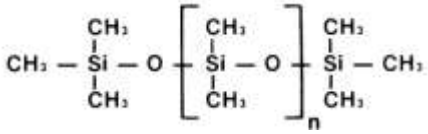
Silicone Antifoam Agents for the Food Industry

COMPOSITION AND REGULATORY STATUS

Applied Material Solutions' line of food-grade antifoam agents are water-based silicone emulsions (as polydimethylsiloxane) designed to control foam in aqueous food processing applications. The functional properties developed especially for these antifoams to eliminate and prevent excessive foam include: quick dispersibility, slight insolubility, relative stability, and a high degree of spreadability in the foaming system. The primary active ingredient, polydimethylsiloxane, is an FDA-approved liquid silicone polymer with the following structure:



n represents repeating dimethylsiloxane units

Applied Material Solutions' silicone antifoam agents utilize only food-grade, nonionic emulsifiers and contain only ingredients that are recognized by qualified experts as safe in food products according to the Code of Federal Regulations, Title 21, Part 173.340(a)(2). They may therefore be used as direct food additives in many foods, with an allowable final concentration present in the food at levels ranging from 33 to 333 parts per million (mg/L), depending upon the silicone content of the antifoam. In addition, silicone antifoam agents are also widely used as indirect food additives for the manufacture of articles or components of articles intended for use in producing, manufacturing, packing, processing, preparing, treating, packaging, transporting, or holding food; and are approved for the manufacture of paper and paperboard per 21 CFR 176.170, 176.180, and 176.210. As processing aids, silicone antifoam agents are considered 'secondary direct food additives' and impart no flavor, odor, or functional attributes to the food. They are also exempt from ingredient and nutritional labeling requirements. Please consult the Code of Federal Regulations for further clarification on antifoam usage in your particular food-grade application.

APPLICATION AND USAGE GUIDELINES

To control foam, our silicone antifoam agents may be added "as is" directly to the foaming process, or they may be diluted with water immediately prior to application. While it is sometimes preferable to dilute the antifoam prior to use, please keep in mind that a diluted antifoam is not often stable for a long period of time, and should be used as soon as possible. It is also advisable to ensure that a diluted antifoam is periodically mixed or thoroughly stirred prior to use. (Note: Undiluted antifoam does not requiring stirring prior to use.) Do not store diluted antifoam agents for a long period of time because product stability and antimicrobial preservation may be compromised.

Each foaming problem is unique and requires different treatment levels of antifoam. Use only the minimum amount of antifoam required to control the foam. Direct food-additive applications are limited to a federally defined legal maximum of silicone content remaining in the food after processing. Therefore, if higher levels of antifoam are initially used during processing, it is essential that the final concentration of silicone present in the food not exceed the legal limit. Indirect food contact applications are not necessarily restricted in this capacity and may be able to use a greater concentration of antifoam in their process. Experimentation is usually necessary to optimize the amount of and compatibility of the antifoam with the foaming system and processing equipment.

STORAGE

Applied Material Solutions' silicone antifoam agents are stable and long lasting; nevertheless, the products should be protected from freezing and prolonged exposure to direct sources of heat. Should the antifoam freeze, thaw the product at room temperature with the container closed and gently stir to uniformity once completely thawed. A slight change in appearance may result, but performance should not be affected. Storage temperatures at or below 80° F (27° C) are preferred and, if desired, the antifoam agents can also be refrigerated. Food-grade antifoam emulsions are ultimately perishable commodities and should be afforded an equivalent level of care. Use the product in a timely fashion after initially opening the container, and close tightly after use. Applied Material Solutions recommends that unopened antifoam agents be used within one year.

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PRODUCT INFORMATION

Product	Silicone Content	Level Permissible in Food	Kosher Status	Typical Viscosity @ 20 rpm	Typical pH (neat)
TRANS-1030	3 %	333 ppm	Not Certified	200 – 300 cP	7.25 – 8.25
TRANS-1030 K	3 %	333 ppm	Pareve	200 – 300 cP	7.25 – 8.25
TRANS-5 A	5 %	200 ppm	Pareve	100 – 200 cP	3.75 – 4.25
TRANS-5 K	5 %	200 ppm	Pareve	100 – 200 cP	3.75 – 4.25
TRANS-10	10 %	100 ppm	Not Certified	1000 – 4000 cP	7.50 – 8.25
TRANS-10 A	10 %	100 ppm	Pareve	400 – 1200 cP	3.50 – 4.00
TRANS-10 K	10 %	100 ppm	Pareve	1000 – 4000 cP	7.50 – 8.25
TRANS-10 M	10 %	100 ppm	Pareve	700 – 1100 cP	8.00 – 8.50
TRANS-10 PK	10 %	100 ppm	Pareve Passover	450 – 600 cP	3.00 – 4.00
TRANS-15	15 %	66 ppm	Not Certified	1000 – 1500 cP	3.50 – 4.00
TRANS-15 K	15 %	66 ppm	Pareve	1000 – 1500 cP	3.50 – 4.00
TRANS-20 A	20 %	50 ppm	Pareve	1000 – 1500 cP	3.50 – 4.00
TRANS-30	30 %	33 ppm	Not Certified	4000 – 7000 cP	8.00 – 8.50
TRANS-30 A	30 %	33 ppm	Pareve	2000 – 4000 cP	3.50 – 4.50
TRANS-30 K	30 %	33 ppm	Pareve	4000 – 7000 cP	8.00 – 8.50

PACKAGING OPTIONS

Applied Material Solutions' antifoam emulsions are available in 55-gallon poly drums (net wt. 450 lb.) and 5-gallon HDPE pails (net wt. 40 lb.). By special request, the following packaging options may also be available: bulk tank wagon, 275-gallon totes, 55-gallon lined openhead or tighthead steel drums, 30 or 15-gallon poly drums, and 1-gallon jugs. Special requests may necessitate longer lead-times.

FORMULATION OPTIONS & EXTRAS

Customers with rigid specifications, including microbiological and viscosity requirements, should contact Applied Material Solutions. Customized products can be made available upon request.