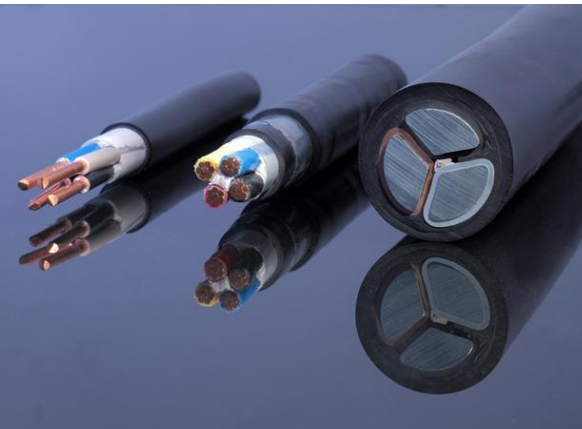


Processing Guide of Mecoline TP Products



CABLE COMPOUNDS

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Additional information to our TDS

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To achieve the optimum of the material properties it is important to know how they are to process.

The extrusion process has influence to the following properties:

- ▶ mechanical properties
- ▶ shrinkage
- ▶ burning properties
- ▶ surface finish
- ▶ ageing behavior
- ▶ porosity

Extruder	Ideally 20 to 24 L/D ratio.
Extruder head	Ideally with deep flow channels. A head assembly with a diverter valve is beneficial.
Screw	Low compression less than 1.5:1 and ideally 1.2:1.
Extension piece/ adapter	If there is an extension piece connecting the end of the extruder and head then this needs to be heated to 160°C by heater bands similar.
Tooling pressure	Ring die should be the same size or slightly smaller than the final cable diameter. Short land length; no longer than 3mm. The flow path should be as gentle as possible with the adequate separation of the core and ring die.
Tubing	Double taper designs are preferred. Draw down ratios of no greater than 1.5:1 is recommended.

Drying	Generally not necessary unless the material is exposed to the atmosphere for a long period of time. In this case, it can be dried in a dehumidifying drier.
Temperature profile	Ranging from 125°C to 160°C from the feed to the end of the extruder with 165°C on the head and 165°C on the die. A higher temperature can be used for Mecoline S TP 1033 F and Mecoline S TP 1034 F.
Melt temperature	Aim for between 160°C and 175°C. For Mecoline S TP 1033 F and Mecoline S TP 1034 F a melt temperature of 230°C can be acceptable.
Colour masterbatches	EVA base is recommended. PE base can be acceptable, but by loosing burning properties.

Problem	Cause	Solution
Poor surface finish	Temperature low	Increase barrel and head temperatures
		Use higher shear screw
	Melt fracture	Increase barrel and head temperatures
		Use lower draw-down ratio
		Reduce extrusion rate
	Extrusion O/D too low	Reduce haul off speed
		Change to smaller die (run with slight die swell)
	Improper filling of the die	Use smaller size die
Porosity	Wet compound	Vacuum dry, replace material
	Wet colour master batches	Vacuum dry, replace material
	Melt temperature is too high (decomposition of fillers)	Reduce barrel temperatures
		Use lower shear screw
		Check heating and cooling equipment

Problem	Cause	Solution
Surging extrudate	Insufficient back pressure in extruder	Use more/finer sieves
	Screw speed too high	Reduce screw speed
	Porosity in extrudate	See above
Die drool	Low molecular weight material exuding during extrusion.	Use highly polished die/point
		Add 1-2 % processing aid
High motor amps	Is motor rating sufficient?	Upgrade motor
	Incorrect screw design	Use lower shear/compression design
	Sieve pack too tough	Remove some/all sieves
	Head design restrictive	Change head design; deeper flow channels
	Material too stiff	Increase temperature profile
		Check heater bands/thermocouples
		Use higher MFI material
High shrinkage	Draw-down too high	Reduce draw-down
	Vacuum too high	Reduce vacuum