



UCON Fluids and Lubricants

UCON Antifoams

Product Description

The Dow Chemical Company offers a series of water-soluble and water-dispersible antifoams for a variety of industrial applications. Inverse solubility and food-grade status are key features which make UCON™ Antifoams desirable and effective as foam control agents.

The chemical nature of UCON Antifoam gives them a physical property known as inverse solubility. This means that an increase in the temperature of an aqueous system in which UCON Antifoams are present causes a decrease in solubility of the UCON Antifoam being used. At or above the cloud point (the initial effective temperature), the UCON Antifoam separates from solution and acts as an extremely effective defoamer. Reduction of the system temperature below the cloud point enables the UCON Antifoam to again become solubilized. This cycling may be indefinitely repeated without degradation of the product, as long as the system temperature does not exceed 150°C.

Food Grade Status

Another key feature of UCON Antifoams is the USA Food and Drug Administration sanctions with which they comply, as noted in the table below.

Regulation (21 CFR)	Permitted Use
§ 173.310	Additive to steam boilers used to generate steam that will contact food.
§ 173.340	Component of defoaming agents used in the processing of beet sugar.
§ 176.200	Component of defoaming agents used in the preparation and application of coatings for paper and paperboard.
§ 176.210(d)(3)	Component of defoaming agents used in the manufacture of paper and paperboard.
§ 176.210(d)(2)	Component of defoaming agent formulations used in the manufacture of paper and paperboard for food packaging, when reacted with fatty acids from certain drying oils to form esters.
§ 177.1200	Defoamer in the processing of cellulose pulp used in the manufacture of cellophane base sheet.
§ 178.3120	Defoaming agent as provided in § 176.210 for use in the production of animal glue used as adhesive or component of adhesives and as a colloidal flocculent added to the pulp suspension prior to the sheet-forming operation in the manufacture of paper and paperboard.

Regulation (21 CFR)	UCON Lubricant					
	50-HB-			LB-		
	2000	3520	5100	625	1145	1715
§ 173.310	•	•	•			
§ 173.340			•			
§ 176.200			•	•	•	•
§ 176.210(d)(3)	•	•	•	•	•	•
§ 176.210(d)(2)				•	•	•
§ 177.1200			•	•	•	•
§ 178.3120	•	•	•	•	•	•

Dosage Levels and Use

Experience in these markets shows that the effective concentration required to prevent or control foaming varies by system, by design, and by operation. The user should optimize concentration levels during actual operation of the system. A partial listing of successful applications and initial dosage recommendations follows:

- Boiler Feed Water – concentrations of 0.15 to 0.35 parts per million (ppm) are common, although some systems use more – seldom over 1.7 ppm. Introduction of antifoam can be done either intermittently or continuously.

» Most Often Used – UCON Lubricant 50-HB-5100 «

- UCON Lubricant LB-625 is employed in certain submerged culture fermentation processes at concentrations of 50 to 5000 ppm. This antifoam is specifically of value in fermentation employing actinomyceteles-type organisms, and is used to produce a wide range of antibiotics, including tetracycline and rifamycin B complex. It is also widely used in the production of steroids. UCON Lubricant LB-625 is sterilizable and stable over a wide range of fermentation processing conditions.

» Most Often Used – UCON Lubricant LB-625 «

- Acid Gas Removal Units (for systems purifying natural gas with ethanolamines) – concentrations vary from 30 ppm to over 200 ppm, but most systems can be started on 100 ppm. Results are rapidly observed, and optimization is, therefore, simple. These products often replace natural oils like oleyl alcohol, which may become rancid. Note: Concentration must be based on total volumes of ethanolamine and water in the system, with makeup and blowdown of each included.

» Most Often Used – UCON Lubricant LB-1715 «

- Sea Water Desalination – concentrations in the total system from 0.07 up to 0.20 ppm have been encountered, but most multistage flash (MSF) evaporator systems use 0.07 to 0.10 ppm. This is equivalent to about 1.2 kg per day of UCON Antifoam per one million imperial gallons per day (MGD) of distillate being produced, or 6 kg per day for each 5 MGD evaporator. Introduction is often done by continuous injection of a concentrate, made by dispersing the UCON Antifoam with water (and also the antiscaling products, if desired), directly into the make-up stream. It is important to maintain thorough mixing while dosing.

» Most Often Used – UCON Lubricant LB-1145 «

Typical Physical Properties†

Water-Soluble Series (effective at >50°C)			
	UCON Lubricant 50-HB-		
	2000	3520	5100
Viscosity, (cSt at 40°C)	398	700	1015
Pour Point, °C(°F)	-32(-26)	-29(-20)	-36(-33)
Cloud Point, °C for 1% aqueous solution	53	51	50
Flash Point, ASTM D 93, °C(°F)	177(350)	171(341)	199(390)
pH (10% aqueous dispersion)	5.5 – 7.5	5.5 – 7.5	5.5 – 7.5
Specific Gravity 20/20°C (68/68°F)	1.056	1.056	1.057

Water-Dispersible Series			
	UCON Lubricant LB-		
	625	1145	1715
Viscosity, (cSt at 40°C)	124	227	338
Pour Point, °C(°F)	-32(-26)	-29(-20)	-23(-10)
Flash Point, ASTM D 93, °C(°F)	168(335)	191(375)	188(370)
pH (3 aqueous dispersion)	5.0 – 8.5	5.0 – 8.5	5.0 – 8.5
Specific Gravity 20/20°C (68/68°F)	0.997	1.000	1.000

† Typical properties, not to be construed as specifications

Product Stewardship

Dow encourages its customers and potential users to review their applications from the standpoint of human health and environmental aspects. To help ensure that Dow products are not used in ways for which they are not intended or tested, Dow personnel will assist customers in dealing with environmental and product safety considerations. Dow literature, including Material Safety Data Sheets, should be consulted prior to the use.

For More Information:

North America: toll-free 1-800-447-4369
 fax 1-989-832-1465
 Europe: toll-free +800 3 694 6367
 call +32 3 450 2240
 fax +32 3 450 2815
 Pacific: call +852 2879 7260
 fax +852 2827 5881
 Other Areas: call 1-989-823-1560
 fax 1-989-832-1465
<http://www.dow.com>

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