

XIAMETER[®] brand Silicones for Foam Control in the Food Processing Industry

Foaming issues in food and beverage processing applications can negatively impact efficiency, productivity and cost. Silicone antifoaming agents from Dow Corning have been designed to safely and effectively reduce problems with foam under the numerous conditions encountered when processing foods and beverages.

And whether used as pure liquids or powders or in a compound or emulsion, silicone antifoams are more effective than organic antifoaming agents.

Dow Corning offers a range of foam-control agent types to meet the diverse needs of the food processing industry:

- Silicone fluids are used for controlling foam in nonaqueous systems.
- Compounds of finely powdered silica in silicone fluids are used for controlling foam in aqueous systems.
- Silicone emulsions are used for applications in which water is the predominant phase of the foam.
- Powdered silicones prevent foaming in dry products when liquids are added.

Subgroup	Application	Proven Solution	Details
DRINKS			
Alcoholic beverage	Vodka and wine production	XIAMETER [®] AFE-0010 Antifoam Emulsion	Has been used in fermentation tanks to increase capacity, reducing foam in the resultant wastewater.
	Alcoholic drink production	XIAMETER [®] AFE-1510 Antifoam Emulsion XIAMETER [®] AFE-1520 Antifoam Emulsion	Have been used during the mash processing step for alcoholic drink production and the cleaning of the processing equipment.
	Beer production	XIAMETER [®] AFE-1510 Antifoam Emulsion XIAMETER [®] AFE-1520 Antifoam Emulsion	Have been used as process aids and cleaning aids during production of beer.
Beverage	Natural juices and carbonated beverages	XIAMETER [®] AFE-0010 Antifoam Emulsion	Has been used during filling of containers, allowing containers to be filled to maximum weight. Typical addition level is 10 ppm.
	Soft drink production	XIAMETER [®] AFE-0010 Antifoam Emulsion	Has been used during mixing before bottling. Typically, antifoam is diluted prior to addition.
	Soft drink production	XIAMETER [®] AFE-0100 Antifoam Emulsion, Food Grade	Has been used to keep foam down to a minimum level during filling of bottles.
	Tank cleaning	XIAMETER [®] ACP-1500 Antifoam Compound XIAMETER [®] AFE-1510 Antifoam Emulsion XIAMETER [®] AFE-1520 Antifoam Emulsion	Have been used during cleaning of tanks used for process water (e.g., at breweries).
	Fruit juice production	XIAMETER [®] AFE-1510 Antifoam Emulsion XIAMETER [®] AFE-1520 Antifoam Emulsion	Have been used as process aids and cleaning aids during production of fruit juices.

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	Sugar-free soft drink production	XIAMETER® AFE-0010 Antifoam Emulsion	Has been used during dilution of drinks prior to and during bottling stage, reducing spillage or loss of product.
	Tea	XIAMETER® AFE-1510 Antifoam Emulsion XIAMETER® AFE-1520 Antifoam Emulsion	Have been used during extraction process.
Dry drink mix	Powdered protein sports supplement drink	XIAMETER® ACP-1920 Antifoam Compound	Has been used in powdered protein sports supplement drink that has a tendency to foam upon mixing with water. Powdered antifoam is required for incorporation into dry mix. The product is packed for the consumer as a dry powder that the end user mixes with water at the point of use.
	Powdered drinks	XIAMETER® ACP-1920 Antifoam Compound	Powdered antifoam can be added to powdered beverage products to prevent foaming.
	Powdered coffee	XIAMETER® ACP-1920 Antifoam Compound	Has been used during production of powdered coffee for ice creams.
Fermentation	Wheat fermentation during bioethanol production	XIAMETER® AFE-1520 Antifoam Emulsion	Has been used during wheat fermentation stage of bioethanol production.
SAVORY			
Bread	Bread production	XIAMETER® AFE-0010 Antifoam Emulsion	Has been used in dough during bread production. Typically added at 10 ppm.
	Cereal and bakery processing	XIAMETER® ACP-1500 Antifoam Compound XIAMETER® AFE-1510 Antifoam Emulsion XIAMETER® AFE-1520 Antifoam Emulsion	Have been used during cereal and bakery processing.
Brine	Pickling	XIAMETER® AFE-0010 Antifoam Emulsion	Has been used in pickling brine to increase speed of pickle packing. Antifoam added at 10 ppm can increase packing speed from 10 to 160 jars per minute.
	Pickling	XIAMETER® AFE-0300 Antifoam Emulsion	Has been used in pickling brine to allow for higher-speed packing.
Meat, poultry and seafood	Rendering step of meat processing	XIAMETER® AFE-0010 Antifoam Emulsion	Has been used during the high-temperature rendering process. Typical addition level is 10-20 ppm.
	Gelatin production	XIAMETER® ACP-1500 Antifoam Compound XIAMETER® AFE-1510 Antifoam Emulsion XIAMETER® AFE-1520 Antifoam Emulsion	Have been used during the cooking of animal fat to produce gelatin. Effective in the harsh conditions experienced during this process.
	Seafood processing	XIAMETER® AFE-0100 Antifoam Emulsion, Food Grade	Has been used during brine freezing of crab and lobster. XIAMETER® AFE-0100 Antifoam Emulsion, Food Grade, controls foam that results from high salt and protein that is leached from the seafood, thus extending the life of the brine solution before it needs to be replaced.
	Poultry processing	XIAMETER® AFE-0010 Antifoam Emulsion	Has been used during rendering of poultry. During rendering of inedible poultry by-products, poultry fat is added to increase possible cooking temperatures. Antifoam is added to control the resulting foam and to reduce the fouling of equipment. Typically, 100 g of antifoam is added to 2,500 kg of poultry.
	Meat processing	XIAMETER® ACP-1500 Antifoam Compound XIAMETER® AFE-1510 Antifoam Emulsion XIAMETER® AFE-1520 Antifoam Emulsion	Have been used during meat processing.

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	Shrimp cleaning treatment	XIAMETER® ACP-1500 Antifoam Compound XIAMETER® AFE-1510 Antifoam Emulsion XIAMETER® AFE-1520 Antifoam Emulsion	Have been used during washing of shrimps.
Pasta	Spinach pasta ready meals	XIAMETER® AFE-0100 Antifoam Emulsion, Food Grade	Has been used during production of spinach pasta ready meals. Process starts with spinach and water. Antifoam is added to the water to prevent foaming.
Soup	Powdered soup	XIAMETER® ACP-1920 Antifoam Compound	Has been used in powdered soup.
	Powdered soup	XIAMETER® AFE-1520 Antifoam Emulsion	Has been used during production of powdered soup.
Soybeans/tofu	Cooking of soybeans during soybean processing	XIAMETER® AFE-0010 Antifoam Emulsion	Has been used in cookers during soybean processing, allowing full utilization of vessel.
	Soy sauce	<i>Dow Corning Toray</i> SM 5571 Emulsion	Has been used during processing of soy sauce.
	Soybean protein	<i>Dow Corning Toray</i> SM 5571 Emulsion	Has been used during processing of soybean protein.
	Powdered soy	XIAMETER® ACP-1920 Antifoam Compound	Has been used in powdered soy.
Starch/potatoes	Manufacture of potato flakes, chips and French fries	XIAMETER® AFE-0010 Antifoam Emulsion	Has been used in a caustic bath during potato washing and peeling processes. The natural surfactants and starch present create foaming problems. Typically, antifoam is diluted with water (one part antifoam to three parts water) prior to addition. Diluted antifoam should be used within 8 hours.
	Manufacture of potato flakes, chips and French fries	XIAMETER® AFE-1510 Antifoam Emulsion	Has been used in protein-based foam caused during potato washing. Typical usage level is 1-10 ppm of XIAMETER® AFE-1510 Antifoam Emulsion as supplied.
	Cornstarch processing	<i>Dow Corning Toray</i> SM 5571 Emulsion	Has been used during processing of cornstarch from sweet potatoes.
Vegetable oil	Sunflower oil	XIAMETER® ACP-1500 Antifoam Compound	Has been used in sunflower oil used for cooking and frying.
	Margarine production	XIAMETER® AFE-1510 Antifoam Emulsion XIAMETER® AFE-1520 Antifoam Emulsion	Have been used as process aids and cleaning aids during production of margarine.
	Margarine production	XIAMETER® ACP-1920 Antifoam Compound	Has been used in margarine and canola oil plants.
SWEET/SAVORY			
Dairy products	Whey processing	XIAMETER® AFE-0010 Antifoam Emulsion	Has been used during whey production and processing. Whey is forced through an electric dialysis machine to extract minerals, and this typically is part of a continuous process. Addition of antifoam facilitates this continuous operation.
	Powdered egg	XIAMETER® ACP-1920 Antifoam Compound	Has been used in powdered eggs.
	Pudding manufacturing	XIAMETER® AFE-0100 Antifoam Emulsion, Food Grade	Has been used during production of puddings, preventing foam-over.
	Dairy and cheese products	XIAMETER® ACP-1500 Antifoam Compound XIAMETER® AFE-1510 Antifoam Emulsion XIAMETER® AFE-1520 Antifoam Emulsion	Have been used during production and bottle filling (e.g., in yogurt drinks). Effective over wide temperature range and under agitation.

Subgroup	Application	Proven Solution	Details
Flavors and spices	Vacuum packing of food products and seasonings	XIAMETER® AFE-0010 Antifoam Emulsion	Has been used during vacuum-packing process used to package foodstuffs and seasonings, reducing clogging in the vacuum line. Typical addition level is 1-10 ppm of antifoam.
	Processing of flavors and fragrances	XIAMETER® ACP-1500 Antifoam Compound XIAMETER® AFE-1510 Antifoam Emulsion XIAMETER® AFE-1520 Antifoam Emulsion	Have been used during processing of flavors and fragrances.
	Powdered flavorings	XIAMETER® ACP-1920 Antifoam Compound	Has been used in powdered flavorings.
	Powdered seasonings	XIAMETER® ACP-1920 Antifoam Compound	Has been used in powdered seasonings.
	Liquid seasonings	XIAMETER® AFE-0300 Antifoam Emulsion	Has been used during blending of liquid seasonings. Typical addition level is 5 ppm of antifoam.
	Food colorant	<i>Dow Corning Toray</i> SM 5571 Emulsion	Has been used during manufacture of food colorant.
Fruits and vegetables	Processing of maraschino cherries	XIAMETER® AFE-0100 Antifoam Emulsion, Food Grade	Has been used during pumping of sugar solutions.
	Fruit processing	XIAMETER® ACP-1500 Antifoam Compound XIAMETER® AFE-1510 Antifoam Emulsion XIAMETER® AFE-1520 Antifoam Emulsion	Have been used during production of pineapple purée.
	Fruit processing	XIAMETER® AFE-1510 Antifoam Emulsion XIAMETER® AFE-1520 Antifoam Emulsion	Have been used during cooking processes.
	Vegetable water bath	XIAMETER® AFE-0100 Antifoam Emulsion, Food Grade	Has been used in water bath used for vegetables. Processing of vegetables containing wheat gluten tends to generate foam. Antifoam is added to keep this foaming action to a minimum.
SWEET			
Confectionery	Sweets production	XIAMETER® ACP-1500 Antifoam Compound	Has been used during production of sweets.
	Toffee and soft ice production	XIAMETER® AFE-1510 Antifoam Emulsion XIAMETER® AFE-1520 Antifoam Emulsion	Have been used as process aids and cleaning aids during production of toffees and soft ices.
Desserts	Manufacture of flavored dessert and pudding toppings	XIAMETER® AFE-0010 Antifoam Emulsion	Has been used during preparation of flavored pudding and dessert toppings, resulting in full utilization of manufacturing equipment and preventing spillage.
Jam	Production of jam (boiling stage)	XIAMETER® AFE-0010 Antifoam Emulsion	Has been used during the boiling of fruit-and-sugar mixture, preventing spillage.
	Marmalade production	XIAMETER® AFE-1510 Antifoam Emulsion XIAMETER® AFE-1520 Antifoam Emulsion	Have been used as process aids and cleaning aids during production of marmalade.

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Sugar	Manufacture of sugar from sugar beets	XIAMETER® AFE-0010 Antifoam Emulsion	Has been used in many processes during sugar production, such as washing, sugar extraction and sugar purification. Can be used undiluted or diluted with at least 4 parts of water. Antifoam typically is added just upstream from the raw juice, either in or after the carbonator.
	Maple syrup processing	XIAMETER® AFE-0300 Antifoam Emulsion	Has been used during bottling of maple syrup, speeding up bottling process. Typical addition level is 10 ppm of antifoam.
ANIMAL			
Animal feed	Mixed fodder	XIAMETER® ACP-1500 Antifoam Compound	Has been used in mixed fodder.

Products listed under "Proven Solution" have been shown to be beneficial in the application listed. Other products may also be effective but have not been tested.

NOTE: A preservative to guard against microbial growth is included in most XIAMETER® antifoam emulsions. Dilution will substantially diminish the effectiveness of the preservative. If diluted material is to be stored for more than several days, additional preservative may be required. Please contact a XIAMETER® technical representative for more information.

Product	Geographic Availability	Product Type
XIAMETER® ACP-1500 Antifoam Compound	Asia, Americas and Europe	Compound
XIAMETER® AFE-0010 Antifoam Emulsion	Asia (Except Japan) and Americas (This product does not meet Japan's food grade requirements.)	Emulsion
XIAMETER® AFE-0100 Antifoam Emulsion, Food Grade	Global	Emulsion
XIAMETER® AFE-0300 Antifoam Emulsion	Global	Emulsion
XIAMETER® AFE-1520 Antifoam Emulsion	Global (Except Japan) (This product does not meet Japan's food grade requirements.)	Emulsion
XIAMETER® AFE-1510 Antifoam Emulsion	Global (Except Japan) (This product does not meet Japan's food grade requirements.)	Emulsion
<i>Dow Corning Toray SM 5571 Emulsion</i>	Japan only	Emulsion
XIAMETER® ACP-1920 Antifoam Compound	Global (Except Japan) (This product does not meet Japan's food grade requirements.)	Powder

Antifoam agents used in food processing applications are "direct additives" and thus remain in the food when it is consumed. As such, they are highly regulated. All XIAMETER® silicone antifoams comply with relevant local regulations.

- The antifoams indicated in this selection guide comply with the Recommendations of the Federal Institute for Risk Assessment (BfR) "XV. Silicones."

Additional Information on European Union Directives for Direct Food Additives

The active substance in these products is authorized as food additive following Regulation (EU) 1129/2011 amending Annex II to Regulation (EC) 1333/2008 of the European Parliament and of the Council by establishing a Union list of food additives. The active substance in this product is dimethyl polysiloxane (E 900) for which Annex II Part E sets up the conditions of use in food categories: fats and oils essentially free from water (excluding anhydrous milkfat): ML = 10 mg/kg, only oils and fats for frying; other fat and oil emulsions including spreads as defined by Council Regulation (EC) No 1234/2007 and liquid emulsions: ML = 10 mg/kg, only oils and fats for frying; canned or bottled fruit and vegetables: ML = 10 mg/kg; jams, jellies and marmalades and sweetened chestnut purée as defined by Directive 2001/113/EC: ML = 10 mg/kg; other similar fruit or

vegetable spreads: ML = 10 mg/kg; other confectionery including breath freshening microsweets: ML = 10 mg/kg; decorations, coatings and fillings, except fruit-based fillings covered by category 4.2.4: ML = 10 mg/kg; batters: ML = 10 mg/kg; soups and broths: ML = 10 mg/kg; fruit juices as defined by Directive 2001/112/EC and vegetable juices: ML = 10 mg/l, only pineapple juice and sød ... saft and sødet ... saft; flavored drinks: ML = 10 mg/l; cider and perry: ML = 10 mg/l, excluding cidre bouché; chewing gum: ML = 100 mg/kg.

Additional Information on Additives in Plastics

- The Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food.
- Code of Federal Regulations 40 CFR concerning "Tolerances and Exemption from Tolerances for Pesticide Chemicals in or on Raw Agricultural Commodities" under Section 180.910: "Inert ingredients used pre- and post-harvest; exemptions from the requirement of a tolerance."

Contact Us

Visit www.xiameter.com to learn more about the many product options available to you from the XIAMETER® brand.

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Printed in USA

Form No. 95-1082B-01

