

TMAL Solar

Trimethylaluminum

TMAL Solar is a special trimethylaluminum grade used to create an aluminum oxide passivation layer to increase efficiency of crystalline silica solar cells with proven performance in Chemical Vapour Deposition (CVD) and Atomic Layer Deposition (ALD) used in the solar cell industry.

CAS number
75-24-1

EINECS/ELINCS No.
200-853-0

TSCA status
listed on inventory

Molecular weight
72.1

Characteristics

Appearance	Clear, colorless liquid
Boiling point, 760 torr	127 °C
Density, 30 °C	0.743 g/cm ³
Melting point	15 °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, 30 °C	0.9 mPa.s

Vapor Pressure

at 10 °C / 283.15 K	4.87 torr
at 15 °C / 288.15 K	6.57 torr
A	2134
B	8.224
Gas constants	$\log P(\text{torr}) = B - A/T(K)$

Thermochemical properties

Heat of vaporization ΔH_v , 127 °C / 1 bar	247 J/g (59 cal/g)
Specific heat, 57 °C	2.213 J/g.°C (0.529 cal/g.°C)
Heat of formation ΔH_f° , 25 °C / 1 bar	-151 kJ/mole (-36 kcal/mole)
Heat of combustion ΔH_c° , 25 °C	-3180 kJ/mole (-760 kcal/mole)

Applications

For the solar cell manufacturing industry we offer a special trimethylaluminum grade under the trade name of TMAL Solar. TMAL Solar is used to create an aluminum oxide passivation layer to increase efficiency of solar cells. TMAL Solar has proven performance in Chemical Vapour Deposition (CVD) and Atomic Layer Deposition (ALD) used in the solar cell industry. It offers a cost-effective alternative to the ultra pure trimethylaluminum used in the semiconductor industry. Not to forget its superior performance over industrial grade TMAL used in the plastics industry. The extra purification step to produce TMAL Solar guarantees consistent, high quality material for your solar cell application. Our trimethylaluminum is supplied in canisters (cylinders) made from stainless steel with an electropolished internal finish. The cylinders are equipped with manual or pneumatic diaphragm valves. The valves are equipped with metal gasket VCR-connections.

Storage

TMAL Solar is stable when stored under a dry, inert atmosphere and away from heat.

Packaging and transport

We maintain a fleet of cylinders and portable tanks designed for the shipment of TMAL Solar. Shipping containers are designed and constructed to meet all national and international transport regulations and are tested periodically, in accordance with the appropriate regulations. Our standard containers are fabricated from carbon steel and are equipped with dip tubes for top discharge. Valves are equipped with standard VCR connections. Other containers are available on request. TMAL Solar is classified as Organometallic substance, liquid, pyrophoric, water-reactive; Class 4. 2; UN 3394; PG I.

Additional information

Nouryon uses leading edge processes, purification and transfilling techniques that ensure the repeatable and consistent delivery of our TMAL Solar in each cylinder that we supply. We apply state of the art techniques such as ICP-OES for trace metal analysis to meet your demands. Please contact us for detailed sales specifications.

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 blue '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.