

PRODUCT BULLETIN

Maxxam™ FR Flame Retardant Polyolefin Formulations

Maxxam™ FR Flame Retardant Polyolefin Formulations are engineered to meet stringent flammability performance requirements according to industry norms. A range of standard and customized solutions conforming to UL 94 V-2, V-0 and 5VA performance ratings are available. Many grades in the portfolio offer elevated Relative Thermal Index (RTI) ratings and Glow Wire Flammability Index (GWFI) up to 960°C. Maxxam FR formulations are an ideal choice for a variety of applications which require specific flame retardant performance in a wide range of industries including consumer, electrical and electronic, transportation, industrial equipment and medical devices. Custom products can be formulated with recycled PP and PE. The portfolio includes non-halogen and halogenated flame retardant systems.

KEY CHARACTERISTICS

- UL 94 V-2, V-0, 5VA ratings and elevated RTI ratings
- GWFI (IEC 60695-11-10) up to 960°C
- Comparative Tracking Index (CTI) PLC 0, 600V ratings
- Injection molding and extrusion grades
- Non-halogen grades available
- Low dielectric performance with selected formulations
- Good recyclability
- Colorable

MARKETS & APPLICATIONS

Applications that require flame retardant performance including:

- **Transportation:** Interior components, seat components, door panels, aircraft interiors, railway interiors, boat interiors
- **Construction & Building Materials:** Cable insulation, pipes and fittings, insulation materials
- **Consumer** – Appliance casings, housings, covers, fume hoods, battery packages, furniture
- **Industrial Equipment:** Machine housings
- **Energy, Electrical & Electronic, E-Mobility:** Battery frames, electrical housings, connectors
- **Telecommunication:** Cable management
- **Packaging:** Transportation of sensitive goods
- **Healthcare**: Medical device housings and components

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MAXXAM FR FLAME RETARDANT POLYOLEFIN FORMULATIONS

	Non-halogenated							Halogenated					
	PP	Homopolymer			Copolymer			Homopolymer			Copolymer		
	Unit	Unfilled	Glass Fiber	Mineral	Unfilled	Glass Fiber	Mineral	Unfilled	Glass Fiber	Mineral	Unfilled	Glass Fiber	Mineral
Characteristic				Talcum			Talcum			Talcum			Talcum
Reinforcement	Mass-%	0	5–30	5–30	0	20–30	5-20	0	5–30	5–20	0	5–30	5–20
Colorable	–	++	++	+	++	++	+	+	+	+	+	+	+
Density	g/cm3	0,9–1,08	1,28–1,37	0,98–1,55	0,92–1,06	1,25–1,35	0,95–1,28	0,94–1,04	1,3–1,55	1,01–1,42	0,96–1,01	0,94–1,58	0,95–1,46
Tensile Strength	MPa	25–30	30–70	25–35	16–22	40–65	15–25	25-–35	30–70	25–35	20–24	20–55	-25
E-Modulus (Tensile)	MPa	1600–2500	2500–8200	2500–4000	800–1200	2000–8000	1600–3000	1300–2000	3000–8900	1900–3500	1000–1400	1200–7500	1500–3000
Izod Impact 23°C notched	%	2,0–4,5	3,5–7,5	2,5–4,5	5–40	2,5–18	2,5–6	2,5–4,5	3,5–6,0	3,0–7,0	4,0–40	2,5–16	2,5–10
Max. Temp (HDT 0,45 MPa)	°C	60–100	80–145	80–160	40–80	60–120	60–110	60–100	80–145	80–145	40–80	60–120	60–110
Flammability, UL94	Step	V2-V0/5VA	V2-V0	V2-V0	V2-V0	V2-V0	V2-V0	V2-V0	V2-V0	V2-V0	V2-V0	V2-V0	V2-V0
Glow Wire Flammability Index	°C	750–960	750–960	750–960	750–960	750–960	750–960	750–960	750–960	750–960	750–960	750–960	750–960
CTI	V	450–00	450–600	450–600	450–600	450–600	450–600	350–600	350–600	350–600	350–600	350–600	350–600
Oil Resistance	–	+	+	+	+	+	+	+	+	+	+	+	+
Drying Required	–	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Process (IM, EX, BM)[1]	–	(IM, EX)	(IM, EX)	(IM, EX)	(IM, EX)	(IM, EX)	(IM, EX)	(IM, EX)	(IM, EX)	(IM, EX)	(IM, EX)	(IM, EX)	(IM, EX)
Other Modifications[2]	–	Impact, HS, UV, LM	GB, T, HS, UV, LM	GF, HS, UV, LM	Impact, HS, UV, LM	GB, T, HS, UV, LM	GF, HS, UV, LM	Impact, HS, UV, LM	GB, T, HS, UV, LM	GF, HS, UV, LM	Impact, HS, UV, LM	GB, T, HS, UV, LM	GF, HS, UV, LM
Descriptions		Lower density with moderate strength. Can withstand some bending. Good heat resistance but can soften at higher temperatures. Excellent chemical resistance and insulation properties. Excellent processability.	Increased tensile strength and stiffness. Enhanced short term heat resistance, allowing resistance to higher temperatures. Good dimensional stability, reduced shrinking and warpage.	Improved stiffness compared to unfilled systems with enhanced heat resistance. Good anisotropic behaviour and dimensional stability. Good chemical resistance.	Lower density with moderate strength and higher impact properties. Can withstand some bending. Good heat resistance but can soften at higher temperatures. Excellent chemical resistance and insulation properties.	Increased tensile strength and stiffness. Enhanced short term heat resistance, allowing to withstand higher temperatures. Good dimensional stability, reduced shrinking and warpage.	Improved stiffness compared to unfilled systems with enhanced heat resistance. Good anisotropic behaviour and dimensional stability. Good chemical resistance.	Lower density with moderate strength. Can withstand some bending. Good heat resistance but can soften at higher temperatures. Excellent chemical resistance and insulation properties.	Increased tensile strength and stiffness. Enhanced short term heat resistance, allowing resistance to higher temperatures. Good dimensional stability, reduced shrinking and warpage.	Good stiffness compared to unfilled systems with enhanced heat resistance. Good anisotropic behaviour and dimensional stability. Good chemical resistance.	Lower density with moderate strength. Can withstand some bending. Good heat resistance but can soften at higher temperatures. Excellent chemical resistance and insulation properties.	Good tensile strength and stiffness. Enhanced short term heat resistance, allowing resistance to higher temperatures. Good dimensional stability, reduced shrinking and warpage.	Good stiffness compared to unfilled systems with enhanced heat resistance. Good anisotropic behaviour and dimensional stability. Good chemical resistance.

[1] IM: Injection Molding, EX: Extrusion, BM: Blow Molding
[2] HS: Heat Stabilized, UV: UV Stablized, LM: Lasermarking. GF: glass Fiber, GB: Glass Bead, T: Talcum

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