

## Product Data Sheet

# TMAI Solar

### Product description

Trimethylaluminum, low oxygen

Molecular formula	: (CH <sub>3</sub> ) <sub>3</sub> Al
Molecular weight	: 72.1
CAS No.	: 75-24-1
EINECS/ELINCS No.	: 200-853-0
TSCA status	: listed on inventory

TMAI Solar has proven performance in ALD and PECVD processes used in the solar industry. It offers a cost-effective alternative to the ultra-pure trimethyl aluminum used in the semiconductor industry. Not to forget its superior performance over industrial grade TMAI used in the plastics industry. Our advanced purification technology guarantees consistent, high quality solar trimethyl aluminum.

### Specifications

AkzoNobel uses leading edge processes, purification and transfilling techniques that ensure the repeatable and consistent delivery of our TMAI 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.

### Characteristics

Appearance	: clear, colorless liquid
Density, 30°C	: 0.743 g/ml
Melting point	: 15°C
Viscosity, 30°C	: 0.9 mPa.s
Boiling point, 760 torr	: 127°C
Stability to air	: ignites upon exposure
Stability to water	: reacts violently, may ignite upon contact
Solubility	: soluble in aromatic and saturated aliphatic and cycloaliphatic hydrocarbons

### Thermochemical properties

Specific heat, 57°C	: 2.213 J/g.°C (0.529 cal/g.°C)
Heat of vaporization DH <sub>v</sub> , at 127°C, 1 bar	: 247 J/g (59 cal/g)
Heat of formation DH <sub>f</sub> <sup>o</sup> , 25°C, 1 bar	: -151 kJ/mole (-36 kcal/mole)
Heat of combustion DH <sub>c</sub> <sup>o</sup> , 25°C	: -3180 kJ/mole (-760 kcal/mole)

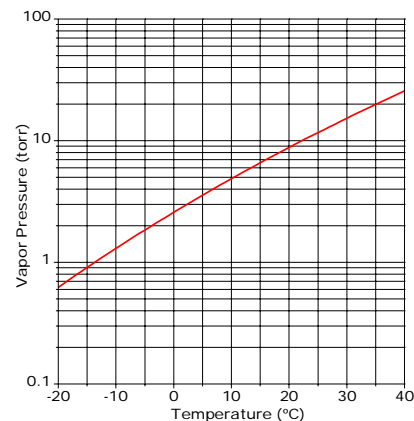
## Vapor pressure

at 10°C (283.15 K) : 4.87 torr  
at 15°C (288.15 K) : 6.57 torr

Gas constants:  $\log P(\text{torr})=B-A/T(\text{K})$

A : 2134

B : 8.224



## Storage

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

CAUTION: TMAI Solar may undergo exothermic decomposition with gas evolution at elevated temperatures (see 'Safety and handling').

Metal alkyls should, in general, be kept 6-12°C above their melting point. In case of solidified TMAI (melting point 15°C) place the container for at least 16 hours in a temperature controlled room at 25-35°C until the product is completely liquified.

## Packaging and transport

We maintain a fleet of cylinders and portable tanks designed for the shipment of TMAI 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.

TMAI Solar is classified as Organometallic substance, liquid, pyrophoric, water-reactive; Class 4.2; UN 3394; PG I.

## Safety and handling

TMAI Solar ignites upon exposure to air and reacts violently with water. TMAI Solar must be handled under a dry, inert atmosphere, e.g. nitrogen or argon. TMAI Solar may undergo exothermic decomposition with evolution of flammable gas if heated above 120°C (248°F).

The decomposition may become self-accelerating and UNCONTROLLABLE and may result in an explosion. 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 TMAI Solar are aluminum oxide, carbon dioxide and water. TMAI Solar causes severe burns to the skin and eyes. It is imperative that proper personal protective equipment be worn when handling TMAI Solar.

Please refer to the Material Safety Data Sheet (MSDS) for further information on the safe storage, use and handling of TMAI Solar. This information should be thoroughly reviewed prior to acceptance of this product.

The MSDS is available at [www.akzonobel.com/hpmo](http://www.akzonobel.com/hpmo).

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. AkzoNobel, 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. Nothing contained herein shall be construed as granting or extending any license under any patent. Buyer 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 bulletins on the subject matter covered. The user 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. You may not copy this document to a website.

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