

Engineering Plastics - Halogen Free range



Halogen free range

Why?

Let's go back in time to year 2006 when following the global trend of protecting the environment and safety regulations two new directives came into play in the E/E market in order to regulate the use of halogenated flame retardant polymer systems. The first directive stated that all electrical and electronic equipment has to be free of brominated substances such as PBBs and PBDEs as well as heavy metals content. This is the very well known **RoHS Directive** - 2002/95/CE.



specified the separated collection and recycling or disposal of all materials used in the E/E market containing brominated compounds. We're talking about the Waste Electrical and Electronic Equipment directive, **WEEE Directive** - 2002/96/CE.

Today, and following the RoHS and the WEEE directives, **Taro Plast S.p.A.** has been able to fill in the existing gap of Engineering Compounds regarding the use of brominated flame retardants by launching a wide range of **halogen free compounds** which make them ready for the E/E market segment.



How?

The new range of halogen free compounds (available in different versions such as unfilled, mineral filled and glass fibres reinforced as well) have been specially designed for those application in which not only a very good temperature and electrical shock resistance performance are required, but also when good mechanical and chemical resistance properties are a must.



The most innovative feature are their halogen free flame retardant systems able to provide great efficacy against almost any kind of fire hazard by achieving, most of the time, the common UL94 V0 as well as GWIT at 775°C ratings at very low thicknesses, while complying at the same

time with both, the RoHS and WEEE directives.

On the other hand, our compounds, thanks to their high thermal stability, can be processed by standard injection moulding methods granting lower mould and equipment metal corrosion as well as lower smoke toxicity creation (no HBr, HCl are developed at all).

They don't show any migration effect; therefore, they grant an excellent colourability as well as permanent laser marking.

Finally our compounds offer lower density, excellent tracking resistance values (CTI up to 600V), and higher UV stability over other halogenated products.



Where?

This unique property profile make our compounds suitable and ready for the new generation of electrical and electronic components such as large and small appliances, lamp holders, motor housings, plugs, switches, relays, sockets, fuse holders, mini circuit breakers (MCB), connectors and capacitors, among many other applications available in the E/E market.

More information about Taro Plast's products, services and contacts can be found on our web site:

www.taroplast.com

Physical properties	Method	Condition	Unit
Density	ISO 1183	23 °C	kg/dm ³
Mould Shrinkage	ASTM D 955	23 °C 3,2 mm	%

Mechanical properties			
Tensile Modulus	ISO 527	1 mm/min	MPa
Tensile Break Strength	ISO 527	5 mm/min	MPa
Tensile Elongation at break	ISO 527	5 mm/min	%
Flexural Modulus	ISO 178	2 mm/min	MPa
Flexural Break Strength	ISO 178	2 mm/min	MPa
Izod Notched Impact Strength	ASTM D 256	23 °C	J/m
Charpy Notched Impact Strength	ISO 179	Type 1eA 23 °C	kJ/m ²
Charpy Unnotched Impact Strength	ISO 179	Type 1eU 23 °C	kJ/m ²

Thermal properties			
Softening Temperature 5 kg (VST/B/50)	ISO 306	Rate 50 °C/h	°C
Deflection Temperature 1,80 MPa (HDT A)	ISO 75	1,80 MPa	°C
Ball Pressure Test	IEC 60695-10-2		°C

Flammability			
Flame Behavior	UL 94		Rating
Flame Behavior - thickness			mm
Glow Wire Flammability Index - GWFI	IEC 60695-2-12		°C
GWFI - thickness			mm
Glow Wire Ignition Temperature - GWIT	IEC 60695-2-13		°C
GWIT - thickness			mm
Comparative Tracking Index - CTI	IEC 60112	Test liquid A	V



Approved by Underwriters Laboratories



To be approved by Underwriters Laboratories

PP			PA6					PA66			PBT			
Haiplen H50 Y0	Haiplen H30 G4 BA Y0	Nilene E V0 LSZH	Taromid B240 Y0	Taromid B240 MT2 Y2	Taromid B240 MT5 Y2	Taromid B240 NG4 Y2	Taromid B240 NG6 Y2	Taromid A260 Y0	Taromid A280 G5 Y0	Taromid A280 G7 Y0	Tarolox GFR	Tarolox GFR 2	Tarolox GFR 4	Tarolox GFR 6
1,05	1,17	1,05	1,17	1,23	1,37	1,34	1,43	1,17	1,36	1,46	1,30	1,40	1,48	1,53
1	0,4	1	1,3	0,7	0,6	0,45	0,4	1,3	0,4	0,3	1,6	0,85	0,6	0,4

-	5000	-	3350	4100	4900	6400	9500	3600	8600	10000	3300	5100	8200	10500
-	70	-	62	72	80	75	90	95	125	150	-	70	90	100
10	3,1	20	8	4	3,5	3,5	3	6	2,6	2,2	-	4,2	2,7	1,9
2000	4600	1750	3100	3800	4400	5500	8500	3300	8000	9600	3000	4800	7300	9000
-	95	-	-	110	115	120	135	-	180	220	-	105	130	140
30	65	50	32	35	50	40	35	40	75	90	50	50	60	65
-	6	-	2,7	2,5	3	2,7	2,8	2,5	7	8,5	3,5	4,5	5	5,5
-	32	-	-	30	50	19	20	50	35	38	45	30	40	45

95	137	72	200	200	200	210	220	236	245	247	194	205	206	208
90	146	60	80	160	170	202	210	90	240	245	160	180	202	215
125	125	125	165	170	170	170	170	190	210	210	165	185	205	215

V0	V0	V0	V0	V2	V2	V2	V2	V0						
1,6	1,6	1,6	0,97	0,97	0,97	0,97	0,97	0,55	0,75	0,75	0,75	0,75	0,75	0,75
960	960	960	960	960	960	960	960	960	960	960	960	960	960	960
1	1,6	1,6	0,8	1	1	1	1	1	3	3	1	1	1	1
725	725	750	750	775	775	775	775	775	775	775	750	750	775	775
1,6	1,6	1,6	0,8	1	1	1	1	1	3	3	1	1	1	1
600	600	600	600	600	600	600	600	600	600	600	600	600	550	550

Product Overview

haiplen H50 Y0

PP homopolymer UL94 V0

haiplen H30 G4 BA Y0

PP homopolymer 20% glass fibres reinforced chemically coupled UL94 V0

nilene E V0 LSZH

PP copolymer UL94 V0

taromid B 240 Y0

PA 6 UL94 V0

taromid B 240 MT2 Y2

PA 6 10% mineral filled UL94 V2

taromid B 240 MT5 Y2

PA 6 25% mineral filled UL94 V2

taromid B 240 NG4 Y2

PA 6 20% glass fibres reinforced UL94 V2

taromid B 240 NG6 Y2

PA 6 30% glass fibres reinforced UL94 V2

taromid A 260 Y0

PA 66 UL94 V0

taromid A 280 G5 Y0

PA 66 25% glass fibres reinforced UL94 V0

taromid A 280 G7 Y0

PA 66 35% glass fibres reinforced UL94 V0

tarolox GFR

PBT UL94 V0

tarolox GFR 2

PBT 10% glass fibres reinforced UL94 V0

tarolox GFR 4

PBT 20% glass fibres reinforced UL94 V0

tarolox GFR 6

PBT 30% glass fibres reinforced UL94 V0

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