



Amine Curing Agents

Airable Research Lab has developed a soy-based amine curing agent platform that combines chemical resistance, high reactivity, and high cross-link density. These curing agents provide a sustainable alternative to conventional petrochemical amines across a range of resin systems, while increasing bio-based content.

THE TECHNOLOGY

Airable modifies soybean oil to introduce amine functionality to enable high reactivity and strong chemical resistance. These materials also increase renewable carbon content relative to traditional amine curing agents. The available technologies are listed in the table to the right.

To evaluate performance, the amine hardeners were formulated 1:1 equivalent with bisphenol A diglycidyl ether (BADGE, ~377 EEW). Cured resins formed clear, glass-like coatings that showed excellent adhesion to steel, confirmed by crosshatch testing. Mechanical and chemical resistance were assessed via pencil hardness, MEK double rubs, mandrel bend, and Shore D testing.

Amine Resin	Equivalent Weight*(g/eq)	Melt Point (°C)	Viscosity (cPs, 25C)	Bio-Content (%)
AirAmine 17	112.4	65	-	82
AirAmine 42	91.3	75	-	56
AirAmine 87	168.7	-	1,400,000	68
AirAmine 98	77.9	-	5,500,000	62

*Amine Hydrogen

	Crosshatch Adhesion	Pencil Hardness	MEK Double Rub	Mandrel Bend (ø)	Shore D
ASTM	D3359	D3363	D5402	D522M	D2240
AirAmine 17	5B	H	50	≤0.5"	19
AirAmine 42	4B	H	40	≤0.4"	51
AirAmine 87	5B	9H+	100+	0.8"	49
AirAmine 98	5B	9H+	100+	1.0"	-

*Cured 1:1 eq with BADGE (~377)

APPLICATIONS

- Sealants
- Coatings
- Adhesives

BENEFITS

- Excellent metal adhesion
- Good chemical resistance
- Wide range of hardness and solvent resistance