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# **At RICKMAN**

**We create defoamer  
chemistry for a better and  
more sustainable future.**

# RICKMAN

Rickman was found in 2013, engaged in production, research and development, sales and service of defoamer. The comprehensive annual capacity can reach 30,000 tons. These products are widely used in pulp and paper, textile, industrial water treatment, paint and ink, oil and gas, agriculture, food, fermentation, industrial cleaning, metal processing and other fields.



At RICKMAN, we create defoamer chemistry for a better and more sustainable future. We believe that our mission is to work closely with our customers, providing them with antifoaming agent solutions enable them to deliver their potential.

**01**

## **Our Purpose**

To solve foam problem and improve efficiency through antifoam solutions.

**02**

## **Our Vision**

To be the global leader in antifoam innovation and build a safer, healthier, more sustainable world.

**03**

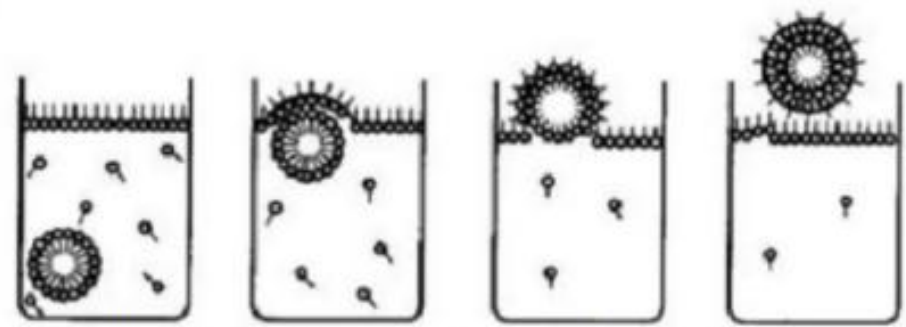
## **Mission**

We strive to build a better and more sustainable world with our partners by solving chemistry problems with the right technology, experience and team.

# Defoamers and Antifoams

## Classifications of foam

- According to the life of the foam, it can be divided into "short foam" with a life span of a few seconds and "durable foam" that can maintain a few days without breaking under the condition of no interference;
- According to the balance between the force of foam generation and foam breaking, it can be divided into "unstable foam" that is constantly approaching the equilibrium state and "stable foam" that is hindered in the equilibrium process;
- According to the aggregation, it can be divided into "bubble dispersion system" with more liquid and less gas and "foam" with more gas and less liquid.



The rise of foaming in a surface activator

## Generation Mechanism and Stability of Foam

Analysis of factors affecting the stability of foam :

(1) Low surface tension.

The lower the surface tension, the easier it is to form foam ;

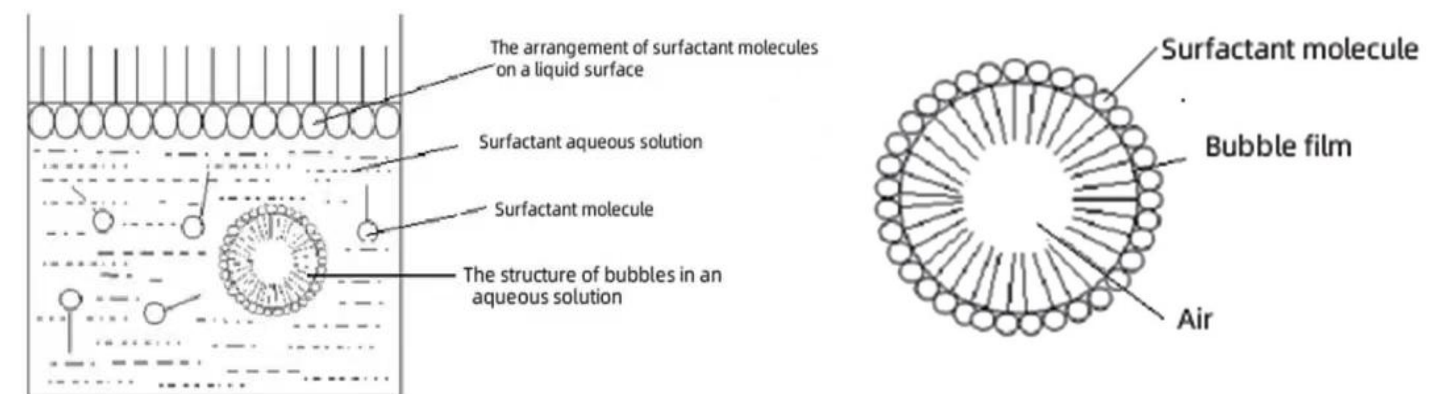
(2) Concentration of surfactants.

The higher concentration of surfactants, the more it accumulates on the surface of the foam, and the stronger the membrane ;

(3) Size of foam itself.

According to the formula  $T=K/D^2$ , T is the life of foam; D is the average diameter of foam; K is the correction coefficient.

As can be seen from the formula, the smaller the foam, the longer the life of the foam, the higher the stability.



## What is foam?

Bubbles and foams are generated by surface action.

Due to the action of surface tension.

The membrane contracts into a ball, forming a bubble. Because of the lifting force, bubbles rise to the liquid surface. When a large amount of bubbles gather on the surface, a foam layer is formed.



## ANTIFOAM SOLUTIONS FOR FERMENTATION

During the fermentation process, the foam-active substances, air and turbulences contribute the excessive foam. Generally, carbohydrates as material, are converted into sugar substrates, enzymes, starches and proteins, which promote the foam appearance. In addition, amino acids and proteins generated by microorganism can cause large of foam activity.

As a manufacturer of foam control agents, RICKMAN provides a series of defoamer solutions for molasses fermentation, ethanol/ alcohol fermentation, distilleries, sugar refineries etc. Silicone defoamers and polyether defoamers provide excellent breaking foam and antifoaming performance for fermentative processes. And adding procedure depends on the fermentation progress. The usage of antifoams can be adjusted according to the whole fermentation.



**RK-0010 is 100% silicone free antifoaming agent with eliminating air performance which is used in paper making, fermentation, water treatment and powder plant desulfurization.**

**RK-8636 is a innovative silicone defoamer, which is ready to used in widely applications, such as textile, water treatment, fermentation, PCB cleaning.**

**RK-700P is a silicone free based defoamer with breaking foam quickly in many industries, such as cooling water treatment, Reverse osmosis RO membrane, sea water treatment, desalination and fermentation.**

**RK-F0080 is a non-silicone defoamer with excellent air removal's performance and used in paper mill, sea water desalination, fermentation, fiber cement and other water treatment.**