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

EASC
Ethylaluminum sesquichloride

CAS Number	12075-68-2
EINECS/EC	235-137-7
Molecular Formula	$(C_2H_5)_3Al_2Cl_3$

APPLICATION

Ethylaluminum sesquichloride (EASC) is used primarily as a catalyst component in Ziegler-Natta type systems for olefin and diene polymerizations. Other applications include ethylation of metals and certain organic carbonyl compounds. EASC can be used as a catalyst in Friedel-Crafts alkylations and acylations.

SPECIFICATION

Aluminum, wt %	21.4 - 22.0
Chlorine/Aluminum, atom ratio	1.47 - 1.53
Hydrolysis gas composition	
Ethane, mol %, min	99.2
n-Butane, mol %, max	0.5
Isobutane, mol %, max	0.3

STATISTICAL DATA

	Average ($\bar{x}$)	Variation (3σ)
Aluminum, wt %	2.17	0.3
Chlorine/Aluminum, atom ratio	1.51	0.02
Hydrolysis gas composition		
Ethane, mol %	99.93	0.13
n-Butane, mol %	0.03	0.07
Isobutane, mol %	<0.1	(*)

(*) Insufficient data to determine sigma.

DENSITY & VISCOSITY

Temperature		Density		Viscosity
°C	°F	g/mL	lbs/gal	cp
0	32	1.1227	9.368	3.03
10	50	1.1118	9.226	2.52
20	68	1.101	9.187	2.11
25	77	1.0955	9.142	1.94
30	86	1.0901	9.096	1.79
40	104	1.0793	9.006	1.54
50	122	1.0684	8.915	1.33
60	140	1.0575	8.824	1.16
70	158	1.0467	8.734	1.02
80	176	1.0358	8.643	0.907
90	194	1.025	8.553	0.809
100	212	1.0141	8.462	0.726
120	248	0.9924	8.281	0.594
140	284	0.9707	8.1	0.496
160	320	0.9489	7.918	0.42
180	356	0.9272	7.737	0.362
200	392	0.9055	7.556	0.315

Equations:

Density: $d(g/mL) = 1.12269 - 0.001086t$; t = °C

Viscosity: $\log_{10}(cp) = -1.8782 + 660.85/(t + 280)$; t = °C

Experimental range: 20 - 100°C

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PHYSICAL PROPERTIES

Property	Value
Formula	$(C_2H_5)_3Al_2Cl_3$
Formula weight	247.51
State and color at 25°C	clear, colorless liquid to straw colored liquid
Stability in contact with air	may fume spontaneously
Stability in contact with water	reacts violently
Melting Point °C (°F)	-21 (-6)
Boiling point at 760 mm Hg, °C (°F)	209.6 (409)
Vapor pressure[1], mm Hg at:	
60°C (140°F), mm Hg	2.47
80°C (176°F), mm Hg	7.63
100°C (212°F), mm Hg	20.42
120°C (248°F), mm Hg	48.00
140°C (284°F), mm Hg	101.5
160°C (320°F), mm Hg	196.8
180°C (356°F), mm Hg	354.7
200°C (392°F), mm Hg	601.1
220°C (428°F), mm Hg	966.7
Specific heat at 20°C, cal/g°C	0.347
Specific heat at 68°F, btu/lb°F	0.347
Heat of vaporization at NBP, cal/g	41.1
Heat of vaporization at NBP, btu/lb	73.9
ΔH° of formation at 25°C, kcal/gfw	-221.6
Heat of combustion, net at 25°C, cal/g	4625
Heat of combustion at 77°F, btu/lb	8325
Heat of reaction with water at 25°C, cal/g	752
Heat of reaction with water at 77°F, btu/lb	1354
Coefficient of volume expansion at 25°C, per/°C	0.001016
Critical pressure, atm	18.0
Critical temperature, °C	43

[1]Equation: $\log_{10}P = 6.4233 - 1285.1/(t + 151)$; P = mm Hg, t = °C

Experimental range: 90 - 185°C

HANDLING & STORAGE

The pyrophoric nature of EASC presents potential hazards not common to most liquid chemicals used by industry. EASC, being pyrophoric, breaks into flame spontaneously. EASC gives off dense smoke when exposed to air and may react violently with water. EASC is a clear, non-corrosive mobile liquid with a low vapor pressure. Hydrocarbon solutions of EASC, 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 EASC 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 & PACKAGING

	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 Sesquichloride)

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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