

AMERICAS


# POLYURETHANE ADDITIVES GUIDE

RIGID & MOLDED FOAMS,  
SPECIALTY APPLICATIONS



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### MOMENTIVE POLYURETHANE ADDITIVES GLOBAL SITES

## A LEADER IN POLYURETHANE ADDITIVES

Momentive Performance Materials offers one of the most trusted and diverse polyurethane additive product lines in the industry, ranging from a broad array of silicone stabilizers and a full portfolio of amine and metal-based catalysts to a selection of organic-based property modifiers.

Developed in 1962, Niax™ brand additives have long been essential ingredients in polyurethane formulations used to meet the specialized processing and performance needs of customers across the globe. Niax grades include a comprehensive line of silicones, catalysts, and process modifiers for polyurethane foam production.

Momentive is a pioneer in the polyurethanes additives industry, and continues to serve customers with leading innovations, creative solutions, and excellent application expertise.

## POLYURETHANE ADDITIVES FOR RIGID & MOLDED FOAMS AND SPECIALTY APPLICATIONS

### Silicones for Molded foams

- Automotive seating
- Head rest
- NVH applications

### Silicones for Rigid foams

- Appliances
- Panels
- Discontinuous applications
- Spray
- One Component Foam

### Silicones for Specialty applications

- Shoe soling
- Automotive parts
- Cushioning
- Mechanical froth
- CASE

### Catalysts

- Amine catalysts
- Trimerisation catalysts and additives
- Metal catalysts
- Low emission catalysts

# NIAX MOLDED FOAM



Silicones	HR TDI	TDI / MDI	HR MDI	VE MDI	Product Description
L-3881				○	Stabilizing low emission silicone for visco-elastic foams, co-silicone together with L-3639
L-3639		○	○	○	Very low emission medium potency silicone providing good stabilization along with good foam openness, co-silicone for VE
L-3639S		○	○	○	Very low emission medium potency silicone offering good stabilization along with good foam openness, co-silicone for VE, water soluble
L-3415			○		Low emission silicone with high cell opening
L-3416		○	○		Low emission silicone with medium cell opening
L-3620		○			Low potency, low emission silicone for TDI/MDI technology
L-3640	○	○			High efficiency, low emission silicone for TDI/MDI technology
L-3556S	○				Low emission, medium potency, water soluble silicone
L-3558	○	○			Low emission, medium - high potency silicone for TDI
L-3555	○				High stability, low emission silicone
L-3170	○				High efficiency balanced silicone
L-3185	○				Low emission version of L-3170, high efficiency balanced silicone
L-3167	○	○			Cell regulator; co-silicone surfactant for TDI
L-5309J	○				High efficiency balanced silicone
L-3001		○	○		High cell opening silicone
L-3111		○	○		High cell opening silicone (cost effective)
L-3002		○	○		Medium cell opening silicone
L-3222		○	○		Medium cell opening silicone (cost effective)
Y-10366J	○	○	○		High efficiency; balanced silicone

TDI/MDI = typically 80/20 blend / TDI = toluene diisocyanate / MDI = Methylene diphenyl diisocyanate / HR = High resilience / VE = Visco Elastic

Catalysts	Blow Amine Catalyst	Balanced Amine Catalyst	Gel Amine Catalyst	Product Description
<b>Low Emission Catalyst</b>				
EF-100	○			Reactive low emission blow catalyst
EF-150	○			Delayed action reactive low emission blow catalyst
EF-600		○	○	Balanced catalyst; predominantly gel
EF-602		○	○	Balanced delayed catalyst; predominantly gel
EF-620		○	○	Balanced catalyst, predominantly gel, high efficiency, low water
EF-700	○	○		Balanced catalyst; predominantly blow
EF-705	○	○		Balanced cell opening delayed catalyst; predominantly blow
<b>Niax Catalysts</b>				
A-1	○			Standard blow catalyst
A-107	○			Delayed action blow catalyst
A-400	○			Delayed action load building (TDI), cell opening, improved flowability MDI
A-440	○			Delayed action load building (TDI), higher cell opening, improved flowability MDI, low water
A-4	○			Catalyst for improved surface cure
C-174	○			HR MDI blow catalyst
C-225		○		Balanced delayed action catalyst
C-247			○	Delayed action gel catalyst
A-300			○	Delayed action load building; cell opening gel catalyst (low corrosion)
A-305			○	Stronger delayed action load building; cell opening gel catalyst (low corrosion)
A-33			○	Key gel catalyst



# NIAX RIGID FOAMS



Silicones	Fine Cells	Pentane solubility in Polyols	Blowing agents emulsification	Cell Stabilization	Foam Flow	Void Reduction	Product Description
L-6891	●●●●	●●●	●●	●●●●	●●●	●●●●	High polyol/pentane solubility - very low lambda value foam and voids reduction, for discontinuous applications especially refrigerators
L-6887	●●●●	●●●●	●●●●	●●●●	●●●	●●●	Excellent polyol/pentane solubility - can provide very fine cells for discontinuous applications especially refrigerators
L-6884	●●●●	●●●	●●	●●●●	●●●	●●●	Can improve polyol/pentane or HFC's compatibility - can provide very fine cells and good flow, for refrigerators and all discontinuous applications
L-6866	●●●●	●●	●●	●●●●	●●●	●●●●	For pentane blown refrigerators and dis-continuous panels to reduce surface voids formation, while still delivering excellent lambda value
L-6988	●●●●	●●	●●●	●●●	●●●	●●●	Very fine cells with pentane and HFO/HC, increase froth shear stability thus reducing voids formation, good storage stability in acidic condition
L-6904	●●●●	●●	●●●●	●●●●	●●●●	●●●	Strong emulsifier, fine cells with all blowing agents - continuous and discontinuous applications
L-6978	●●●●	●●	●●●	●●●	●●●●	●●●●	For Cyclopentane/HFO co-blown appliances and discontinuous panels systems, it can provide very fine cells and low K factor and good foam surface
L-6889	●●●	●●●●	●●●	●●●●	●●●●	●●●	Very high polyol-pentane solubility for excellent blend stability, good flow and void reduction
L-5440	●●	●●●●	●●	●●●●	●●●	●	For HFC's and pentane co-blown with water, good flow and dimensional stability
L-6620	●●●●	●●	●●●	●●	●●●	●●●	For HFC's and pentane co-blown with water, good flow and dimensional stability
L-6630	●●	●	●●	●●	●●●●	●●●	Reduce foam voids formation in continuous and discontinuous application
L-6633	●●●	●●●	●●●	●●●	●●●	●●●	Reduce foam voids formation in continuous and discontinuous application
L-6645	●●	●●	●●	●●	●●●	●●●●	Excellent silicone properties offering a reduction in foam voids.
Y-16460	●●	●●	●●	●●	●●●	●●●●	Premium grade silicone to reduce foam voids, contributing to outstanding surface quality in metal faced panels
L-6642	●●●	●●	●●	●●	●●●●	●●●	Balanced stabilizer with good voids control and flow for both continuous and discontinuous process , suitable for all blowing agents included formic acid and HFOs
L-6100	●●	●●	●●	●●●	●●●	●●	Can produce foams with good dimensional stability and improved fire properties, good liquid flow and leveling

HFC = Hydro Fluoro Carbon, HFO = Hydrofluoro Olefin, PIR = Polyisocyanurate, PUR = Polyurethane  
 Features: Strong = ●●●●, Moderate = ●

# NIAX RIGID FOAMS

Silicones	Fine Cells	Pentane solubility in Polyols	Blowing agents emulsification	Cell Stabilization	Foam Flow	Void Reduction	Product Description
L-6265	●●	●●●	●●●	●●●	●●	●●	Can improve dimensional stability and FR for spray and panels application with various water/co-blown technologies
L-5345	●●	●●	●●●●	●	●●●	●●	1K/OCF foam, good emulsification also for structural foam, blocks and phenolic foams
L-5348	●●	●	●●●	●●	●●●	●●	1K/OCF foam, also manufactured without HFC, high froth volume, good compatibilization, excellent storage stability
L-5350	●●●	●	●●●●	●	●●	●●	1K/OCF foams. Multipurpose stabilizer mainly for straw foam applications
L-5351	●●●	●	●●●●	●	●●●	●●	1K/OCF foam - can improve foaming at low temperature and is manufactured without HFC
L-5360	●●●	●	●●●●	●	●●	●●●	1K/OCF foams. High yield in gun foams allowing high propellant levels to be used
L-5362	●●●	●	●●●●	●	●●	●●●	1K/OCF foams, good dimensional stability over a wide range of temperatures. PIR boardstock and blocks, fine cells and improved side compressions
Y-16371	●●●●	●	●●●●	●●●●	●●●	●●●●	1K/OCF, excellent performance in winter conditions and premium foams. Easy flow and low expansion rate
Y-16450	●●●	●	●●●	●●●●	●●●●	●●●	1K/OCF, improved dimensional stability at low density. Well balanced, easy flow and popcorn-like froth
L-5388	●●●	●	●●●	●●●	●●	●●●	Excellent solution for low density foams like open cells spray, packaging and OCF. Wide compatibility with polyethers and polyesters, strong foam stabilization
L-6164	●●	●●	●●	●●	●●	●●	Cell-opener, cell-regulator - very efficient cell opener, OCF/1K and 2K systems

Relative Scale of Niaux Silicone Contribution to Blowing Agent Solubility in Rigid Foam System Applications



Silicones	Cell Stabilization	Cell Opening	FR Properties	Processing Window	Surface Quality	Yield	Key Performance Benefit
<b>Open Cell Spray Foam</b>							
L-5388	●●●●	●	●●	●●●	●●●	●●●	Excellent foam cell structure and foam stability, may need a cell opening additive. May be used at lower use levels.
L-6165	●	●●●	●●●	●●●	●●●	●●●	Balanced surfactant that provides good dimensional stability, yield, processing window and cell opening
L-6186	●	●●●●	●●	●●	●●	●●	Excellent cell opening at medium-low density, good polyol compatibility, may require co-surfactant
L-6188	●	●●●●	●●	●●	●●●	●●	Excellent cell opening at medium up to very high density, may require co-surfactant, good polyol compatibility
L-6189	●●●	●●●	●●●	●●●●	●●	●●●	First choice for OCF formulations, can improve formulation compatibility and shelf-life
L-6630	●●●	●●	●●	●●●	●●●	●●●	Balanced foam stabilizer for open cell foam with fine cell structure
Y-16312	●●●●	●●	●●	●●●	●●●●	●●●●	Surfactant for improved yield and processing

Silicones	R Value	Pentane Emulsification	Flow/Flatness	Compressive Strength	Surface Quality	Pentane Isomer	Key Performance Benefit
<b>PIR Flex Face</b>							
L-5111	●●●●	●●●	●●	●	●●	c	Fine cells with mainly cyclo-pentane blowing agents - for PIR/PUR boardstock
L-5112	●●●	●●●●	●●	●●	●●●	n/i/c	Improves mixing quality and emulsification of pentane up to high usage level of iso-pentane, improved foam quality and yield, and reduced laydown defects
L-5151	●●●	●●●	●●●	●●●	●●●	n/i	Broad processing window silicone with good compatibility and flow in PIR formulations
L-5466	●●●	●●●	●●●	●●●	●●●●	n/i/c	Strong nucleation and stabilization can reduce surface voids when using gas-tight facings, helps compatibility with APP's
L-5140	●●●	●●●●	●●●	●●	●●●	n/i	Strong emulsification power, for n- and iso-pentane, can significantly improve compatibility with APP's
Y-16321	●●●●	●●●	●●	●	●●	n/i/c	Provides excellent R Value with all pentane isomers
L-5120	●●●	●●●●	●●●	●●●	●●●	n/i	Provides excellent emulsification with pentane blowing agent, excellent compatibility with APP's
Y-16402	●●●●	●●	●●●	●●●●	●●●	n/i	Strong nucleation power leading to small cells size and good insulation properties

c = cyclo-pentane, i = iso-pentane, n = n-pentane  
 Features: Strong = ●●●●, Moderate = ●●



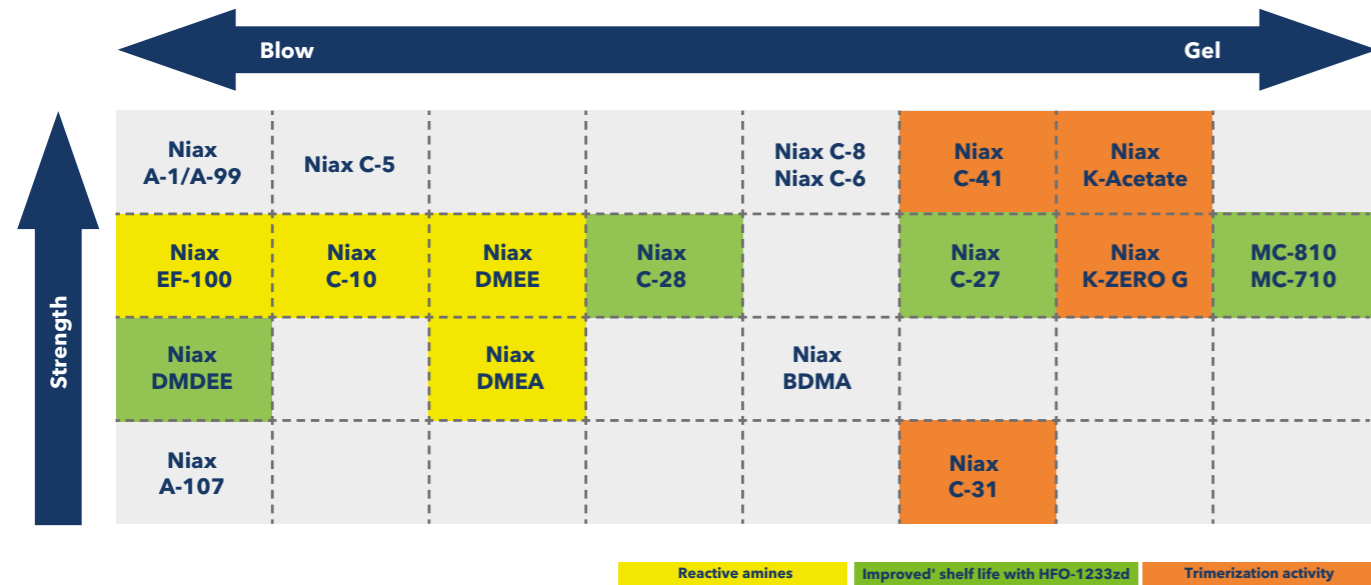
Catalysts						Product Description
	PUR discontinuous	PUR continuous lamination and block	PIR continuous lamination and block	Water-blown PUR	Packaging, open cells foam	
<b>A-1</b>	●	●	●	●	●	Very effective blowing catalyst, promote selectively water-NCO reactions, can improve foam flow and rate of expansion
<b>C-5</b>	●	●	●			General purpose blowing catalyst
<b>EF-100</b>	●	●	●	●	●	Reactive blow catalyst, excellent candidate for applications where low odor is a relevant feature
<b>C-6</b>		●	●			Efficient gel catalyst for a variety of PU application
<b>C-8</b>	●	●		●	●	General purpose PUR catalyst
<b>C-10</b>		●	●	●	●	Reactive amine catalyst, ideal for spray and open-cell applications. Blowing catalyst giving a smooth reaction profile, good candidate also in flexible moulded foams
<b>PM-40</b>		●	●			Blowing catalyst based on A-1, moderate odor and viscosity and may be used with direct metering
<b>BDMA</b>	●	●		●	●	Dimethylbenzylamine, weak gel catalyst, can reduce surface friability and can improve foam adhesion in particular with mainly water-blown foams
<b>DMEA</b>	●	●				Moderate odour, typically cost-effective, reactive catalyst
<b>DMEE</b>	●			●	●	Moderate odour, typically cost-effective, reactive catalyst, more blowing efficiency compared to DMEA
<b>DMDEE</b>	●				●	Moderate activity blow catalyst, excellent storage stability also in isocyanate and prepolymers, 1K/OCF foams
<b>C-27</b>	●	●	●	●	●	Low odor catalyst offering improved shelf life for water co-blown systems
<b>C-28</b>	●	●	●	●	●	Balanced blow-gel catalyst, good shelf-life with HFO-1233zd
<b>C-31</b>	●	●	●	●		Delayed action catalyst for PIR and PUR, improve green strength and surface curing, reduce post expansion in thick panels
<b>C-41</b>	●	●	●			Strong gel catalyst promoting both PUR and PIR reaction, promote fast crosslinking, can reduce demould time and improve foam adhesion
<b>A-107</b>	●			●		Acid blocked delayed action blow catalyst
<b>C-520</b>		●	●			Formulated blowing catalyst for a safer and more accurate handling
<b>MC-710/ MC-810</b>					●	Bismuth based catalysts, exhibiting strong gel catalytic activity.

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Niax Catalysts	PUR discontinuous	PIR discontinuous panels	PIR continuous lamination and block	Spray	Water blown PUR	Packaging, open cells foam	Product Description
<b>Potassium Octoate LV</b>			●				15% K containing PIR catalyst for direct metering (2500 cPs), also good as general purpose curing catalyst in PUR
<b>Potassium Octoate</b>	●		●				15% K containing PIR catalyst, also good as general purpose curing catalyst in PUR
<b>K-ZERO G</b>	●	●	●	●	●		15% Potassium content, glycol free catalyst, reduce MDI use and improve isotropy in PIR
<b>Potassium Acetate</b>	●		●	●			15% K containing PIR catalyst
Niax Special Additives							
<b>RA-1</b>		●	●		●		Can speed up foam hardening and adhesion without influencing gel time, in particular for PIR foam made with aromatic polyester polyols
<b>AP-01</b>	●	●	●		●		Adhesion promoter additives, can reduce surface friability in high water and/or high index formulations

### Niax Catalysts for Rigid Foams Applications



# NIAX SPECIALTIES APPLICATIONS

POLYURETHANE COATINGS,  
ADHESIVES, SEALANTS AND  
ELASTOMERS (CASE)



## Niax Silicone and Modifiers

Silicones	Microcellular (Polyether)	Microcellular (Polyester)	SRIM/Composite	Integral Skin Foam	PU Leather/Coatings	Mechanical Froth	Product Description
L-1500	●						Standard surfactant for microcellular systems (PES)
L-1501	●	●					Wide processing latitude with excellent open cells for low-medium density systems
L-1507	●	●		●			For low-density polyester or polyether-based microcellular systems with excellent emulsification
L-1541		●	●				For high-density polyester-based microcellular systems with thick skin and SRIM applications
L-1510	●		●	●			General purpose surfactant for polyether shoe sole and rigid foam systems, low freezing point
L-5309J	●		●	●			Surfactant for I-skin with HFO or CP, medium-low stabilization, good open foam content
L-620	●			●			Strong stabilizing surfactant for I-skin and high density microcellular applications
L-5302	●		●	●			Medium stabilizing surfactant can be considered for use in integral skin and high-density polyether-based microcellular systems
L-1131				●			Cell stabilizer for wet process PU leather, provides good deposition, increases thickness, speeds up DMF and water exchange
L-1160				●			Linear reactive silicone, enhance anti-sticking property, good solubility in PU system. Improves leveling in coating application
L-1169				●			Linear reactive silicone, enhance anti-sticking property, good leveling, and silky hand feeling
L-1593				●			Co-surfactant that enhances froth stability, improve cell structure and reduce foam density when used with standard mechanical froth surfactants
L-5614				●			Industry-standard surfactant for the mechanically frothed foam process
L-5617				●			Low VOC surfactant analog of L-5614, used in the mechanically frothed foam processes
L-5639				●			A low VOC mechanical froth surfactant, non-hydrolysable, provides high closed cell content while reducing both froth density and shear induced cell collapse
L-5690				●			Co-surfactant that enhances froth stability and reduce foam density when used with standard mechanical froth surfactants
L-5641				●			Low VOC surfactant for increased closed cell content and decreased density (< 300 kg/m <sup>3</sup> )

## Niax Catalysts

Catalysts	Microcellular/Shoe Sole	SRIM/Composite	Elastomers	Spray Elastomer	Integral Skin Foam	PU Leather/Coatings	Product Description	Urea Selectivity	Urethane Selectivity	Pot Life	Curing Speed	Hydrolytic Stability
A-440	●	●		●			Delayed-action, blowing-selective amine catalyst developed for microcellular foams	●	2	2	4	
A-533	●	●	●	●	●	●	Industry-standard TEDA catalyst in (mono)ethylene glycol	●	1	4	4	
A-525	●	●	●	●	●	●	Industry-standard TEDA catalyst in BDO	●	1	4	4	
A-535		●	●			●	Delayed-action gel catalyst for microcellular/SRIM/PUL applications	●	3	3	4	
A-537	●	●	●		●		Delayed-action TEDA-based catalyst for open-mold pouring applications	●	3	2	4	
A-575	●	●	●		●		DBU based Temperature-activated, delayed-action, powerful, gelling-selective catalyst	●	3	2	4	
A-577		●	●		●		Delayed-action, powerful, gelling-selective catalyst	●	3	2	4	
LC-5619		●	●		●		Gel selective tin carboxylate catalyst for polyurethane production, transesterification catalyst		1	4	2	
LC-5636		●	●		●		Heat activated catalyst Sn/Hg/Ni free.	●	3	2	2	
MC-710	●	●		●	●	●	Enhanced reactivity and stability over MC-810	●	1	4	3	
MC-810	●	●		●	●	●	Tin free metal based catalysts, strong gelling, can replace DBTDL	●	1	3	2	

4 = more ; 1 = less



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