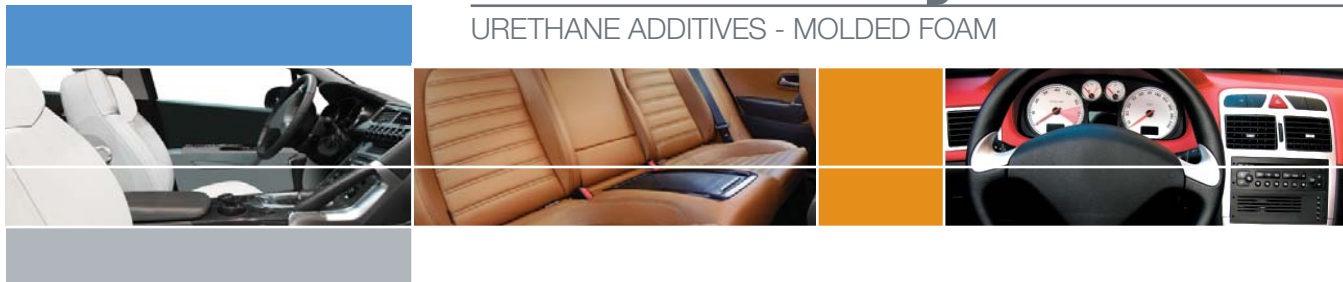


NIAX* Catalyst A-400

URETHANE ADDITIVES - MOLDED FOAM



Niax catalyst A-400 lets you reap the benefits of extended pour times and increased open foam. A liquid, water-soluble tertiary amine composition, Niax catalyst A-400 promotes the blowing reaction in the production of your molded polyurethane foams. As flexible as it is efficient, Niax catalyst A-400 may be added as a separate stream or blended with water or polyol for metering to the mixing head of the machine. Niax catalyst A-400 delivers the bonus of delayed-action enhancement. Both Niax catalyst A-400 and Niax catalyst A-300 belong to a new class of delayed-action catalysts with unique properties that offer a wide variety of molders the benefit of delaying the reaction while they produce substantially more open foam.

Key Features and Typical Benefits

Niax catalyst A-400 provides a wealth of added values. The “Momentive Performance Materials Difference” includes:

- delayed blow reaction for extended pour times needed to produce complex parts.
- considerable reduction in force-to-crush, indicating enhanced production of open foam when compared with competitive delayed-action catalysts.
- much lower amine fugitivity.
- far less corrosive to mild steel

Potential Applications

Niax catalyst A-400 may be used in the production of automotive seating.

Please note that:

- The reaction profile of Niax catalyst A-400 is similar to that of Niax catalyst A-107
- The delayed-action feature is particularly useful in high-reactivity systems
- In a typical molded foam application, the delayed blowing produced by Niax catalyst A-400 should be used in combination with a gelation catalyst such as Niax catalyst A-33 or Niax catalyst A-300

Typical Physical Properties

Specific Gravity at 25°C	1.115
Viscosity at 25°C, cP	140
Solubility in Water at 20°C	Complete
Flash Point, Pensky-Martens Closed Cup ⁽¹⁾ , °C (°F)	>93 (>200)

(1) ASTM Test Method D93

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Performance Data

Table 1 shows formulations that are typical of North American rapid-demold seating systems. The two in columns 1-4 are firmer, cushion-type formulations. The formulation in columns 5 and 6 is a softer seatback type.

Formulations in columns 1, 3 and 5 are catalyzed by Niox catalyst A-107 and in columns 2, 4 and 6 by Niox catalyst A-400. The surfactant used in all formulations is Niox silicone surfactant Y-10366 (RS-171).

Indications:

- Niox catalyst A-400 delays the onset of the blowing reaction in a manner similar to the other delayed-action blow catalyst but, in all three formulations, Niox catalyst A-400 produces more open foam, as evidenced by the lower force-to-crush values.
- The force-to-crush reduction is 48% to 59% in the firmer cushion formulations and 64% in the softer seatback formulation.
- At the same time, the foams made with Niox catalyst A-400 have equally good stability and green strength, as illustrated by the hot ILD values.

Table 1: Niox Catalyst A-400 Performance in TDI-Based Foams

Formulations	Parts by Wt					
	1	2	3	4	5	6
Components						
Polyether Polyol (OH# 36)	25.00	25.00	50.00	50.00	75.00	75.00
Polymer Polyol (OH# 22)	75.00	75.00	50.00	50.00	25.00	25.00
Diethanolamine	1.50	1.50	1.50	1.50	1.50	1.50
Water (total)	4.00	4.00	4.00	4.00	4.00	4.00
Niox Catalyst A-33	0.35	0.35	0.35	0.35	0.35	0.35
Niox Catalyst A-107	0.20	–	0.20	–	0.20	–
Niox Catalyst A-400	–	0.26	–	0.26	–	0.26
Niox Silicone Surfactant Y-10366 (RS-171)	1.20	1.20	1.20	1.20	1.20	1.20
TDI (80:20)	45.50	45.50	46.00	46.00	46.50	46.50
Isocyanate Index	98	98	98	98	98	98
Foam Properties						
Density, pcf (kg/m ³)	2.2 (35)	2.2 (35)	2.2 (35)	2.2 (35)	2.2 (35)	2.2 (35)
Cream Time, sec	8	7	8	7	8	7
Exit Time, sec	30	30	30	30	30	30
Weight, g	316	313	316	314	313	314
FTC, N	933	487	775	321	501	181
Hot ILD, N	241	228	180	183	148	147

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NIAX* Catalyst A-400

Performance Data (continued)

Table 2 shows formulations that typically are used in Europe.

Indications:

- Niox catalyst A-400 produces more open foam than the industrial standard delayed-action blow catalyst (Niox catalyst A-107) with equivalent stability (as illustrated by the ventcollapse) and equivalent cure

Table 2: Niox Catalyst A-400 Performance in TDI-Based Foams

Formulations	Parts by Wt	
	1	2
Components		
Polyether Polyol (OH# 35)	67.00	67.00
Polymer Polyol (OH# 30)	33.00	33.00
Water (total)	4.00	4.00
Diethanolamine	1.50	1.50
Niox Silicone Surfactant Y-10366 (RS-171)	1.10	1.10
Niox Catalyst A-33	0.25	0.25
Niox Catalyst A-107	—	0.20
Niox Catalyst A-400	0.26	—
Foam Properties^(1, 2)		
Index 90		
Cream Time, sec	6.5	6.5
Exit Time, sec	43-45	36-39
Foam Weight, g	509	507
F.T.C., N	675	867
Hot ILD, N	96	98
Foam Weight, g	491	480
F.T.C., N	549	745
Hot ILD, N	87	90
Foam Weight, g	479	474
F.T.C., N	491	695
Hot ILD, N	85	89
Index 105		
Vent collapse ⁽³⁾ , cm	0	0
Exit Time, sec	37	30
Foam Weight, g	408	376
Index 100		
Density, pcf (kg/m ³)	2.0 (32)	2.0 (32)
Cream Time, sec	6.5	6.5
Exit Time, sec	45	38
Foam Weight, g	482	474
F.T.C., N	549	803
Hot ILD, N	96	96
Foam Weight, g	478	478
F.T.C., N	541	789
Hot ILD, N	97	96

(1) F.T.C. is the force to indent at 50% an uncrushed cushion at 1 min. after demold.

(2) Hot ILD is the force to indent at 50% a crushed cushion at 3 min. after demold.

(3) Vent Collapse is measured using 4 x 1 mm vents.

NIAX* Catalyst A-400

Performance Data (continued)

Figure 1: Reduction in Force-to-Crush Properties Using Niax Catalyst A-400

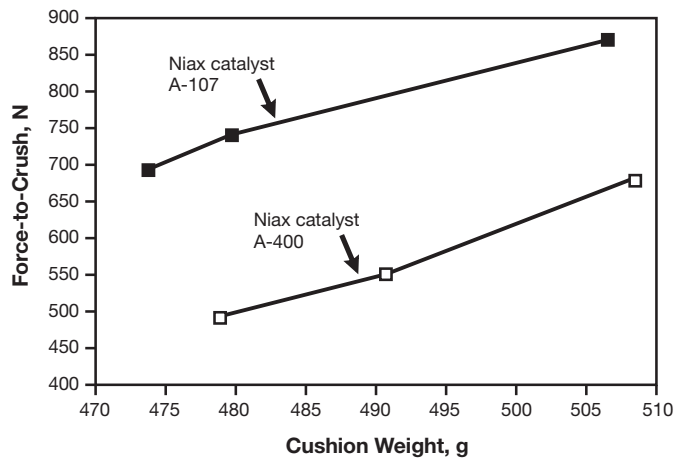


Figure 1 shows the significant reduction in force-to-crush with Niax catalyst A-400 as a function of foam part weight at 90 index.

NIAX* Catalyst A-400

Patent Status

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Alaska, Hawaii	CHEMTREC	1-800-424-9300
Canada	CHEMTREC	1-800-424-9300
Europe, Israel	NCEC	+44 (0) 1235239670
Middle East	NCEC	+44 (0) 1235239671
Asia Pacific (except China)	NCEC	+44 (0) 1235239670
China	NCEC	+86-10-5100-3039
Latin America (except Brazil)	NCEC	+44 (0) 1235239670
Brazil	SOS Cotec	08000111767 or 08007071767
All other locations world wide	NCEC	+44 (0) 1235239670
At sea	Radio U.S. Coast Guard in U.S. waters NCEC in International waters	+44 (0) 1235239670

For Health related calls, contact Momentive Performance Materials at +1-518-233-2500 (English only).

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Customer Service Centers

Worldwide Hotline

T +1 800 295 2392 / +1 607 786 8131
F +1 607 786 8309

North America

cs-na.silicones@momentive.com

Silicones – Fluids, Urethane Additives, Silanes, Specialty Coatings, RTVs and Elastomers

T +1 800 523 5862 / +1 800 334 4674
F +1 304 746 1654 / +1 304 746 1623

Consumer Sealants/ Construction Sealants and Adhesives

T +1 877 943 7325
F +1 304 746 1654

Latin America

cs-la.silicones@momentive.com

South America

T +55 11 4534 9650
F +55 11 4534 9660

Mexico and Central America

T +52 55 2169 7670
F +52 55 2169 7699

Europe, Middle East, Africa and India

cs-eur.silicones@momentive.com

T +00 800 4321 1000 / +40 21 3111848

Pacific

cs-ap.silicones@momentive.com

China

T +800 820 0202 / +86 21 3860 4892

Japan

T +0120 975 400 / +81 276 20 6182
F +81 276 31 6259

Korea

T +82 2 6201 4600
F +82 2 6201 4601

Malaysia

T +60 3 9206 1555
F +60 3 9206 1533

Thailand

T +66 2207 3456
F +66 2207 3488

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22 Corporate Woods Boulevard
Albany, NY 12211 USA
+1 800 295 2392
+1 607 786 8131
momentive.com