

# Niax<sup>\*</sup> Catalyst A-400

## Product Description

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.

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Momentive Performance Materials provides versatile materials as the starting point for our creative approach to ideas that help enable new developments across hundreds of industrial and consumer applications. We are helping customers

solve product, process, and performance problems; our silanes, fluids, elastomers, sealants, resins, adhesives, urethane additives, and other specialty products are delivering innovation in everything from car engines to biomedical devices.

From helping to develop safer tires and keeping electronics cooler, to improving the feel of lipstick and ensuring the reliability of adhesives, our technologies and enabling solutions are at the frontline of innovation.



# Niax\* Catalyst A-400

## Key Features and Typical Benefits

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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

## Typical Physical Properties

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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 <sup>(1)</sup> , °C (°F)	>93 (>200)

(1) ASTM Test Method D93

## 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

## Niax\* Catalyst A-400

### 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 Niax catalyst A-107 and in columns 2, 4 and 6 by Niax catalyst A-400. The surfactant used in all formulations is Niax silicone surfactant Y-10366 (RS-171).

#### Indications:

- Niax 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, Niax 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 Niax catalyst A-400 have equally good stability and green strength, as illustrated by the hot ILD values.

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

Formulations	Parts by Wt					
	1	2	3	4	5	6
<b>Components</b>						
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
Niax Catalyst A-33	0.35	0.35	0.35	0.35	0.35	0.35
Niax Catalyst A-107	0.20	–	0.20	–	0.20	–
Niax Catalyst A-400	–	0.26	–	0.26	–	0.26
Niax 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
<b>Foam Properties</b>						
Density, pcf (kg/m <sup>3</sup> )	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

## Niax\* Catalyst A-400

### Performance Data (continued)

Table 2 shows formulations that typically are used in Europe.

Indications:

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

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

Formulations	Parts by Wt	
	1	2
<b>Components</b>		
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
Niax Silicone Surfactant Y-10366 (RS-171)	1.10	1.10
Niax Catalyst A-33	0.25	0.25
Niax Catalyst A-107	—	0.20
Niax Catalyst A-400	0.26	—
<b>Foam Properties<sup>(1, 2)</sup></b>		
<b>Index 90</b>		
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
<b>Index 105</b>		
Vent collapse <sup>(3)</sup> , cm	0	0
Exit Time, sec	37	30
Foam Weight, g	408	376
<b>Index 100</b>		
Density, pcf (kg/m <sup>3</sup> )	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.

Performance Data (continued)

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

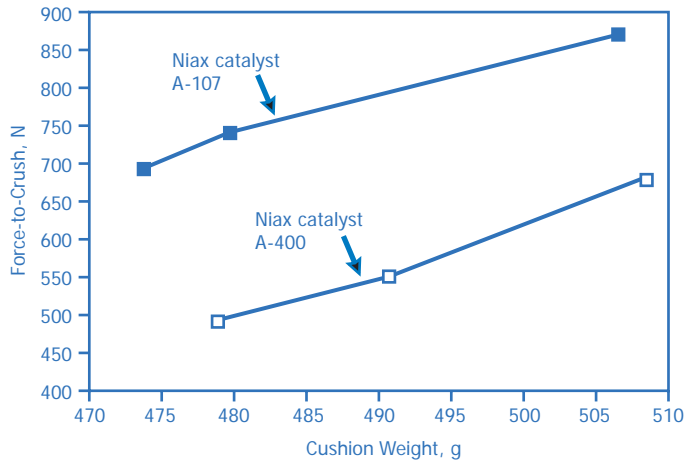


Figure 1 shows the significant reduction in force-to-crush with Niix catalyst A-400 as a function of foam part weight at 90 index.

## Niax\* Catalyst A-400

### Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

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### Limitations

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At sea	Radio U.S. Coast Guard, which can directly contact Momentive Performance Materials at 518.233.2500 or CHEMTREC at 800.424.9300.	

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