will depend on the foaming propensity of the culture medium.



Key features of SIXIN defoamers for waterborne coatings

- Approved HALAL and KOSHER.
- Low toxicity.
- Persistent foam control.
- Contact your SIXIN sales representative for technical data sheets and samples for evaluation.

SIXIN defoamers for waterborne coatings				
	CS-4809C	X-1030FT	X-1040FK	X-1050FK
Chemistry	Polyether concentrate	Silicone emulsion		
Appearance	Colorless to light yellow liquid	White to yellowish liquid emulsion		
Viscosity (25 °C, mPa·s)	400-1000	1000-5000		