

DEAL-E

Diethylaluminum ethoxide ^a

DEAL-E is a co-catalyst product soluble in aromatic and saturated aliphatic and cycloaliphatic hydrocarbons.

Also used in a chromium catalyst system.

CAS number
1586-92-1

EINECS/ELINCS No.
216-447-1

TSCA status
listed on inventory

Molecular weight
130.2

Composition

Aluminum	^c 19.5-20.7 wt%
C ₂ H ₅ O/Al (molar)	1.00-1.05 wt%
Ethane	^b ≥ 96.0 molar%
Ethoxide	^d 33.4-36.5 wt%
Hydrogen	^b ≤ 0.6 molar%
Isobutane	^b ≤ 1.0 molar%
Methane	^b ≤ 0.3 molar%
n-Butane	^b ≤ 3.5 molar%
Propane	^b ≤ 0.2 molar%

Characteristics

Appearance	Clear, colorless liquid
Boiling point, 10 mm Hg	108-109 °C
Density, 30 °C	0.851 g/cm ³
Melting point	-50 °C
Solubility	Soluble in aromatic and saturated aliphatic and cycloaliphatic hydrocarbons
Stability to air	Fumes upon exposure
Stability to water	Reacts violently
Viscosity, 30 °C	2.3 mPa.s

Thermochemical properties

Heat of vaporization ΔH_v , NBP / 1 bar	^e 146 J/g (35 cal/g)
Heat of formation ΔH_f° , 25 °C / 1 bar	-523 kJ/mole (-125 kcal/mole)

Notes:

^a Product determined to be pyrophoric by the 'paper char test'. For more information, see the Nouryon technical bulletin entitled Pyrophoricity of Metal Alkyls. ^b Calculated from gas chromatographic analysis of hydrocarbons and hydrogen obtained by hydrolysis. ^c Determined by titration of aqueous hydrolyzate. ^d May be determined by proton nuclear magnetic resonance spectroscopy or by analyzing hydrolyzate for ethanol content. ^e NBP = Normal Boiling Point i.e. temperature at which the vapor pressure is 760 mm Hg (1 bar).

Applications

DEAL-E is used as a cocatalyst in the polymerization of olefins.

Storage

DEAL-E and its solutions are stable when stored under a dry, inert atmosphere and away from heat. DEAL-E slowly decomposes at temperatures above ~ 185°C.

Packaging and transport

DEAL-E and its solutions are available worldwide in cylinders and portable tanks. In North America only, DEAL-E is also available in tank trailers and rail cars. Containers are fabricated from carbon steel and are equipped with dip tubes for top discharge and all connections are located in the vapor space. Both packaging and transport meet the international regulations.

Safety and handling

DEAL-E may ignite upon exposure to air and reacts violently with water. DEAL-E and its solutions must be handled under a dry, inert atmosphere, e. g. nitrogen or argon. Water must be scrupulously removed from process equipment prior to putting it into metal alkyls service. Failure to do so may result in an explosion. Products of complete combustion of DEAL-E and its solutions are aluminum oxide, carbon dioxide and water. DEAL-E causes severe burns to the skin and eyes. It is imperative that proper personal protective equipment be worn when handling DEAL-E. Please refer to the Material Safety Data Sheet (MSDS) for further information on the safe storage, use and handling of DEAL-E. This information should be thoroughly reviewed prior to acceptance of this product. The MSDS is available at <https://polymerchemistry.nouryon.com>.

All information concerning this product and/or suggestions for handling and use contained herein are offered in good faith and are believed to be reliable. Nouryon, however, makes no warranty as to accuracy and/or sufficiency of such information and/or suggestions, as to the product's merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. Nouryon does not accept any liability whatsoever arising out of the use of or reliance on this information, or out of the use or the performance of the product. Nothing contained herein shall be construed as granting or extending any license under any patent. Customer must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes. The information contained herein supersedes all previously issued information on the subject matter covered. The customer may forward, distribute, and/or photocopy this document only if unaltered and complete, including all of its headers and footers, and should refrain from any unauthorized use. Don't copy this document to a website.

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