Technical Data Sheet
Date of Issue: 2026/10/03

EADC
Ethylaluminum dichloride

CAS Number	563-43-9
EINECS/EC	209-248-6
Molecular Formula	$C_2H_5AlCl_2$

APPLICATION

Ethylaluminum dichloride (EADC) is used primarily as a catalyst component in Ziegler-Natta type systems for olefin and diene polymerizations. Other applications include use in alkylation reactions and as a catalyst component in linear oligomerization and cyclization of unsaturated hydrocarbons.

SPECIFICATION

Aluminum, wt. %	20.8 - 21.6
Chlorine/Aluminum, atom ratio.	1.95 - 2.05

	Average ($\bar{x}$)	Variation (3σ)
Aluminum, wt. %	21.2	0.3
Chlorine/Aluminum, atom ratio	2.00	0.03
Hydrolysis gas composition		
Ethane, mol. %	99.8	(*)
n-Butane, mol. %	0.1	(*)
Isobutane, mol. %	< 0.1	(*)

(*) Insufficient data to determine sigma.

DENSITY & VISCOSITY

Temperature		Density		Viscosity
°C	°F	g/mL	lbs/gal	cp
0	32	1.2718*	10.612*	5.11
10	50	1.2591*	10.506*	3.83
20	68	1.2464*	10.4*	2.98
25	77	1.24*	10.347*	2.66
35	95	1.2273	10.241	2.16
40	104	1.221	10.188	1.96
50	122	1.2083	10.082	1.65
60	140	1.1956	9.976	1.41
70	158	1.1828	9.87	1.22
80	176	1.1702	9.764	1.08
90	194	1.1574	9.658	0.957
100	212	1.1448	9.552	0.86
120	248	1.1194	9.34	0.712
140	284	1.094	9.128	0.603
160	320	1.0686	8.916	0.527
180	356	1.0432	8.704	0.466
200	392	1.0178	8.492	0.419

Equations:

Density: d(g/mL) = 1.271 8 - 0.001 27t; t = °C
Viscosity: $\log_{10}$(cp) = -1.1 135 + 246.57/(t + 135.31); t = °C
Experimental range: 35 - 90°C

*For supercooled liquid

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PHYSICAL PROPERTIES

Property	Value
Formula	$C_2H_5AlCl_2$
Formula weight	126.95
State and color at 25°C	white solid
Stability in contact with air	fumes vigorously
Stability in contact with water	reacts violently
Melting point, °C (°F)	31 (87.8)
Boiling point at 760 mm Hg, °C (°F)	203 (397)
Vapor pressure 40°C (104°F)	0.934
Vapor pressure 60°C (140°F)	3.33
Vapor pressure 80°C (176°F)	10.0
Vapor pressure 100°C (212°F)	26.1
Vapor pressure 120°C (248°F)	60.1
Vapor pressure 140°C (284°F)	124.6
Vapor pressure 160°C (320°F)	237.5
Vapor pressure 180°C (356°F)	421.8
Vapor pressure 200°C (392°F)	705.8
Vapor pressure 220°C (428°F)	1122.0
Vapor pressure 240°C (464°F)	1708.0
Specific heat at 20°C (68°F), cal/g°C	0.304
Specific heat at 20°C (68°F), btu/lb°F	0.304
Heat of vaporization at NBP, cal/g	39.4
Heat of vaporization at NBP, btu/lb	70.9
ΔH° of formation at 25°C, kcal/gfw	-128.9
Heat of combustion at 25°C, cal/g	3014
Heat of combustion at 25°C, btu/lb	5425
Heat of reaction with water at 25°C, cal/g	704
Heat of reaction with water at 25°C, btu/lb	1267
Coefficient of volume expansion at 35°C, per °C	0.00107
Critical pressure, atm	18.4
Critical temperature, °C	372.9

SAFETY & HANDLING

The pyrophoric nature of EADC presents potential hazards not common to most liquid chemicals used by industry in tank truck quantities. EADC, being pyrophoric, breaks into flame spontaneously and gives off dense smoke when exposed to air. It reacts violently with water. EADC is a clear, non-corrosive mobile liquid with a low vapor pressure. Hydrocarbon solutions of EADC, depending on the concentration and temperature, may not be pyrophoric. However, these solutions must still be blanketed with an inert gas such as dry nitrogen because EADC will react with air and moisture at the surface of the solution, giving off dense smoke, heat and flammable gas. For specific information on the safe handling and toxicity of this product, please refer to the Material Safety Data Sheet, which is available upon request.

TRANSPORT & PACKAING

	Nominal Value		Approximate Loadings	
Container Description	Gallons	Liters	Pounds	Kilograms
Tank Car (DOT-105A300W)	23,000-25,100	87,100-95,000	135,000-230,000	61,400- 104,000
Tank Trailer (DOT-MC330 or 331)	6,200-7,200	23,500-27,200	30,00-48,000	13,600- 21,800
Portable Tanks (DOT-51)/UN T21	430	1,635	2,250-3,800	1,021-1,725
	1,980	7,500	10,257-17,000	4,880-7,711
Isotank	5,635-5,970	21,330-22,600	30,000-34,000	13,600- 15,500
Cylinders: dual valve (DOT-4BA240)				
5 gallon size	5.7	22	25-53	11-24
26 gallon size	28.0	106	150-268	68-120
Laboratory cylinders (DOT-3AA2015)				
0.4 gallon size	0.40	1.47	1.2-2.2	0.58-0.97
1.0 gallon size	0.94	3.60	2.9-6.3	1.4-2.8

*Actual weight depends on highway load limits, product density and lifting considerations.

Shipments are made in accordance with DOT regulations — Section 173.134. All containers are shipped blanketed with dry nitrogen under slight positive pressure. Hydrocarbon solutions are also available blended to customer specifications.Tank rail cars and tank trucks are available in North America only.

Transportation Classification

Proper shipping name ..... Organometallic Substance, Liquid, Pyrophoric, Water Reactive (Ethylaluminum dichloride)

Hazard class ..... 4.2 (spontaneously combustible) + 4.3(dangerous when wet)

ID number UN3394

Placard(s ..... spontaneously combustible w/ number 4+dangerous when wet 4

Label(s ..... spontaneously combustible+dangerous when wet

MARPOL Classification ..... n/a

Harmonized tariff number 2931.00.4000-2

Schedule B number 2931.00.6000-7

OTHER INFORMATION

Further Related Documents — Safety Data Sheet

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