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UNIPLEX FRX 44-94S Non-Halogen Flame Retardant

Description: A white, thermally-stable non-halogen flame retardant particularly useful in polyolefin and polyurethane applications.

Applications:

<u>Resin</u>	<u>Applications</u>
Polypropylene	Battery cases, electronic housings
Polyethylene	Wire & Cable, molded parts
Polyurethane	Flexible Foam, Paint & Coatings

Features: White Powder
Thermally-stable to 225°C
Small Particle Size (< 5 micron)
Excellent UV stability
Non-hydroscopic
Excellent acid stability to mineral acids

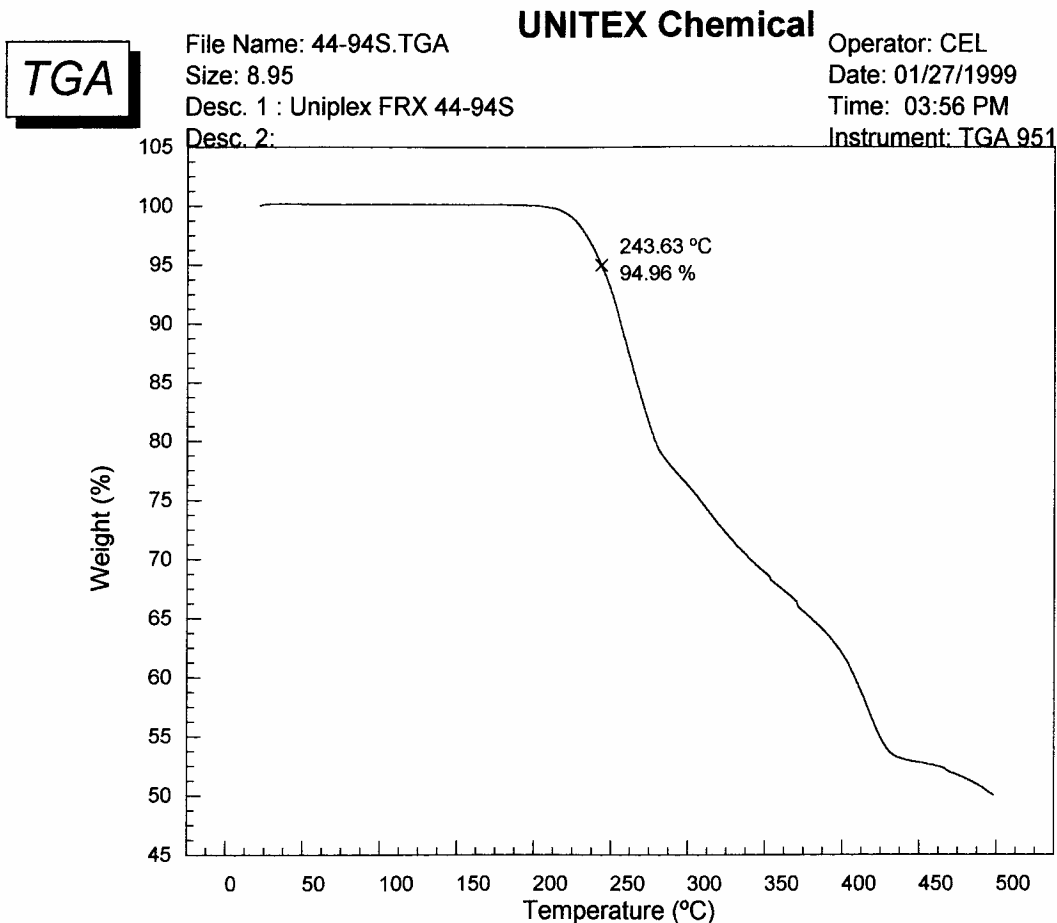
Typical Properties:

Appearance	White Powder
Density	0.33 g/cm ³
Melting Point	254°C
Flash Point	> 680°F
Water Content	0.15% max
Phosphorus Content	15.67%
Nitrogen Content	27.0%



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THERMOGRAVIMETRIC ANALYSIS:



Instrument Specialists, Inc. Version 3.0



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Application Data:

Low Density Polyethylene (LDPE) Formulation

Component	Wt %	Wt %	Wt %
LDPE (MFI=7)	100	59.5	69.5
Uniplex FRX 44-94S	----	40	30
Antioxidant	----	0.25	0.25
Dispersant	----	0.25	0.25

Low Density Polyethylene Properties

UL94 (1/8 inch)	No Rating	V-0	V-0
UL94 (1/16 inch)	No Rating	V-0	V-0
%Elongation	196	92	104
Tensile Strength at Yield	1090	1088	1095
Tensile Strength at Break	1415	1096	1210
Izod Impact (1/8 inch) (ft-lbs/in)	2.7	2.4	2.55

Ethylene-Vinyl Acetate (18%VA) Formulation

Component	Wt %	Wt %	Wt %
Dupont Elvax 450 (MFI=8)	100	64.5	69.5
Uniplex FRX 44-94S	----	35	30
Antioxidant	----	0.25	0.25
Dispersant	----	0.25	0.25

Ethylene-Vinyl Acetate Properties

UL94 (1/8 inch)	No Rating	V-0	V-2
UL94 (1/16 inch)	No Rating	V-0	V-2
%Elongation	680	204	220
Tensile Strength at Yield (psi)	690	755	728
Tensile Strength at Break (psi)	935	785	810
Izod Impact (1/8 inch) (ft-lbs/in)	1.6	2.9	2.8



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High Density Polyethylene (HDPE) Formulation

Component	Wt %	Wt %	Wt %
HDPE (MFI=5)	100	64.5	69.5
Uniplex FRX 44-94S	----	35	30
Antioxidant	----	0.25	0.25
Dispersant	----	0.25	0.25

High Density Polyethylene Properties

UL94 (1/8 inch)	No Rating	V-0	V-0
UL94 (1/16 inch)	No Rating	V-2	V-2
%Elongation	800	144	180
Tensile Strength at Yield (psi)	2540	2100	2240
Tensile Strength at Break (psi)	1840	1396	1450
Izod Impact (1/8 inch) (ft-lbs/in)	1.2	0.86	1.02

High Density Polyethylene (HDPE) Formulation

Component	Wt %	Wt %	Wt %
HDPE (MFI=10)	100	64.5	69.5
Uniplex FRX 44-94S	----	35	30
Antioxidant	----	0.25	0.25
Dispersant	----	0.25	0.25

High Density Polyethylene Properties

UL94 (1/8 inch)	No Rating	V-0	V-0
UL94 (1/16 inch)	No Rating	V-2	V-2
%Elongation	980	80	108
Tensile Strength at Yield (psi)	3040	2496	2920
Tensile Strength at Break (psi)	1680	2410	2860
Izod Impact (1/8 inch) (ft-lbs/in)	0.98	1.05	1.07



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Polypropylene Co-Polymer (2.5% Ethylene Content) Formulation

Component	Wt %	Wt %	Wt %
PP (MFI=8)	100	64.5	69.5
Uniplex FRX 44-94S	---	35	30
Antioxidant	---	0.25	0.25
Dispersant	---	0.25	0.25

Polypropylene Copolymer Properties

UL94 (1/8 inch)	No Rating	V-0	V-0
UL94 (1/16 inch)	No Rating	V-0	V-0
%Elongation	60	100	200
Tensile Strength at Yield (psi)	4800	5200	4950
Tensile Strength at Break (psi)	2300	2800	2650
Izod Impact (1/8 inch) (ft-lbs/in)	1.1	0.98	1.2

Loading in Polypropylene (MFI=12) Versus Limiting Oxygen Index (LOI)

Weight% FR	0	25	30	35	40
L.O.I.	18	32	34	37	42

Loading in Polypropylene Versus UL-94 Rating

Polymer MFI	1/8"	UL94 V-2 1/16"	1/32"	1/8"	UL94 V-0 1/16"	1/32"
2				<25	30	
4				<25	30	
12	15	20	25	25	30	40
35	<25	<25		25	35	

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