



## TP521

### Thermoplastic, low smoke, halogen free, flame retardant compound for cable insulation and sheathing.

This is a flame retardant, low smoke, thermoplastic compound which has been specially developed to meet the requirements of limited toxic and corrosive fume emission, having good moisture resistance and hot pressure performance.

TP521 has been specially developed to comply with the requirements of BS7655 Section 6 for types LTS1,2,3 and 4; EN 50290-2-27 for type HM2 and HD 604 for type HM4.

Test	Test method	Unit	Typical value	
<b>Physical properties and mechanical properties</b>				
Density	BS 2782 Pt. 6 Mtd 620A-D	g/cm <sup>3</sup>	1.48	
Tensile strength	IEC 60811-1-1	N/mm <sup>2</sup>	13	
Elongation at break	IEC 60811-1-1	%	160	
Tear Strength	BS 6469	N/mm	7	
Hardness (N)	Shore A	-	90	
Hardness (N)	Shore D	-	40	
<b>Typical ageing behaviour after 7 days at 100°C</b>				
Tensile strength	IEC 60811-1-2	% Variation	-10	
Elongation at break	IEC 60811-1-2	% Variation	+13	
<b>Thermo mechanical properties</b>				
Hot pressure deformation at 90°C	IEC 60811-3-1	%	25	
Hot pressure deformation at 100°C	IEC 60811-3-1	%	30	
Cold bend test at -30°C	IEC 60811-1-4	-	pass	
Elongation at break at -30°C	IEC 60811-1-4	%	60 (pass)	
Cold impact at -30°C	IEC 60811-1-4	-	pass	
Thermal crack resistance @ 80°C	AEI internal method	-	pass	
<b>Fire &amp; smoke properties</b>				
Oxygen Index	BS ISO 4589-2	%	30	
Temperature Index	BS ISO 4589-3	°C	270	
Toxicity index	NES 713	-	1.3	
Halogen Acid Gas Evolution	IEC 60754-1	%	<0.5	
Smoke emission 3m cube test	BS EN 61034-2:2005	-	pass	
<b>Electrical properties</b>				
Insulation Constant Ki at 20°C	IEC 60502	MΩ.km	7.7	
Insulation Constant Ki at 90°C	IEC 60502	MΩ.km	0.057	
<b>Fluid resistance</b>				
	<b>Time (hrs)</b>	<b>Temperature °C</b>	<b>% Variation in TS</b>	<b>% Variation in EB</b>
ASTM No2	4	23	9	2
ASTM No2	4	70	14	24
ASTM No2	4	100	28	48

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# TP521

## Recommended processing and handling conditions

### Extruder

An extruder with an L/D ratio (length/diameter) of 15-24 and an extruder screw with a compression ratio 1.5:1 or less are recommended.

### Extruder temperature conditions

It is important that the melt temperature is not allowed to rise above 170°C.

As a guide the following temperature profile is recommended:-

Zone 1	Zone 2	Zone 3	Zone 4	Head	Die
120°C	130°C	140°C	150°C	160°C	160°C

This profile will vary slightly depending on extruder type, head design and output.

**Screw water temperature** Depends upon screw design, but should be 30-50°C

**Recommended screen pack** 50 (mesh apertures per linear inch) or 300 micron

### Head and tool design

The head and tools should be so designed as to allow streamlined flow of material. To obtain the optimum in physical properties in the case of tubing tools, the smallest possible draw down ratio is recommended to avoid internal stress.

### Masterbatches

Addition of approved colour masterbatches, including black, up to a maximum of 1%, has no detrimental effect on the properties.

It is recommended that all masterbatches should be thoroughly dried at 60°C for 8 hours or at 80°C for 4 hours.

### Storage and shelf life

TP521 has an unlimited shelf life. However, the following precautions should be observed:-

- Packaging should remain sealed
- Avoid storage outside and in direct sunlight.

### Form and packaging

Form – pellets

Packaging – the following possibilities are available:-

- Moisture resistant sacks containing 25kg.
- Boxes with a moisture resistant heat sealed liner containing approximately 125kg, 500kg or 1000kg.

### Additional grade information

TP521 is available in the following versions:-

TP521N (natural colour)	TP521NU (with a non-staining UV stabiliser added)
TP521B (coloured black)	TP521BU (carbon black added to give UV stability)

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