



Silicone Foam Control for the Oil & Gas Industry

Foam is a problem.

From the well head, through refining, processing and even during shipment of the finished product, foam can cause major problems in the production and refining of oil.

Foam robs you of capacity and makes your production process less efficient. It causes cavitation in pumps and excessive process fouling. Waste, maintenance costs and processing time go *up*, while productivity goes *down*.

Silicone foam control is the solution.

Silicone foam control agents from Dow Corning eliminate process foam in production, refinery and gas processing plants. Eliminating process foam can increase your productivity, reduce your production costs and, consequently, save you money.

In oil and gas production:

- Gas-Oil Separation
- Drilling Mud
- Gas Dehydration
- Gas Scrubbing

In the refinery:

- Crude Distillation
- Vacuum Distillation
- Cracking Process
- Asphalt Processing
- Delayed Cokers
- Storage Tank Froth-Overs
- Benzene-Toluene-Xylene (BTX) Extraction (Aromatics)



Oil & Gas Antifoam Applications – Global Product Selector

Products	Oil and Gas Production				Refinery Operations						
	Gas-Oil Separation	Drilling Muds and Fluids	Well Water Injection	Gas Treatment, Amine and Glycol	Crude Distillation	Vacuum Distillation	Cracking Process	Asphalt Processing	Delayed Coking	Froth-Over	BTX Extraction (Aromatics)
EMULSIONS											
<i>Dow Corning</i> [®] 1410 Emulsion				x							
<i>Dow Corning</i> [®] 1430 Emulsion		x		x							
<i>Dow Corning</i> [®] 2-1517 Offshore AF			x								
<i>Dow Corning</i> [®] DB-110A Emulsion				x							
<i>Dow Corning</i> [®] DB-310 Emulsion		x		x							
FLUIDS											
<i>Dow Corning</i> [®] 2-3316 Silicone Organic Antifoam				x							
<i>Dow Corning</i> [®] 2-1165 Dispersion	x				x				x		
<i>Dow Corning</i> [®] FS-1265 Fluid, 10,000 cSt	x										
<i>Dow Corning</i> [®] FS 2638 Antifoam Fluid	x										
<i>Dow Corning</i> [®] Q2-4128 Antifoam									x		
<i>XIAMETER</i> [®] PMX-200 Silicone Fluid, 1,000 cSt						x	x	x		x	
<i>XIAMETER</i> [®] PMX-200 Silicone Fluid, 12,500 cSt	x					x					
<i>XIAMETER</i> [®] PMX-200 Silicone Fluid, 60,000 cSt	x				x	x			x		
<i>XIAMETER</i> [®] PMX-200 Silicone Fluid, 100,000 cSt	x								x		
<i>XIAMETER</i> [®] PMX-200 Silicone Fluid, 600,000 cSt	x								x		
<i>XIAMETER</i> [®] PMX-200 Silicone Fluid, 1,000,000 cSt	x								x		
COMPOUNDS											
<i>Dow Corning</i> [®] 1400 Compound		x		x	x			x			x
<i>Dow Corning</i> [®] DB-100 Compound		x		x	x			x			x

Key:

Aqueous

Nonaqueous

Oil & Gas Antifoam Applications – General Product Information

Products	Type Of Foamer Aq = Aqueous Naq = Non-Aqueous	Effectiveness at High Temperatures		Usable in Strong Acid or Alkaline Systems	Active Ingredients, percent	Suggested Starting Concentration as supplied, ppm ¹	Suitable Diluents	Emulsion (E) Fluid (F) Compound (C)	Color and Consistency	Specific Gravity at 25°C	Containers Available, kg	Shelf Life, as supplied, months ²
		Above 49°C	Above 100°C									
EMULSIONS												
<i>Dow Corning</i> 1410 Emulsion	Aq	x		x	10	200	Water	E	Thin, white liquid	1.00	20, 200	6
<i>Dow Corning</i> 1430 Emulsion	Aq	x		x	30	60	Water	E	Medium, white liquid	1.00	20, 200	6
<i>Dow Corning</i> 2-1517 Offshore AF	Aq	x			56	5	Water	E	Thin, white liquid	1.00	200, 1000	6
<i>Dow Corning</i> DB-110A Emulsion	Aq	x		x	10	200	Water	E	Thin, white liquid	1.00	25, 200, 1000	6
<i>Dow Corning</i> DB-310 Emulsion	Aq	x		x	30	60	Water	E	Medium, white liquid	1.00	25, 200, 1000	6
FLUIDS												
<i>Dow Corning</i> 2-3316 Silicone Organic Antifoam	Aq	x		x	80	5-10	Amine or Water	F	Medium, milky white liquid	1.005	20, 200	18
<i>Dow Corning</i> 2-1165 Dispersion	Naq	x			24	15	Aliph. or arom. solvents	F	Thin, clear liquid	0.84	200, 1000	12
<i>Dow Corning</i> FS-1265 Fluid, 10,000 cSt	Naq	x	x		100	5	Cellosolve acetate	F	Viscous, clear fluid	1.25-1.31	25, 250	12
<i>Dow Corning</i> FS 2638 Antifoam Fluid	Naq	x	x		100	5	Cellosolve acetate	F	Clear/hazy liquid	1.15	25, 225	24
<i>Dow Corning</i> Q2-4128 Antifoam	Naq	x			100	10	Propylene glycol	F	Very viscous, white fluid	0.98	200	9
XIAMETER PMX-200 Silicone Fluid, 1,000 cSt	Naq	x	x		100	20	Aliph. or arom. solvents	F	Thin, clear fluid	0.97	25, 200, 1000	12
XIAMETER PMX-200 Silicone Fluid, 12,500 cSt	Naq	x	x		100	20	Aliph. or arom. solvents	F	Viscous, clear fluid	0.97	20, 190, 980	12
XIAMETER PMX-200 Silicone Fluid, 60,000 cSt	Naq	x	x		100	15	Aliph. or arom. solvents	F	Viscous, clear fluid	0.97	20, 190, 960	12
XIAMETER PMX-200 Silicone Fluid, 100,000 cSt	Naq	x	x		100	10	Aliph. or arom. solvents	F	Very viscous, clear fluid	0.97	18, 190, 950	12
XIAMETER PMX-200 Silicone Fluid, 600,000 cSt	Naq	x	x		100	5	Aliph. or arom. solvents	F	Very viscous, clear fluid	0.97	170	12
XIAMETER PMX-200 Silicone Fluid, 1,000,000 cSt	Naq	x	x		100	5	Aliph. or arom. solvents	F	Very viscous, clear fluid	0.97	170	12
COMPOUNDS												
<i>Dow Corning</i> 1400 Compound	Naq	x	x	x	100	20	Aliph. or arom. solvents	C	Medium, off-white liquid	1.03	20, 200	18
<i>Dow Corning</i> DB-100 Compound	Naq	x	x	x	100	20	Aliph. or arom. solvents	C	Medium, off-white liquid	1.03	25, 200, 1000	6

¹To determine concentration of antifoam required for a particular application, start at the recommended concentration. Results will indicate whether it is necessary to increase or decrease the level of antifoam for optimum performance.

²From date of shipment from Dow Corning when properly stored. Subsequent dilution will reduce shelf life greatly.

Key:

Aqueous

Nonaqueous

In oil & gas production

Gas-Oil Separation – Certain crudes tend to foam while undergoing depressurization to release entrapped gas. This tendency can severely limit output and is especially severe on offshore rigs where special foaming problems occur. Using as little as 1 to 5 parts per million silicone antifoam from Dow Corning can help you maintain maximum separator capacity and well output.

Drilling Mud – These vital fluids are extremely surface active and prone to foam. *Dow Corning*[®] brand silicone antifoams effectively suppress that foam.

Gas Dehydration – Stripping water from glycols such as di-, tri- or tetraethylene glycol during drying of gas often causes severe foaming. This leads to high glycol loss and reduction of throughput. A *Dow Corning* silicone antifoam added to the makeup glycol stream usually eliminates the problem.

Gas Scrubbing – Gas scrubbers used to remove CO₂ and H₂S from gases are prone to foam. Such processes are commonly used for natural gas, refinery gas, in gas treatment as a part of reforming, in ethylene production (steam cracking) and in the production of ethylene oxide. Trace impurities, such as liquid hydrocarbons, well-head inhibitors and valve greases in the incoming gas can cause foam regardless of which absorbent (MDEA, DEA, TEA and DGA or carbonate solution) is used. Foaming can cause reduced throughput as well as loss of expensive absorbent by carryover. The foam can be prevented by feeding a *Dow Corning* silicone antifoam into the absorbent stream or into the top of the absorber.

In the refinery

Crude Distillation – Certain crudes have a tendency to foam badly, which can reduce distillation efficiency. As little as 2 ppm (60 lb/d for a throughput of 100,000 bpd) of a silicone antifoam from Dow Corning can end the problem, significantly increasing capacity.

Vacuum Distillation – Silicone fluid can be used to control foaming of heavy oil fractions. The low volatility of the silicone ensures that it leaves the unit with the heavier bitumen fractions.

Cracking Process – Silicone antifoams from Dow Corning are frequently used in processes such as Visbreaking to prevent foaming in the distillation column.

Asphalt Processing – Silicone antifoams from Dow Corning are particularly effective in preventing foam in asphalt-related processes. Examples include controlling foam in strippers associated with propane deasphalting and eliminating foam in asphalt blowing. And when used at rates as low as 2 ppm in asphalt, silicone antifoams can make a remarkable difference in processing, loading and transport.

Delayed Cokers – Foam typically occurs during the process of coking heavy oil and asphalt fractions. The addition of 10 ppm of a silicone antifoam dispersed in kerosene, either directly to the drum or before the furnace, generally controls the foam. Increased drum runs and reduced coke deposits in overhead vapor lines can be realized.

Storage Tank Froth-Overs – These can be prevented in the event of steam line rupture, water-bottom turnover or the inadvertent injection of water by injecting 1 ppm silicone antifoam into the tank intake.

Benzene-Toluene-Xylene (BTX) Extraction (Aromatics) – This is characterized by the *Udex*^{™1} process, which uses a mixture of

diethylene and dipropylene and/or tetraethylene glycol to extract BTX. Foaming occurs in both the stripper and the extractor, which leads to carryover and decreased capacity. Prediluting a *Dow Corning* silicone antifoam in one of the system components or in an aliphatic solvent and injecting it continuously at the top of the extractive stripper helps prevent foam buildup.

Two brands to serve you

In addition to the *Dow Corning*[®] brand specialty materials and services showcased in this product guide, Dow Corning Corporation offers over 2,100 standard silicone products under its XIAMETER[®] brand, backed by the same quality and supply you've come to expect from Dow Corning. Visit xiameter.com to learn more about additional silicone options available from XIAMETER brand.

Contact us

dowcorning.com/ContactUs

xiameter.com

¹*Udex* is a trademark of UOP.

Images: Page 1 (top to bottom): AV12255, AV11614, AV12202

LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that our products are safe, effective and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow Corning's sole warranty is that our products will meet the sales specifications in effect at the time of shipment.

Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

DOW CORNING SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

DOW CORNING DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Dow Corning is a registered trademark of Dow Corning Corporation.

We help you invent the future is a trademark of Dow Corning Corporation.

XIAMETER is a registered trademark of Dow Corning Corporation.

©2002, 2009 Dow Corning Corporation. All rights reserved.

Printed in USA

AGP9871

Form No. 26-1143A-01

DOW CORNING

We help you invent the future.[™]