Product Datasheet

Airout® Air Release Agents

Multipurpose Air-release Additives & Surface Tension Depressants

The Airout line of air release agents are additives specially formulated to facilitate the release of entrapped air from epoxy, polyurethane, polyester, and other polymeric resin systems including polyaspartic and some thermoplastic resin systems. They minimize or eliminate the appearance of bubbles and voids in castings and reduce or eliminate surface defects such as orange peel and cratering in coatings.

These additives are effective in solvent-based, water-based, and 100% solid resin systems. Highly effective, they can be used in very low concentrations, which ensure that there is little or no negative impact on the cure polymeric system. Indeed, in some cases the addition of selected additives, may increase adhesion, surface wetting, moisture resistance, and gloss.

Applications & Benefits

• Airout®	Designed for use in epoxy & polyurethane resins. Rapidly eliminates bubbles in casting, coatings, and impregnation systems. Stable and compatible with most resin systems. Reduced possibility of "sweat out" or oily surface appearance.
• Airout® NF	Modified version of Airout that is non-hazardous for shipping purposes and Volatile Organic Compounds (VOC) free.
• Airout® S	Modified version of Airout with a carrier solvent that improved compatible and increases performance in epoxy coatings.
• Super Airout®	Designed for use in polyurethane, polyester, and many other resins for rapid reduction of air. In many applications, Super Airout also improves the adhesion, surface wetting, and moisture resistance of most systems. Free of silicone oils but contains silane functionality.
• X-Air™	Excellent for epoxy and polyurethane systems especially for castings or encapsulation systems. Improve rapid air release with little or no impact on mechanical, chemical, or electrical properties. 100% solids. Silicone-free additive.
• X-Air 2™	Non-Phthalate containing version of X-Air™, very similar performance, but phthalate free.
• X-Air™ 105	High solids content, 100% active, multipurpose Silicone defoamer. Can be used in a wide range of applications including coatings, inks, adhesives, soap & cleaning formulations, & lube additives
• Antifoam AF-4™	Multipurpose air release agent for epoxy, polyurethane, and polyester systems. Aids air release, wetting, surface leveling and prevents many coating defects. Silicone-free.
• Antifoam NF-4™ and Antifoam NF-4X™	Non-flammable / non-hazmat versions of Antifoam AF-4. VOC free. NF-4X has higher active ingredient concentration & solids content.

Product description

(average values at25ºC unless otherwise specified)

Airout			
	Viscosity	ASTM D-2393	30 cP
	Specific Gravity	ASTM D-1963	0.86
	Surface Tension	Tensiometer method	23.1 dynes/cm
	Percent Solids,	ASTM D-2369	45%
	Water Solubility		Minimal
	Flash point	ASTM D-92	>40 °C
	Appearance		Water clear liquid
	Storage	Airout is combustible, do not expose to heat, sparks, or flames. Store at 25°C +/- 10°C.	
	Shelf-life		12 months, minimum
Airout S	(formerly also known as D-Air)		
	Viscosity	ASTM D-2393	30 cP
	Specific Gravity	ASTM D-1963	0.86
	Surface Tension	Tensiometer method	22.9 dynes/cm
	Percent Solids,	ASTM D-2369	44%
	Water Solubility		~9%
	Flash point	ASTM D-92	-5°C
	Appearance		Water clear liquid
	Storage	Airout S is flammable, do not expose to heat, sparks, or flames. Store at 25°C +/- 10°C.	
	Shelf-life		12 months, minimum
Airout NF			
	Viscosity	ASTM D-2393	30 cP
	Specific Gravity	ASTM D-1963	1.20
	Surface Tension	Tensiometer method	~ 23 dynes/cm
	Percent Solids,	ASTM D-2369	100%
	Water Solubility		Minimal
	Flash point	ASTM D-92	>42°C*
	Appearance		Water clear liquid
	Storage	Airout NF is rated as combustible*. Store at 25°C +/- 10°C.	
	Shelf-life		12 months, minimum

*The solvent carrier PCBTF has a flash point around 42°C but does not support combustion and will self-extinguish.

Super Airout			
	Viscosity	ASTM D-2393	20 cP
	Specific Gravity	ASTM D-1963	0.96
	Surface Tension	Tensiometer method	~ 29.6 dynes/cm
	Percent Solids,	ASTM D-2369	45%
	Water Solubility		Appreciable
	Flash point	ASTM D-92	>27°C
	Appearance		Slightly yellow, liquid
	Storage	Super Airout is flammable, do not expose to heat, sparks, or flames. Store at 25°C +/- 10°C	
	Shelf-life		12 months, minimum
X-Air			
	Viscosity	ASTM D-2393	40 cP
	Specific Gravity	ASTM D-1963	0.97
	Surface Tension	Tensiometer method	24.1 dynes/cm
	Percent Solids,	ASTM D-2369	100%
	Water Solubility		Minimal
	Flash point	ASTM D-92	>115°C

Product description

(average values)

	Appearance		Slightly yellow liquid
	Storage	X-Air is non-flammable, but may foam or spatter above 100°C. Store at 25°C +/- 10°C	
	Shelf-life		12 months, minimum

X-Air 2

Viscosity	ASTM D-2393	36
Specific Gravity	ASTM D-1963	0.96
Surface Tension	Tensiometer method	24 - 25 dynes/cm
Percent Solids,	ASTM D-2369	100%
Water Solubility		Minimal
Flash point	ASTM D-92	>93°C
Appearance		Clear to very light yellow liquid
Storage	X-Air 2 is non-flammable. Store at 25°C +/- 10°C	
Shelf-life		12 months, minimum

X-Air 105

Viscosity	ASTM D-2393	1000 cP
Specific Gravity	ASTM D-1963	1.01
Surface Tension	Tensiometer method	22.9 dynes/cm
Percent Solids,	ASTM D-2369	>97.5%
Water Solubility		Negligible
Flash point	ASTM D-92	>115°C
Appearance		Greyish translucent liquid
Storage	X-Air is non-flammable. Store at 25°C +/- 10°C	
Shelf-life		12 months, minimum

Antifoam AF-4

Viscosity	ASTM D-2393	15 cP
Specific Gravity	ASTM D-1963	0.86
Surface Tension	Tensiometer method	28.1 dynes/cm
Percent Solids,	ASTM D-2369	10%
Water Solubility		Minimal
Flash point	ASTM D-92	>26°C
Appearance		Water clear liquid
Storage	Antifoam AF-4 is flammable, do not expose to heat, sparks, or flames. Store at 25°C +/- 10°C	
Shelf-life		12 months, minimum

Antifoam NF-4

Viscosity	ASTM D-2393	15 cP
Specific Gravity	ASTM D-1963	1.04
Surface Tension	Tensiometer method	28 dynes/cm
Percent Solids,	ASTM D-2369	25%
Water Solubility		Minimal
Flash point	ASTM D-92	>42°C*
Appearance		Water clear liquid
Storage	Airout NF-4 is rated as combustible*. Store at 25°C +/- 10°C.	
Shelf-life		12 months, minimum

*The solvent carrier PCBTF has a flash point around 42°C but does not support combustion and will self-extinguish.

Antifoam NF-4X

Viscosity	ASTM D-2393	32 cP
Specific Gravity	ASTM D-1963	1.04
Surface Tension	Tensiometer method	dynes/cm
Percent Solids,	ASTM D-2369	10%
Water Solubility		Minimal
Flash point	ASTM D-92	>42°C*
Appearance		Water clear liquid
Storage	Airout NF-4X is rated as combustible*. Store at 25°C +/- 10°C.	
Shelf-life		12 months, minimum

*The solvent carrier PCBTF has a flash point around 42°C but does not support combustion and will self-extinguish.

Packaging

Most items are available in pints, quarts, 1-gallon, and 5-gallon containers. Some items are also available in 55-gallon drums. Custom packaging, labeling, and blends of standard products are available by request.

Guide to Target Applications

Product	Coatings					Molding / Casting / Encapsulation			
	Epoxy	PUR	Polyester	Water based	Other*	Epoxy	PUR	Polyester	Other*
Airout	++	+++		+	+	++	+++		+
Airout S	+++	+++		++	+	+++	+++		+
Airout NF	+++	+++		+	+	+++	+++		+
Super Airout	++	++	++	+	+	+	++		+
X-Air	+	+			+	++	+		
X-Air 2	+	+			+	++	+		
X-Air 105	+++	+++	+++	++	++	++	++	++	++
AF-4	++	++	++		++	++	++	++	+
NF-4	++	++	++		++	++	++	++	+
NF-4X	+++	+++	++		++	+++	+++	++	+

*Includes UV cured acrylates, polyaspartics, thermoplastic resin solutions.
Compatibility & Effectiveness Rating: + = good, ++ = better, +++ = best

Suggested Usage Levels

Product	Type	Parts by weight additive in 100 part resin
Airout	Silicone	0.01 – 0.50
Airout S	Silicone	0.01 – 0.50
Airout NF	Silicone	0.01 – 0.50
Super Airout	Silane functionality	0.10 – 1.00
X-Air	Non-silicone	0.10 – 0.50
X-Air 2	Non-silicone	0.10 – 0.50
X-Air 105	Silicone	0.001 – 0.25
Antifoam AF-4	Non-silicone	0.05 – 0.50
Antifoam NF-4	Non-silicone	0.05 – 0.50
Antifoam NF-4X	Non-silicone	0.01 – 0.50

These usage levels are only suggested starting levels. The proper amount of any air release agent will vary with resin composition and filler content, if any. We suggest starting your evaluation with low levels and increasing the concentration until the optimum effect is achieved. Air release performance should be balanced against the effects of the additives on the other chemical, mechanical, and electrical properties of the system.

In transparent systems, high levels of air release agents can lead to cloudiness. The silicone additives are more likely to cause cloudiness than non-silicone additives. The exact concentration that produces cloudiness will vary with the air release agent selected and the compatibility with the resin system into which it is mixed. Because the silicone air release tend to be the most effective air release agents, it is sometimes helpful to blend one of the Airout air releases at 2:1 or 1:1 by weight or volume with either X-Air or Antifoam NF-4. Such blends can maximize air release effectiveness while reducing haziness and coating defects. SP&S can supply such mixtures pre-blended if that is helpful.

Whichever product is selected should be thoroughly mixed into the resin system. Power mixing is preferred to hand mixing to achieve thorough dispersion of the air release agent into the system. Adding the air release agent as early as possible in the manufacture of a formulated product will also generally aid in reducing air entrainment during the processing of the product.

Handling precautions

Mandatory and recommended industrial hygiene procedures should be followed whenever our products are being handled and processed. For additional information please consult the corresponding material safety data sheets.

Personal hygiene

See the applicable SDS for the GHS warnings and precautionary statements that are apply to each of these products. Contact us at msds@spolymers.com or by telephone at 661-294-1790 to request an SDS.

First aid

In case of contact:

Skin: Wash skin thoroughly with mild soap and water. Remove contaminated clothing and wash before reuse. Discard contaminated shoes and other articles made of leather.

Eyes: Flush eyes with plenty of water for 15 minutes and get prompt medical attention.

Inhalation: Remove person to fresh air.

Ingestion: **Do not** induce vomiting. Dilute with plenty of water and contact physician immediately. Never give anything by mouth to an unconscious person.

DISCLAIMER

IMPORTANT: The following supersedes Buyer's documents. **SELLER / MANUFACTURER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE**. No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller / Manufacturer be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict liability, tort or contract arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results presented are based on controlled or laboratory work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended.

Specialty Polymers & Services, Inc. (SP&S)
27822 Fremont Court
Valencia, CA 91355
www.spolymers.com

Tel: 661-294-1790
Fax: 661-294-0640
info@spolymers.com