

TEAL

Triethylaluminum

TEAL is an aluminum alkyl used as a co-catalyst in the Ziegler-Natta polymerization of olefins.

CAS number
97-93-8

EINECS/ELINCS No.
202-619-3

TSCA status
listed on inventory

Molecular weight
114.2

Composition

Aluminum	^b ≥ 22.5 wt%
Hydride, as AlH ₃	^a ≤ 0.10 wt%
Triethylaluminum	^a ≥ 94.0 wt%
Triisobutylaluminum	^a ≤ 0.1 wt%
Tri-n-butylaluminum	^a ≤ 6.0 wt%

Characteristics

Appearance	Clear, colorless liquid
Boiling point, 760 mm Hg	186 °C
Density, 25 °C	0.832 g/cm ³
Melting point	-52 °C
Solubility	Soluble in aromatic and saturated aliphatic and cycloaliphatic hydrocarbons
Stability to air	Ignites upon exposure
Stability to water	Reacts violently, may ignite upon contact
Viscosity, 25 °C	2.5 mPa.s

Thermochemical properties

Heat of vaporization ΔH _v , NBP / 1 bar	536 J/g (128 cal/g) [°]
Heat of hydrolysis, 25 °C	4619 J/g (1104 cal/g)
Specific heat, 57 °C	2.226 J/g.°C (0.532 cal/g.°C)
Heat of formation ΔH _f [°] , 25 °C / 1 bar	-218 kJ/mole (-52 kcal/mole)
Heat of combustion ΔH _c [°] , 25 °C	-5104 kJ/mole (-1220 kcal/mole)

Notes:

^a Calculated from gas chromatographic analysis of hydrocarbons and hydrogen obtained by hydrolysis. ^b Determined by titration of aqueous hydrolyzate. [°] NBP = normal boiling point

Applications

TEAL is used as a cocatalyst in the Ziegler-Natta polymerization of olefins. TEAL is also used in the Ziegler growth reaction for the production of α-olefins and α-alcohols and as an alkylating agent in the production of other organometallic compounds and organic intermediates.

Storage

TEAL and its solutions are stable when stored under a dry, inert atmosphere and away from heat. TEAL decomposes slowly above 120°C. Thermal decomposition products include hydrogen, ethylene and elemental aluminum.

Packaging and transport

TEAL and its solutions are packed in cylinders and portable tanks. In North America, TEAL 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

TEAL ignites upon exposure to air and reacts violently with water. Hydrocarbon solutions of TEAL may also ignite upon exposure to air. TEAL 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 TEAL and its solutions are aluminum oxide, carbon dioxide and water. TEAL causes severe burns to the skin and eyes. It is imperative that proper personal protective equipment be worn when handling TEAL. Please refer to the Safety Data Sheet (SDS) for further information on the safe storage, use and handling of TEAL. This information should be thoroughly reviewed prior to acceptance of this product. The SDS is available at nouryon.com/sds-search.

Additional information

Availability: TEAL is available as the neat pyrophoric liquid and as pyrophoric and nonpyrophoric solutions in a variety of hydrocarbon solvents. Consult your Nouryon representative for further information.

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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The Nouryon logo consists of a stylized orange 'N' followed by the word 'ouryon' in a lowercase, sans-serif font. The 'N' is significantly larger and more prominent than the rest of the text.