



ALWAYS ONE
STEP AHEAD

EMEA1 EUROPE, MIDDLE EAST, AFRICA & INDIA

POLYURETHANE ADDITIVES FOR

INSULATION BOARDS & BLOCKS CONTINUOUS LAMINATION





A LEADER IN POLYURETHANE ADDITIVES

Niax™ polyurethane additives offer a broad range of products able to satisfy the latest requirements of the production of insulation boards by continuous lamination.

The success of innovative and cost-effective foam production depends largely upon selecting the right surfactants, catalysts, and other additives. In support of your success, Momentive has a team of experts available with the technical know-how to help solve your production challenges, or to craft Niax Additives solutions tailored to your development needs.

Niax range includes all needed products to provide an optimum foam performance:

- Low thermal conductivity
- Optimum foam surface quality/low voids
- Suitable reactivity and processing to fit different industry processes



SILICONE SURFACTANTS

MAIN ROLE & TYPICAL BENEFITS

Reduced surface tension of reactants:

- Ease of mixing and emulsification
- Avoidance of phase separation after mixing
- Use of different base polyols and fillers/extenders
- Support for emulsification of insoluble blowing agents
- Improved wetting of facings
- Support of reaction efficiency and uniform foam formation

Bubble formation:

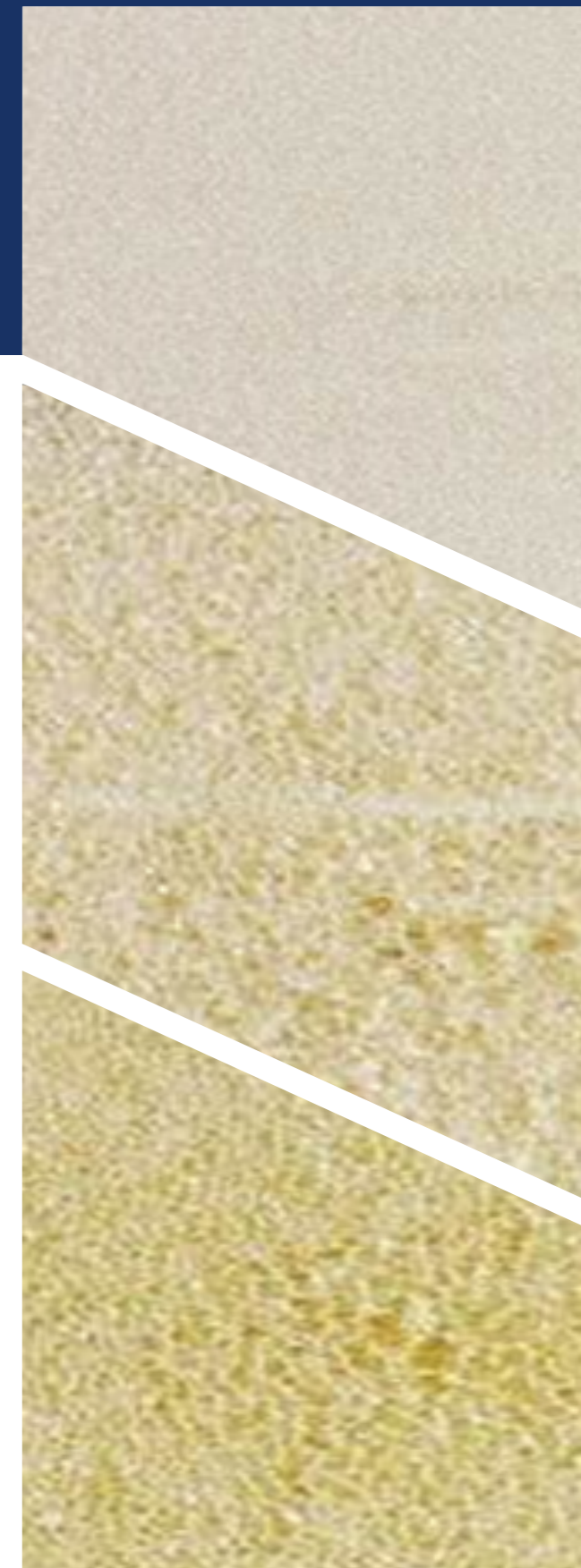
- Increased nucleation of air and blowing gas
- Regular and uniform cell formation
- Enhanced blowing efficiency and reduced loss of blowing agent

Bubble stabilization:

- Maximized closed cell content
- Stabilization of cells during flow and under stress from processing conditions and contact to facings
- Reduced voids and defects

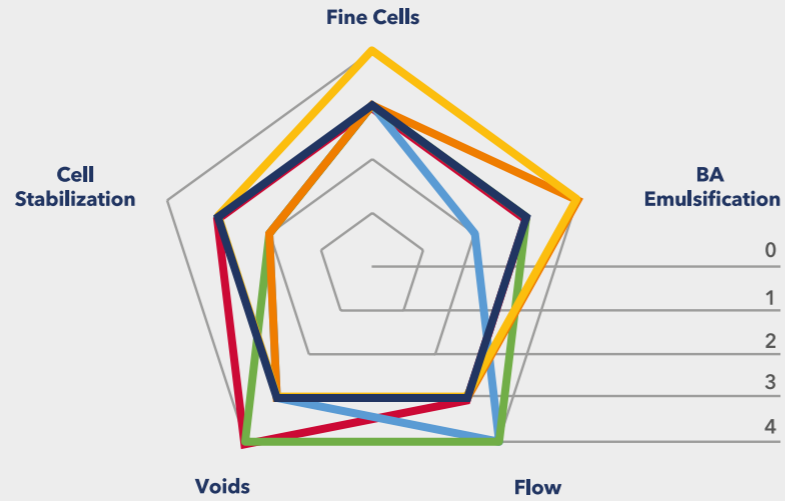
Bubble growth/coalescence:

- Control of average cell size
- Isotropy
- Improved key foam properties, such as thermal conductivity and compression strength

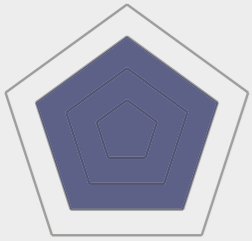


Example of the effect that the surfactant choice can have on final foam characteristics

SILICONES FOR INSULATION BOARDS (BOARDSTOCK)

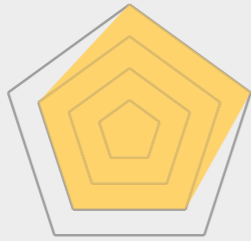


L-5164



Fine cells, wide latitude, broad compatibility with all polyester polyols and pentanes, fast and slow reactivity. High purity surfactant.

L-5210



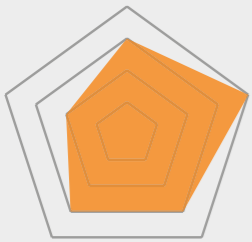
Excellent candidate for maximizing the nucleation step, helping to reduce the cells size in the final foam. High purity surfactant.

L-5158



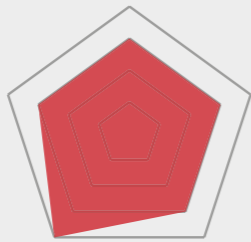
Very good liquid and foam flow, reduced subsurface voids formation. Improved compatibility of MDI with aromatic polyester polyols and pentanes.

L-5112



Strong nucleation and emulsification, improved compatibility with polyols, fine and uniform foam also with high pentane level or in presence of reduced mixing energy.

L-5466



Good balance of strong nucleation and flow, low thermal conductivity, and reduced surface voids.

L-6642



Balanced stabilizer with good voids control and flow for both continuous and discontinuous processes. Suitable for all blowing agents including formic acid and HFOs.

CATALYSTS

MAIN ROLE & TYPICAL BENEFITS

In PUR and PIR lamination, catalysts are responsible for the activation of crosslinking reactions, as well as water reaction with development of CO₂ blowing gas. Exothermic reaction causes physical blowing agent evaporation and further foam blowing.

Catalyst balance between blow and gel determines the viscosity build-up, and the overall catalyst level defines the rise and curing times.

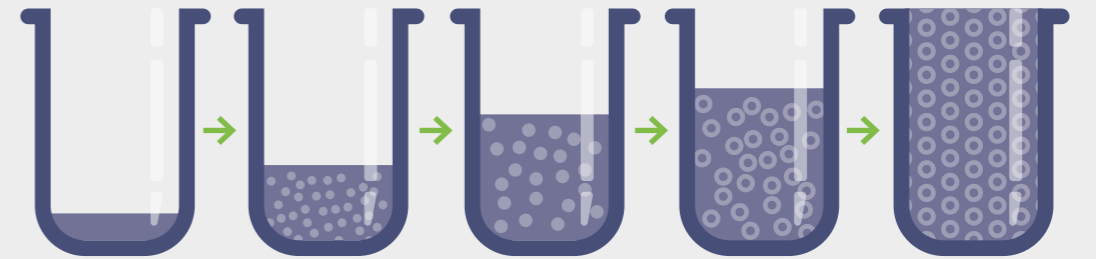
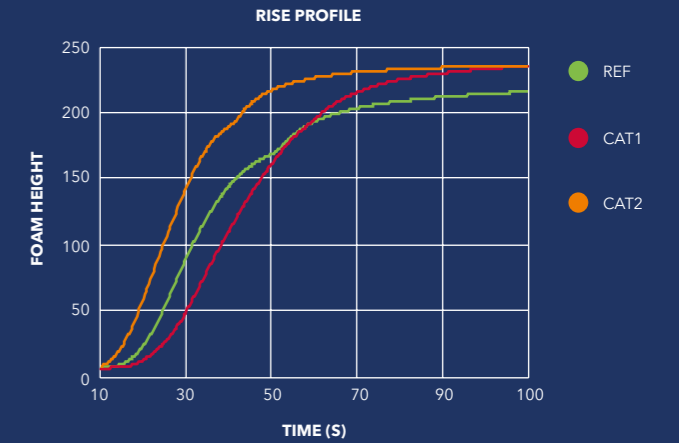
Catalyst level and balance are important for the maximization of productivity and for obtaining a sufficient degree of polymerization. The Niax portfolio includes a range of standard grades, as well as catalysts able to meet specific requirements of PIR boardstock production.

A TYPICAL ROLE SPLIT OF CATALYSTS IS:

Blowing catalysts: promoting MDI-water reaction, thus increasing expansion rate.

Gelling catalysts: promoting the crosslinking reaction, mainly with -OH groups.

Trimerization catalysts: promoting the isocyanurate formation (PIR foams).



Test data. Actual results may vary.

NIAX CATALYSTS

STANDARD CATALYSTS - KEY FEATURES/TYPICAL BENEFITS

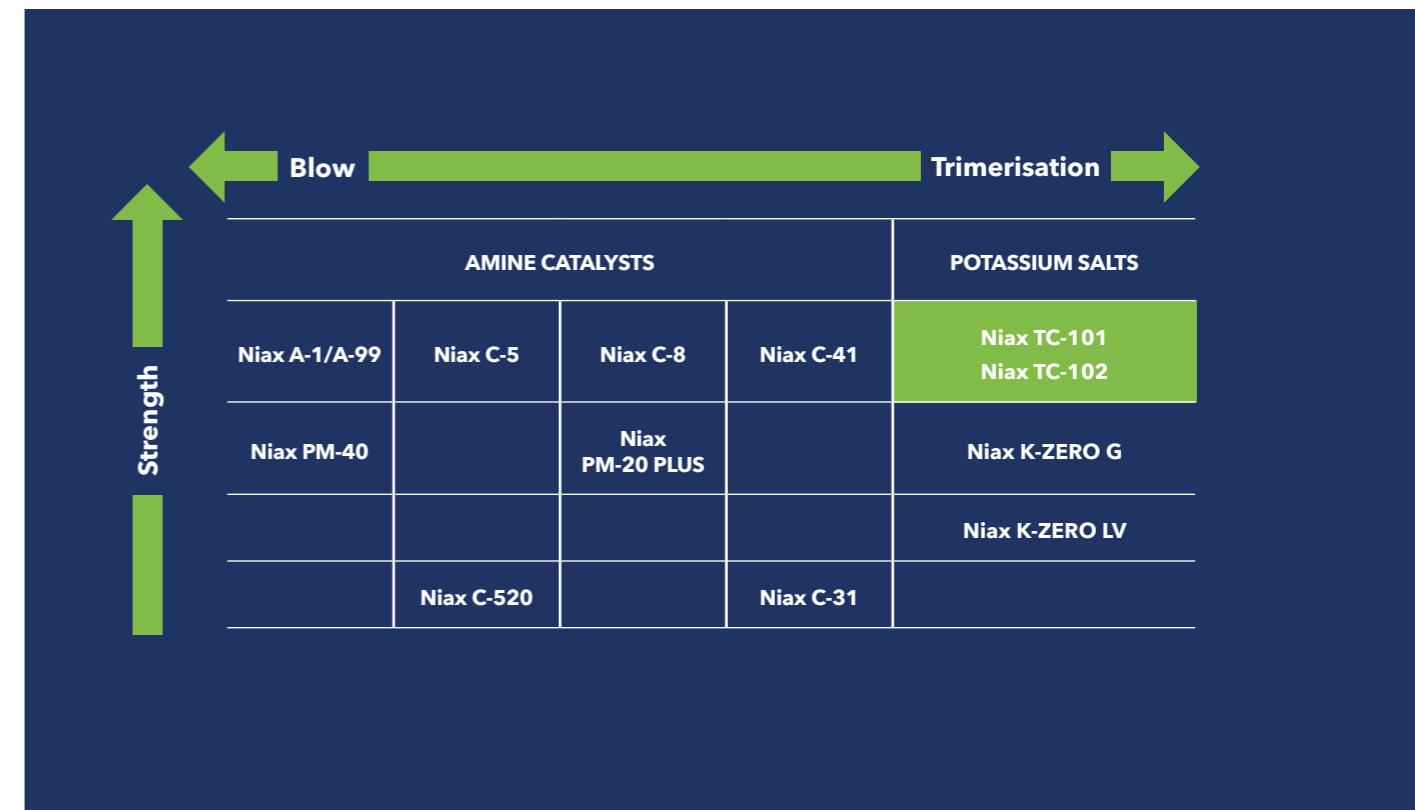
Niax Catalyst A-1	High selectivity toward water/MDI reaction.
Niax Catalyst C-5	General purpose blowing catalyst.
Niax Catalyst C-520	Easy metering blowing catalyst.
Niax Catalyst Potassium Octoate	15% potassium content K-Octoate.
Niax Catalyst Potassium Octoate LV	15% potassium content K-Octoate, low viscosity.
Niax Catalyst Potassium Acetate	15% potassium content K-Acetate.

CURING ADDITIVES - KEY FEATURES/TYPICAL BENEFITS

Niax Additive RA-1	Delayed action catalyst, highly selective towards PIR reactions. Improved surface cure in PIR boards and metal panels.
Niax Catalyst C-31	Delayed action catalyst, highly selective towards PIR reactions. Improved surface cure and reduced post-expansion, excellent candidate for high thickness boards.

SPECIAL CATALYSTS - KEY FEATURES/TYPICAL BENEFITS

Niax Catalyst PM-40	Easy metering blowing catalyst, no "toxic" label.
Niax Catalyst PM-20 PLUS	Combined blow-gel-trimerization catalyst, improved foam surface cure.
Niax Catalyst K-ZERO G	Glycol free potassium salt, 15% potassium, reduced MDI consumption.
Niax Catalyst K-ZERO LV	Glycol free potassium salt, 13% potassium, reduced MDI consumption, very low viscosity, 600 mPas.
Niax Catalyst TC-101	Trimerisation catalyst based on a non-reprotoxic salt. Increased efficiency and enhanced trimer conversion versus standard octoates. Low viscosity to facilitate on-line metering.
Niax Catalyst TC-102	Trimerisation catalyst based on a non-reprotoxic salt. Increased efficiency versus standard octoates, smoother rise profile. Low viscosity to facilitate on-line metering.



PROCESSING ADDITIVES

Unique solutions for the simplification of critical foam formulation processing.

NIAX Y-16257: Adhesion promoter for PIR foams

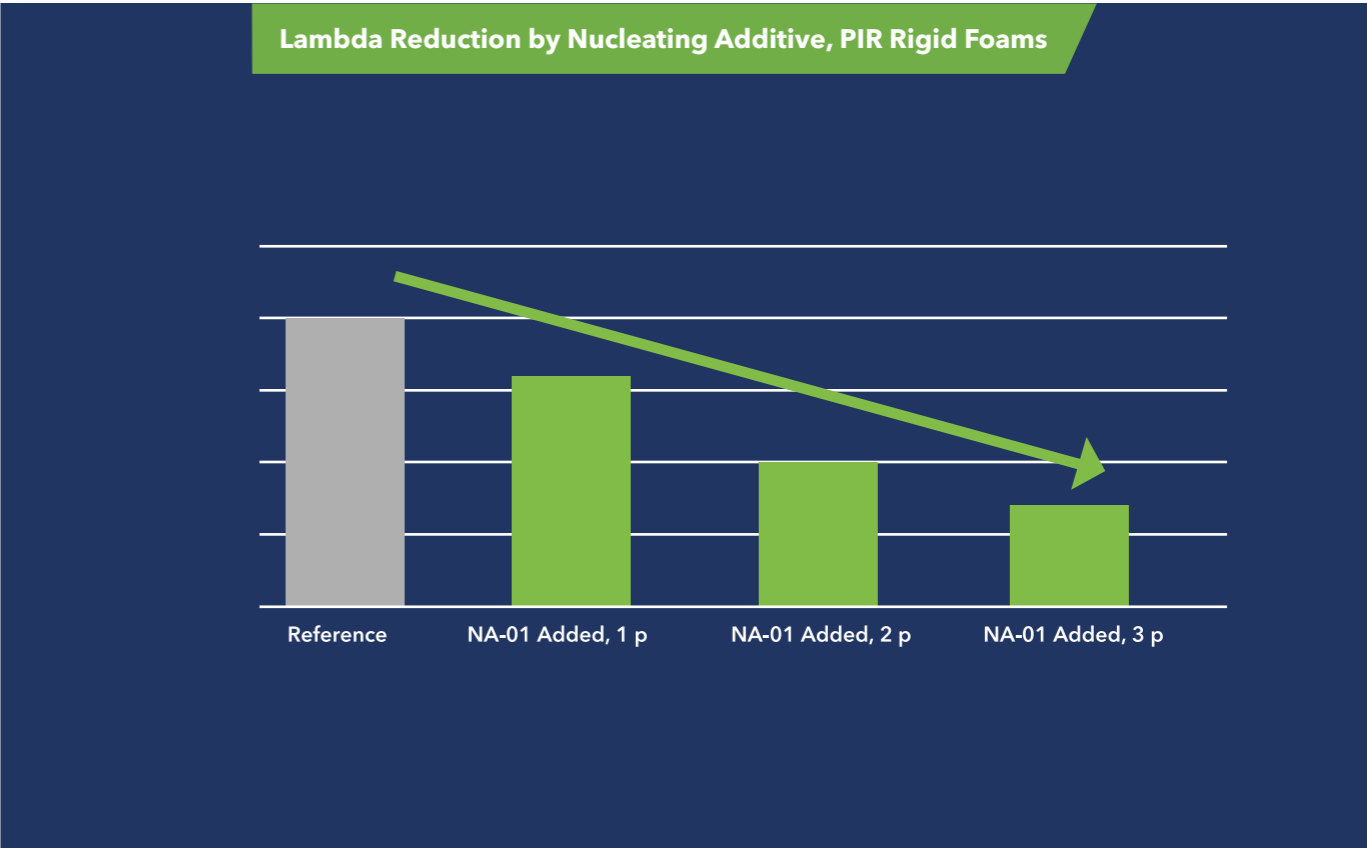
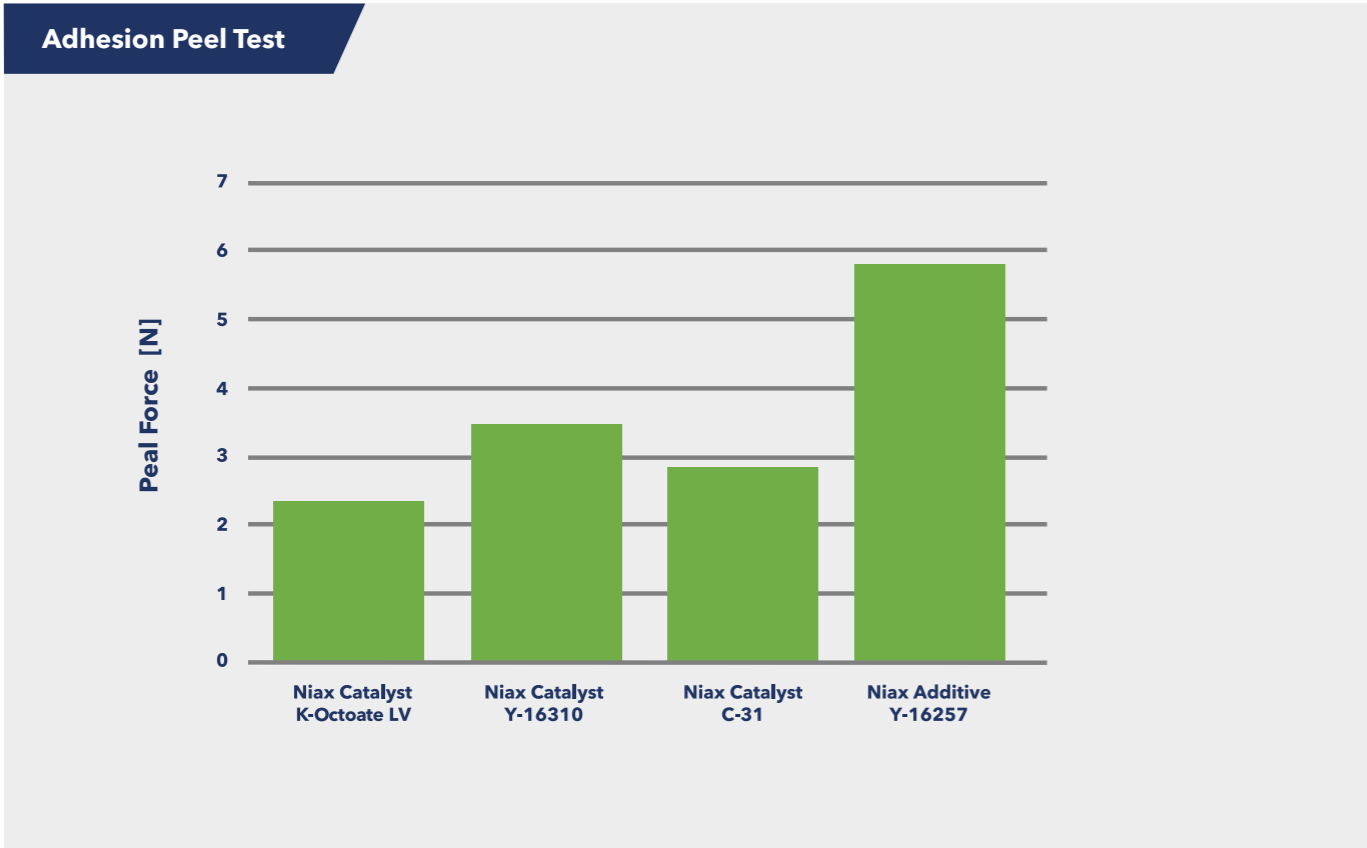
Processing additive used in the manufacture of rigid polyisocyanurate foams by continuous lamination. It offers improved foam surface curing and can enhance panel properties at the interface between foam and substrates, leading to improved foam adhesion to the substrates, without affecting flow or reactivity.

NIAX FRP-320/40 & FRP 240/40: FR Polyols

Highly aromatic cross-linkers/compatibilizers that can allow improved fire properties at reduced PIR index, along with enabling easier processibility and enhanced fire/heat resistance properties.

NIAX NA-01: Nucleating Additive for lambda value improvement

Silicone-based composition suggested in the insulation boards production to enhance the nucleation of gas at mixing and early foaming stages, leading to smaller cell size of the final foam. In combination with a conventional rigid foam surfactant, it reduces cell size of rigid foams, potentially leading to lower foam thermal conductivity.



TYPICAL PHYSICAL PROPERTIES

Product	Viscosity @25 °C cps	Specific Gravity @25 °C
Niix Catalyst A-1	4.1	0.90
Niix Catalyst C-5	1.6	0.83
Niix Catalyst PM40	50	0.98
Niix Catalyst C-41	32	0.92
Niix Catalyst PM-20 PLUS	60	0.95
Niix Catalyst C-31	100	1.18
Niix Catalyst K-ZERO G	3000	1.07
Niix Catalyst K-ZERO LV	600	1.07
Niix Catalyst Potassium Octoate LV	2800	1.11
Niix Potassium Octoate	6000	1.12
Niix Catalyst Potassium Acetate	120	1.27
Niix Silicone L-5164	700	1.05
Niix Silicone L-5210	350	1.0
Niix Silicone L-5112	750	1.05
Niix Silicone L-5466	950	1.04
Niix Silicone L-5158	500	1.05
Niix Silicone L-6642	1700	1.05
Niix Catalyst TC-101	180	1.18
Niix Catalyst TC-102	180	1.22

Lab results; actual results may vary.



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