Niax* catalyst A-400

Description

Niax catalyst A-400 lets you reap the benefits of extended pour times and increased open foam. A liquid, watersoluble 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 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

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

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

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					
Components	1	2	3	4	5	6
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
Foam Properties						
Density, pcf (kg/m3)	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

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	
Components	1	2
Polyether Polyol (OH# 36)	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	-
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	837
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.

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

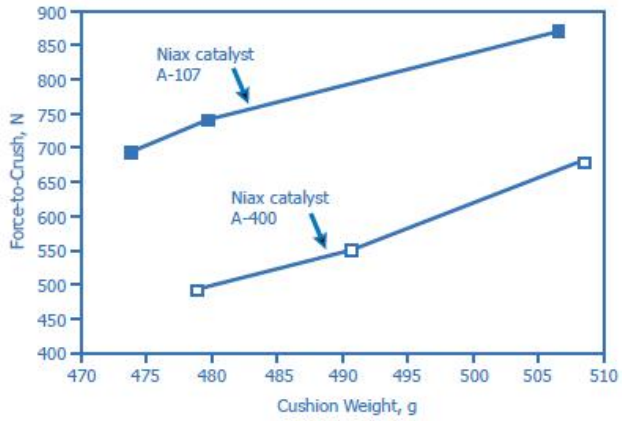

Figure 1 shows the significant reduction in force-to-crush with Niax catalyst A-400 as a function of foam part weight at 90 index.

Patent Status

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