Technical Data Sheet

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Silfluo LS-A431

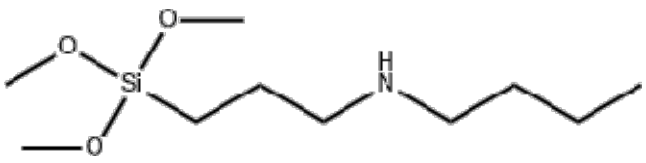
Secondary Amino-Functional Silane

Description

Silfluo LS-A431 is a versatile, high-performance secondary amino-functional silane, chemically identified as N-(3-(Trimethoxysilyl)propyl)butylamine (also known as N-(n-Butyl)-3-aminopropyltrimethoxysilane). Featuring a highly reactive secondary amine group and three hydrolyzable methoxy groups, it acts as a premier molecular bridge to forge robust, bidirectional chemical bonds between inorganic substrates and organic polymers. Compared to traditional primary aminosilanes, its specialized secondary amine architecture fundamentally imparts enhanced polymer flexibility, superior thermal stability, and significantly reduced yellowing in final formulations.

Performance equivalent to industry standards: Momentive Silquest A-1189, Evonik Dynasylan 1189.

Typical Physical Properties

Silfluo Code:	LS-A431
Chemical Name	N-(3-(Trimethoxysilyl)propyl)butylamine
CAS NO.	31024-56-3
EINECS No.:	250-437-8
Formula	C10H25NO3Si
Appearance	Colorless to Pale Yellow Transparent Liquid
Density(ρ20°C，g/cm³）	0.947
Refractive Index(n 25°C)	1.4246
Purity (by GC,%)	97 min
Chemical Structure	

Features

1. Secondary amine structure intrinsically mitigates the thermal and UV-induced yellowing typically associated with primary aminosilanes, preserving the aesthetic integrity of clear sealants and coatings.
2. Dual reactivity (organic amine and inorganic trimethoxysilyl) enables exceptional unprimed adhesion to a wide array of challenging substrates, including glass, aluminum, and cold-rolled steel.
3. Autocatalytic hydrolysis mechanism efficiently generates reactive silanols upon exposure to ambient moisture, eliminating the need for external acid catalysts in most aqueous systems.
4. Imparts distinct elastomeric flexibility to modified polymer networks, significantly improving the elongation

and tear resistance of the cured matrix.

Applications

1. Advanced Adhesives & Sealants (SMP & PU): Extensively utilized as a highly flexible adhesion promoter and end-capping agent in Silane-Modified Polymers (MS Polymer, SPUR). It also serves as a critical chemical modifier for NCO-functional polyurethane prepolymers, enhancing moisture-cure profiles and bond strength.
2. High-Performance Paints & Coatings: Formulated as a premium primer or integral additive in industrial epoxy, acrylic, and polyurethane coatings to dramatically elevate wet and dry adhesion, moisture resistance, and anti-corrosion performance.
3. Resin Modification & Foundry Binders: Acts as a vital reactive additive in phenolic, furan, and melamine-based resin systems, specifically engineered to boost the mechanical strength and moisture tolerance of high-performance foundry sand binders.
4. Fiberglass Composites & Mineral Fillers: Deployed as an elite surface sizing agent for fiberglass fabrics and a dispersion optimizer for inorganic fillers (silica, ATH, talc), drastically improving the interfacial shear strength and tensile properties of reinforced plastic composites.

Formulation & Handling Guidelines

1. Autocatalytic Hydrolysis: In the presence of ambient moisture, the methoxy groups rapidly hydrolyze to form reactive silanols, releasing methanol. The typical pH of its hydrolysate is 10–11; however, buffering the aqueous bath to ~pH 4 can significantly optimize and extend silanol stability.
2. Solvent Incompatibility (CRITICAL): The secondary amine functionality is highly reactive with ketones and esters. It is strictly prohibited to utilize ketone or ester-based solvents (e.g., MEK, Acetone, Ethyl Acetate) for dilution or formulation.
3. Atmospheric Sensitivity: The active amine groups readily react with atmospheric carbon dioxide (CO_2) to form insoluble carbamates or carbonates. Ensure all containers are tightly sealed and thoroughly purged with dry inert gas (nitrogen or argon) immediately after dispensing.

Packaging

In 20kg pail, 190kg drum and 950kg IBC

Safety and Storage

Keep in a cool, strictly dry, and well-ventilated environment, aggressively avoiding direct sunlight, heat, sparks, and open flames. The shelf life is 12 months from the date of manufacture when stored at or below 25°C in the original, tightly sealed and unopened containers. Storage beyond the shelf life does not necessarily mean the product is unusable; however, the properties required for the intended use must be thoroughly checked for quality assurance reasons prior to application.