

**Robot Control Cable
Jacket Material Solution** (TPU/PVC)



Application Advantages

TPU

1. Fully meet the testing requirements of robot control cables through UL, VDE, TÜV, CIAR and other standards ;

2. High temperature resistance:

one of a very few halogen-free flame retardant TPU material that support cable passing UL758/1581 105°C temperature resistance grade test (136 /168Hrs);

3. High mechanical properties:

pass through ≥ 50000 wear-resistant tests, effectively avoid cable wearing and cracking in use; excellent tensile strength ($\geq 18\text{Mpa}$) tear strength ($\geq 40\text{N}$) and modulus of elasticity, support the wire going through torsion resistance, bending resistance and flexion resistance tests;

4. Good dynamic mechanical properties:

fully meet the TÜV 1-5 level mechanical performance requirements.

5. Better environmental performance:

1) Oil Resistance:

Supporting the cable to pass 70°C/24h oil resistance test, the change rate of strength and elongation is no more than 30%;

2) Hydrolysis resistance:

Supporting the cable to pass hydrolysis resistance test at 80°C/168h, strength change rate is less than 30%, elongation change rate is less than 35%; or 1000Hrs hydrolysis resistance test (85°C/85% RH, 1000Hrs) ;

3) Acid and Alkali Resistance :

Supporting the cable to pass the acid and alkali resistance test at 23°C/168h, the strength change rate is no more than 30%, and the elongation rate is no less than 100%.

PVC

The introduction of elastomer functional groups in PVC resin greatly improves the comprehensive properties of PVC materials. Compared with normal PVC materials, it has obvious advantages as follows:

1. Supporting cables pass UL758/1581 VW-1 combustion test;

2. High elasticity:

take account of soft touch and higher Modulus of elasticity;

3. Good dynamic mechanical performance:

fully meet the TÜV 1-5 level mechanical performance requirements;

4. Excellent environmental resistance:

1) Oil Resistance:

pass 70°C/24Hrs oil resistance test, the change rate of strength and elongation is no more than 30%.

2) Hydrolysis resistance:

pass hydrolysis resistance test at 80°C/168Hrs, strength change rate is no more than 30%, elongation change rate is no more than 35%.

Properties Datasheet

					Model	Model	Model
General characteristics	Material properties	Testing standard	Test condition	Units	1185D-EM	1175D-EM	6078B
	Material category	-	-	-	TPU Polyether	TPU Polyether	EVC
	Appearance (light/Semi-matte/Frosted)	-	-	-	Semi-matte	Semi-matte	Frosted
	Extrusion/injection	-	-	-	Extrusion	Extrusion	挤出
Physical characteristics	Hardness	DIN 53505	155	Shore A	86	75	78
	Proportion	DIN 53479	-	g/cm ³	1.16	1.15	1.33
	Melt index	DIN 53735	230°C/5kg	g/10min	2	2	0.5
	Brittle temperature	ISO 812	-	°C	-60	-60	-35
Mechanical properties	Elongation	DIN 53504	200mm/min	%	600	600	330
	Tensile Strength	DIN 53504	200mm/min	Mpa	30	24	18
	Tearing strength	DIN 53515	500mm/min	KN/m	70	55	26
Hot air aging	Elongation retention rate	DIN 53504	158°C/168h	%	≥75 (113°C)	≥75 (113°C)	≥75 (135°C)
	Tensile strength retention	DIN 53504	158°C/168h	%	≥75 (113°C)	≥75 (113°C)	≥75 (135°C)
Electrical performance	Volume resistivity	ASTM D257	-	Ohm-cm	≥1.0E+11	≥1.0E+11	≥1.0E+11
Combustion performance	Vertical burning test	UL 94	3.0/6.0mm	-	V2(3.0mm)	V2(3.0mm)	V0(3.0mm)
Feature					Charging pile/robot cable through IEC 60331-1-2	Super soft flame retardant TPU product, charging pile/robot cable through IEC 60331-1-2	The most cost-effective robot cable products, in accordance with VW - 1



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