NIAX ADDITIVES BY MOMENTIVE

ALWAYS ONE STEP AHEAD

AMERICAS

POLYURETHANE ADDITIVES FOR

INSULATION BOARDS & BLOCKS CONTINUOUS LAMINATION

NIAX ADDITIVES BY MOMENTIVE

A LEADER IN URETHANE ADDITIVES

Niax™ urethane additives offer a broad range of products able to satisfy the latest requirements of continuous lamination processes for the production of high performance insulation foam.

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.

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:

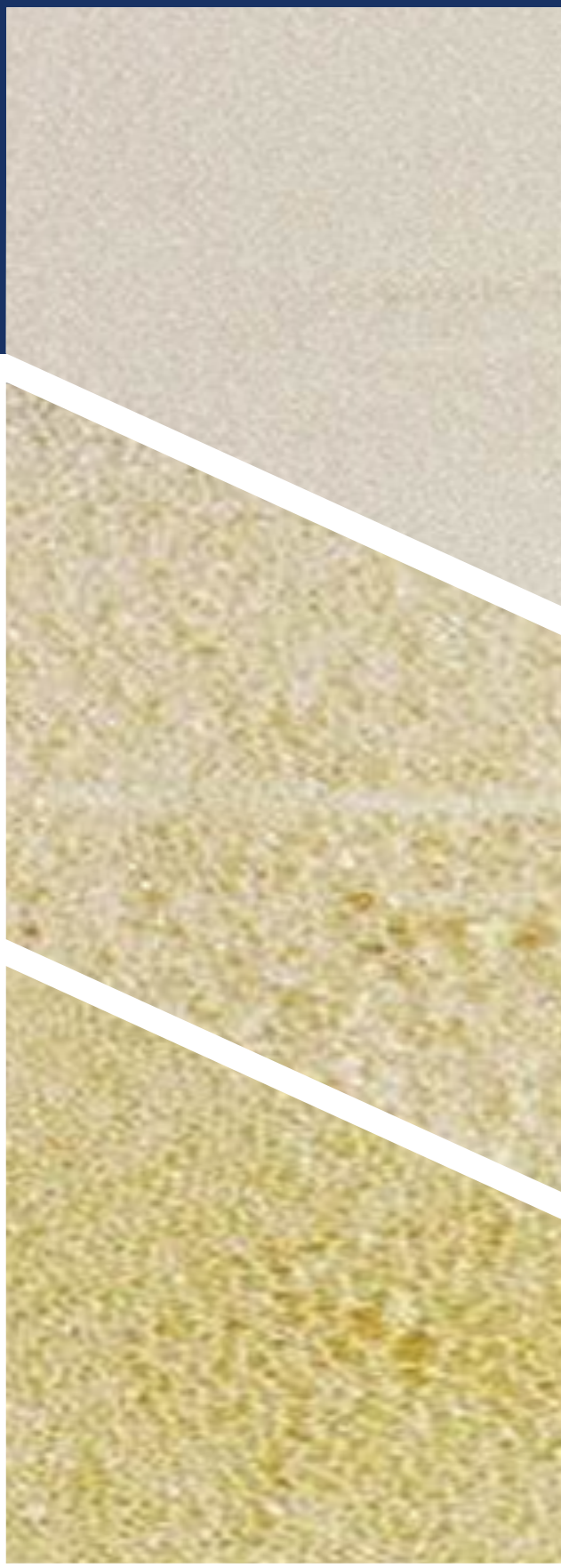
- Increased nucleation of air and blowing gas
- Regular and uniform cell formation
- Enhanced blowing efficiency and reduced loss of blowing agent

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

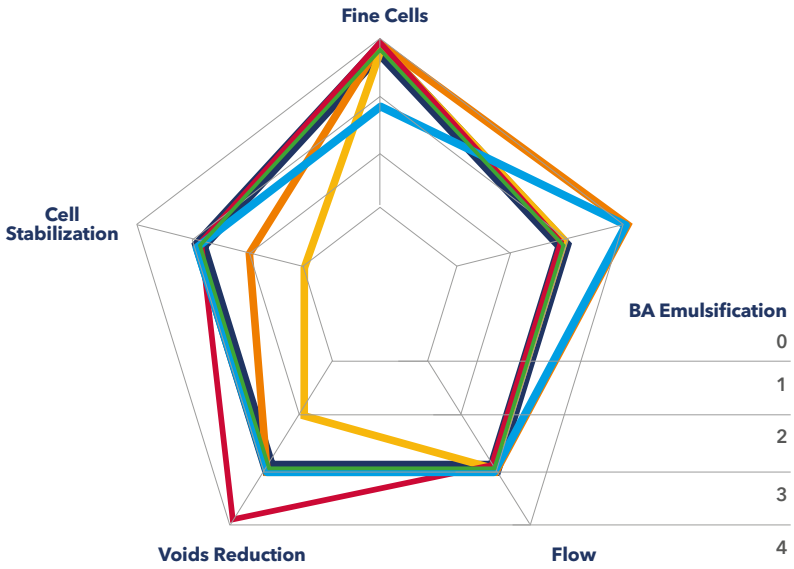
Bubble growth/coalescence:

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

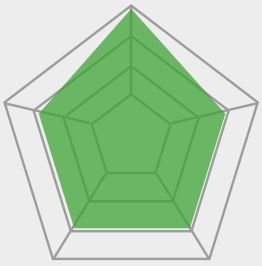


Example of the effect that the surfactant choice can have on final foam characteristcs

SILICONES FOR INSULATION BOARDS (BOARDSTOCKS)

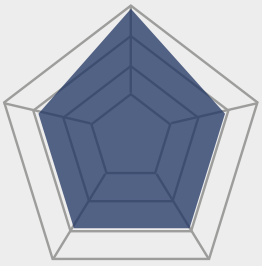


L-5151



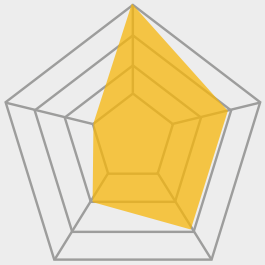
Fine cells, wide latitude, broad compatibility with all polyester polyols and pentanes, fast and slow reactivity.

L-5164



Fine cells, excellent thermal conductivity, wide latitude silicone surfactant with high purity level, i.e D4, D5 and D6 each below 0.1% by weight allowing to meet sustainability goals.

L-5111

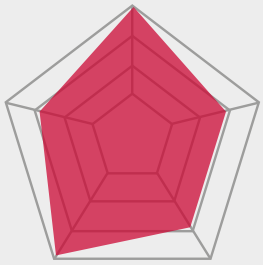


Excellent thermal conductivity in pentane blown foam, reduced pin holes and cell elongation.

L-5112

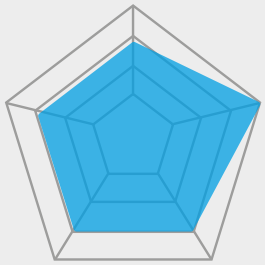
Strong nucleation and emulsification, improved compatibility with polyol, fine and uniform foam also with high pentane level or in presence of reduced mixing energy.

L-5466



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

L-5140



Strong emulsification, reduced foam voiding and wider processing window enabled by emulsion stability. Fine cells leading to improved thermal conductivity.

CATALYSTS

MAIN ROLE & TYPICAL BENEFITS

In PUR an PIR lamination, catalysts are responsible for 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.

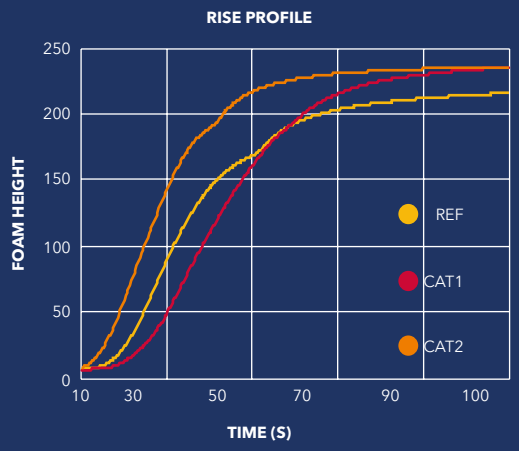
Catalyst level and balance are important to the maximizaton of productivity and to obtaining a sufficient degree of polymerization. The Niax portfolio includes a range of standard grades, as well as catalysts able to meet specific requirements of PIR boardstock production.

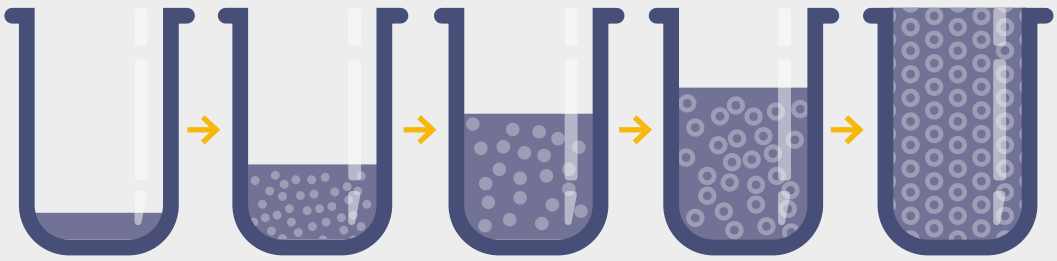
A TYPICAL CATALYSTS ROLE SPLIT IS:

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

BLOWING CATALYSTS - KEY FEATURES/TYPICAL BENEFITS

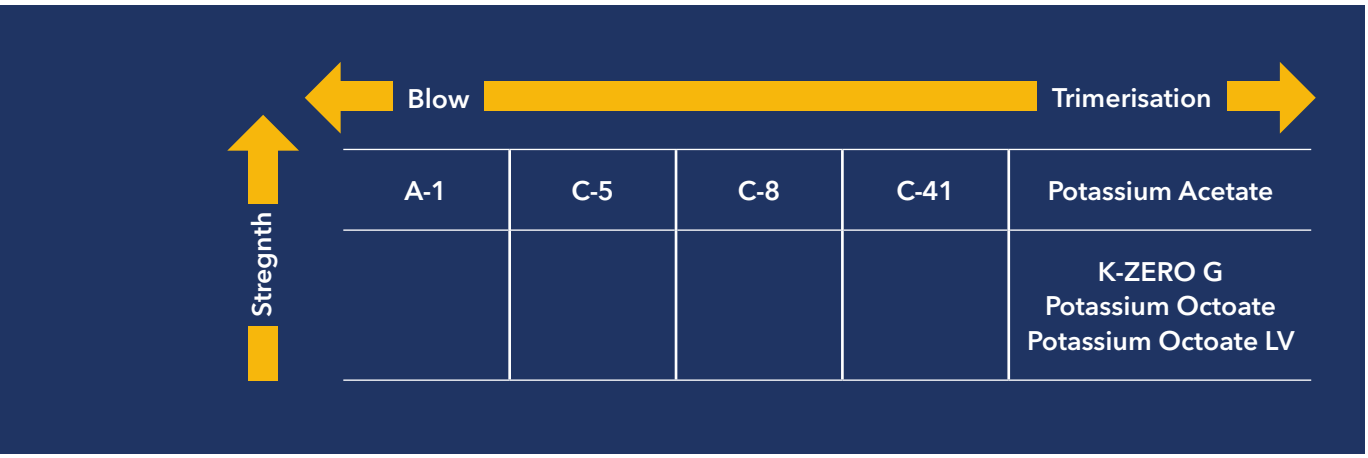
Niax Catalyst A-1	High selectivity toward water/MDI reaction Improved flow and expansion rate
Niax Catalyst C-5	General purpose blowing catalyst

TRIMERISATION CATALYSTS - KEY FEATURES/TYPICAL BENEFITS

Niax Catalyst Potassium Acetate	15% Potassium content K-Acetate
Niax Catalyst Potassium Octoate	15% Potassium content K-Octoate
Niax Catalyst Potassium Octoate LV	15% Potassium content K-Octoate, low viscosity version
Niax Catalyst K-ZERO G	Glycol free Potassium salt, 15% Potassium, reduced MDI consumption, improved thermal conductivity and cells isotropy

CURING ADDITIVES - KEY FEATURES/TYPICAL BENEFITS

Niax Additive RA-1	High selectivity toward PIR reaction, to boost the formation of a rigid polymer network after gelation occurs, improved surface cure, flatness and stiffness of PIR boards and metal faced panels. No significant impact on foam flowability or reactivity.
Niax Catalyst C-31	Delayed action catalyst, highly selective toward PIR reactions. Improved surface cure, stiffness and reduced swelling of PIR insulation boards, excellent candidate for improved quality of high thickness boards.



NIAX PRODUCT RANGE

Product	Viscosity @25 °C cps	Specific Gravity @25 °C
Niax catalyst A-1	4.1	0.90
Niax catalyst C-5	1.6	0.83
Niax catalyst C-41	32	0.92
Niax additive RA-1	270	1.22
Niax catalyst C-31	60	1.18
Niax catalyst K-ZERO G	3000	1.07
Niax catalyst Potassium Octoate LV	2500	1.11
Niax Potassium Octoate	6000	1.12
Niax catalyst Potassium Acetate	120	1.27
Niax silicone L-5164	800	1.05
Niax silicone L-5111	340	1.01
Niax silicone L-5112	750	1.05
Niax silicone L-5466	950	1.04
Niax silicone L-5151	720	1.05
Niax silicone L-5140	1100	1.03

Note: Typical properties are average data and are not to be used as or to develop specifications

6 php of 15%K octoate in EG at Index 300 consume **20 pbw polymeric MDI***
6 php of 15%K octoate in DEG at Index 300 consume **12 pbw polymeric MDI***
6 php of 15%K octoate K-ZERO at Index 300 consume **0 pbw polymeric MDI***

*Excluding water content

NIAX ADDITIVES

CUSTOMER SERVICE CENTERS

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