LANDU

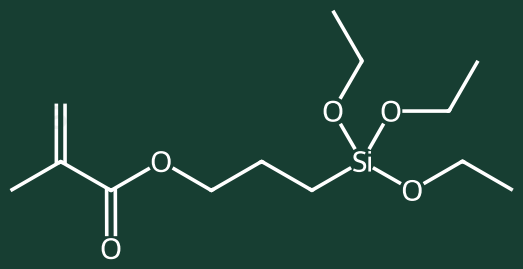
Technical data sheet
TDS-LEGRA-4010-L-EN
Revision 1.0, November 2026

LANDUSIL LEGRA

4010-L

3-Methacryloxypropyltriethoxysilane

Methacrylate-functional triethoxy silane for radical-curing resin and mineral interfaces



Chemical identity

Chemical name
3-Methacryloxypropyltriethoxysilane

CAS number
21142-29-0

Molecular formula
$C_{13}H_{26}O_5Si$

Molecular weight
290.43 g/mol

Hydrolysis by-product
Ethanol

Product description

LANDUSIL LEGRA 4010-L is 3-methacryloxypropyltriethoxysilane, a functional organosilane containing a methacrylate double bond and three hydrolyzable ethoxy groups. The two functions are joined through a propyl ester linkage. It is used to investigate coupling between compatible radical-curing resins and glass or mineral surfaces.

The ethoxy groups react with moisture to release ethanol and form silanols, which can condense with hydroxylated surfaces or with one another. The methacrylate group can participate in compatible radical polymerization. Surface bonding and organic cure require separate control: substrate moisture, catalyst, inhibitor, mixing sequence and drying all influence the resulting interface. Validate adhesion after conditioning in the intended resin system.

Features and benefits

- Methacrylate group for compatible radical cure
- Three ethoxy groups for hydrolysis and condensation
- Releases ethanol during hydrolysis
- Suitable for glass and hydroxylated mineral screening
- Can be evaluated as a comonomer or surface treatment

Specification

Property	Unit	Value	Test method
Appearance		**Colorless to light yellow, clear liquid**	Visual
Purity (GC)	%	**min. 97.0**	Gas chromatography

Tested on every batch and reported on the Certificate of Analysis.

Typical properties

Refractive index, nD20	approx. 1.4277
Flash point, method not reported	approx. 116 °C

For guidance only; not part of the specification.

© 2026 LANDUSIL

Applications

Glass fiber sizing
Coupling component for sizes and finishes used with polyester, vinyl ester and compatible acrylic matrices; match the film former and drying cycle.

Acrylic coatings and adhesives
Reactive silane for compatible radical-curing acrylic formulations, with conversion and substrate adhesion assessed in the complete formulation.

Acrylic emulsions
Comonomer screening during polymer manufacture; assess the stage of addition, competing hydrolysis and dispersion storage stability.

Mineral-filled composites
Surface treatment of quartz, silica and oxide fillers in cast composites and artificial stone; compare dispersion and conditioned strength.

UV-curable development
Evaluate with the selected initiator, wavelength, film thickness and filler content; confirm double-bond conversion and interfacial bonding.

Hybrid coating precursors
Starting material for controlled hydrolysis and condensation where retained methacrylate groups and condensed species are monitored separately.

Guidelines for use

Surface treatment	Apply to clean glass or suitable hydroxylated fillers using a validated treatment bath. Control water content, pH, mixing and bath age, then dry under conditions compatible with the substrate.
Resin incorporation	Introduce into a compatible radical-curing formulation with adequate mixing. Establish the addition level by trials and monitor cure, viscosity, pot life and storage stability.
Process qualification	Check inhibitor requirements and the complete cure package before scaling up. Compare treated and untreated controls after water or humidity exposure representative of service.

These levels are starting points. Determine the optimum level and method in trials under your own production conditions.

Handling and safety

- Hydrolysis releases ethanol. Keep transfer equipment dry and provide ventilation during mixing and drying.
- Can irritate skin and eyes. Wear suitable protective gloves, goggles and protective clothing.
- Protect from heat and strong light. Avoid contamination with initiators; confirm inhibitor and oxygen requirements before bulk storage.
- Read the Safety Data Sheet before use.

Storage and shelf life

Store in tightly closed original containers in a cool, dry and well-ventilated place, protected from moisture, heat and direct sunlight. Shelf life is 12 months in unopened containers under the recommended storage conditions. Reseal promptly after use.

Packaging

25 kg plastic drum, 200 kg steel drum, 1,000 kg IBC. Other pack sizes on request.

The information in this data sheet reflects our current knowledge and is given in good faith. It is not a guarantee of properties or of suitability for a particular use, and it does not release users from testing the product for their own application and process. Users are responsible for complying with applicable laws, regulations and third-party rights. Only the values under Specification are binding, as confirmed on the Certificate of Analysis. This edition supersedes all previous editions. For safety information, see the current Safety Data Sheet. © 2026 LANDUSIL. All rights reserved. LANDUSIL and its product series names are trademarks of LANDUSIL. No part of this document may be reproduced, modified or redistributed without prior written permission.