TPU for Mining Cables

OVERVIEW

A mining cable jacket serves as the first set of protection from environmental damage, chemical materials and biological attacks. Lubrizol's Estane® TPU (thermoplastic polyurethane) offers the superior properties and benefits needed for mining cables to withstand the most extreme temperatures and meet everyday demands.

BENEFITS OF ESTANE® TPU

Estane TPU is the preferred choice for jacketing materials and cables due to its key benefits. These include, but are not limited to:

- Excellent Abrasion and Cut-Through Resistance
- High Flex-Life
- Flame Retardancy
- Excellent Chemical Resistance
- Weathering Resistance to UV and Harsh Environments

PORTABLE CONDUCTORS FOR SINGLE & MULTIPLE POWER CABLES:

Minimum tensile strength and tear resistance for TPU are 50 to 100% higher than alternative materials (chloro-sulfonated polyethylene, neoprene, chlorinated polyethylene, etc.).

MINING POWER CABLE FEEDERS:

Minimum tensile strength and elongation expectations from TPU are significantly higher than alternative products like PVC and chlorinated polyethylene.

CABLE JACKETING GRADES OF ESTANE® TPU VS ICEA REQUIREMENTS

NEMA Standard Publication No. WC 58-2008, ICEA Standard Publication No. 2-75-381-2008								
	Table 3-3 Portable Power Cable Jacket	Table 4-9 Mine Power Feeder Cable Jacket						
Products	**Required Minimum**	**Required Minimum**	**Estane® 58300 NAT 035**	**Estane® 58863 NAT 025**	**Estane® ZHF80AT3 NAT 021**	**Estane® ZHF90AT0 NAT 021**	**Estane® ZHF90AT2 NAT 021**	**Estane® 58887 NAT 035**
Shore Hardness			82A	85A	80A	90A	90A	87A
Tensile Strength	3,700 psi	3,700 psi	5,200	6,300	6,800	6,800	3,200	6,800
Ultimate Elongation	400%	400%	600	540	530	400	530	540
Stress at 200% Elongation	800psi	800psi	1,000	1,300	1,000	2,300	1,600	1,400
Trouser Tear	80 ppi	80 ppi	130	150	100	144	140	160
100°C 168 HR Heat Aging								
Tensile Retention	50%	50%	61%	89%	94%	103%	97%	84%
Elongation Retention	75%	75%	115%	100%	107%	94%	98%	107%
121°C 18 HR ASTM Oil #2								
Tensile Retention	60%	60%	75%	102%	97%	100%	91%	77%
Elongation Retention			125%	130%	116%	113%	113%	119%
LOI					25	24	24	
Comment			Non-FR	Non-FR	Halogen Free FR V2	Halogen Free FR V2	Halogen Free FR V2	Non-FR

TABER ABRASION RESISTANCE

Estane® TPU Products	Weight Loss, mg
ZHF80AT3 NAT 021	16
58300 NAT 035	20
58887 NAT 035	21
58863 NAT 035	25
58866 NAT 025	67
Reference Materials	
Chlorosulfonated Polyethylene	222
Flexible PVC	631
Polychloroprene	939

Test Method: ASTM D3389
Wheel Type: H-18
Load: 1,000 grams
Cycles: 1,000

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