

Dow Corning® 43-821 Additive

FEATURES & BENEFITS

- In PA6 and PA66 composites, *Dow Corning*® 43-821 Additive demonstrates flame retardant synergistic effects when combined with aluminum phosphinate
- Non-phosphorus and non-corrosive flame retardant co-synergist alternative to melamine polyphosphate
- Use of *Dow Corning* 43-821 Additive with metal phosphinate allows a reduction of the phosphorus content
- Thanks to the reduction of phosphorus based additives, your formulation will:
 - Regain mechanical performances
 - Show reduced corrosion
- Efficient at low loadings (1–2 wt%)

COMPOSITION

- Silicone powder

Silicone powder flame retardant

APPLICATIONS

- To be used as synergist with metal-phosphinate based flame retarded glass reinforced polyamide 6 and polyamide 66 systems where improved mechanical and low corrosion are needed.
- Can be used as a replacement of classical melamine polyphosphate synergist where low phosphorus is required.

TYPICAL PROPERTIES

Specification Writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Test*	Property	Unit	Result
CTM 0176 B	Physical appearance		White powder
CTM 0208 GP	Volatility forced draft	%	1.5 Max
TGA	Degradation temperature	°C	350

*CTM: Corporate Test Method, copies of CTM's are available on request
TGA: Thermo Gravimetric Analysis

DESCRIPTION

Dow Corning® 43-821 Additive is a phosphorus free, non-corrosive, silicone powder designed to develop synergistic flame retardancy effects when combined with aluminum phosphinate in glass fibers reinforced polyamide 6 and 66.

HOW TO USE

Dow Corning 43-821 Additive is used in synergy with metal phosphinate, typically aluminum phosphinate, in glass fibers reinforced polyamide 6 and 66 as co-synergist flame retardant.

Thanks to its synergistic effect with aluminum phosphinate, *Dow Corning* 43-821 Additive will help you open new perspectives for developing halogen-free flame retardant formulations with lowered phosphorus content, thus less corrosive and showing improved mechanical performances.

It is recommended to pre-blend *Dow Corning* 43-821 Additive with aluminum phosphinate prior to introduction in extrusion process.

Dow Corning 43-821 Additive is effective at low levels, typically ranging from 1 up to 2 wt%.

Table 1: Typical Examples in Polyamide 6

Formula #	Aluminum diethyl phosphinate	Aluminum diethyl phosphinate with melamine polyphosphate co-synergist	Silicone additive	P-content %
1	20		0	4.8
2	13		2	3.1
3	10		2	2.4
4		20	0	3.8

Formula #	Mechanical performance			ISO-179 unnotched	UL-94 V		Cone Calorimeter (50 kW/m ²) ISO-5660	
	ISO-527				1.5 mm	1 mm	PkHRR (kW/m ²)	MAHRE
	E-Mod (MPa)	Fmax (MPa)	E@B (%)					
1	10417	117	4	60.7	V-1	V-1	453	269
2	9610	123	4.7	70	V-0	V-1	250	158
3	9518	128	4.8	75.3	V-1	HB	267	160
4	10133	120	3.4	59	V-0	V-0	345	211

Table 2: Typical Examples in Polyamide 66

Formula #	Organo-phosphorus FR additive 1 (OP-1230)	Aluminum diethyl phosphinate with melamine polyphosphate co-synergist	Silicone additive	P-content %
5	20		0	4.8
6	13		0	3.1
7	10		0	2.4
8	13		2	3.1
9	10		2	2.4
10		20	0	4.2

Formula #	Mechanical performance			ISO-179 unnotched	UL-94 V		Cone Calorimeter (50 kW/m ²) ISO-5660		
	ISO-527				1.5 mm	1 mm	PkHRR (kW/m ²)	MAHRE (kW)	TSP
	E-Mod (MPa)	Fmax (MPa)	E@B (%)						
5	9402	114	3.5	49.5	HB	-	389	214	1651
6	9272	123	4.2	61	HB	-	415	222	1462
7	9277	127	4.2	63	HB	-	471	237	1425
8	9490	119	3.6	51	V-0	V-0	230	166	1471
9	9347	125	3.8	56	V-1	V-1	198	132	1101
10	10015	121	3.2	46.5	V-0	V-0	186	110	1429

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**USABLE LIFE AND
STORAGE**

When conditioned in its original non-opened package, *Dow Corning* 43-821 Additive has a usable lifetime of 540 days.

**PACKAGING
INFORMATION**

Available in 1 kg pail and 20 kg bags.

LIMITATIONS

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

**HEALTH AND
ENVIRONMENTAL
INFORMATION**

To support customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our website, dowcorning.com or consult your local Dow Corning representative.

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