

Varglas ES-4400 Silicone Rubber Sleeving

Silicone Rubber Coated Fiberglass Sleeving

Class 220 (-73°C to +220°C) (-100°F to +428°F)

Description

Varglas ES-4400 Silicone Rubber Sleeving is produced by curing a specially compounded silicone gum with a select catalyst on a continuous length of fiberglass braid. Most silicone rubber is characterized, chiefly, by its capability of performing satisfactorily at elevated temperatures. Varglas ES-4400 Silicone Rubber, in addition to providing superior dielectric and thermal protection, at less weight, was developed to meet unusual fluid and flame resistance requirements. Its high temperature performance places it in a 220°C classification.

Specifications

Varglas ES-4400 Silicone Rubber Sleeving conforms to, and is listed on the Qualified Products List (QPL) for, MIL-I-3190/8, latest revision (Grade A). It also exceeds the requirements of NEMA TF-1, Type 5; and ASTM-D372.

Under the Component Program of Underwriters Laboratories, Grade A Varglas ES-4400 Silicone Rubber is recognized for 200°C, 600 volt service and complies with VW-1 flammability requirements under UL File #E63450. (VW-1 compliance of Grades B through C-1 is covered under UL File #E53690.) CSA International certified the use of Grade A for 200°C, 600 volt service and flammability requirements under CSA File #LR58486 VW-1/FT1. Varglas ES-4400 is incorporated in systems work, per UL Safety Standard 1446, to facilitate product acceptance by UL.

Applications

Varglas ES-4400 Silicone Rubber Sleeving's superior dielectric strength, high and low temperature performance, and excellent fluid and flame resistance make it ideally suited for use in industrial instrumentation for measurement, analysis and control; surgical, medical and optical instruments and apparatus; electrical and electronic machinery and equipment; and aircraft and other transportation equipment where its lighter weight provides an additional performance advantage.

Sizes

AWG #24 through 1" I.D. Other sizes subject to inquiry.

Standard Color

Blue-gray and tan. Other colors made to order.

Standard Packaging

Coils, spools or 36" lengths at manufacturer's option, unless otherwise specified. There is no cutting charge for 36" lengths, but lengths other than 36" are subject to cutting charges.

Varglas ES-4400 Silicone Rubber Sleeving Typical Properties

Property	Procedure	Performance
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Physical

Tear Strength, Coating	ASTM-D624	180 psi (Die B)
Ultimate Elongation, Coating	ASTM-D882	570% @ 20°C
Hardness, Coating	ASTM-D2240	50 (Durometer, Shore A-2)
Flexibility and Toughness, Coating	UL 1441	Passes (Penetration Test)

Chemical

Chemical Resistance	UL 1441	Resistant to solvents and fluids including water vapor
Fungus Resistance	MIL- I- 631	Passes
Oil Resistance, 22 hour immersion @ 70°C	ASTM - D471	No measurable change in wall thickness when immersed in Skydrol LD. Varflex tests indicate good resistance to Freon 22 and refrigeration oil Suniso® 3-G.
Compatibility	UL 1446	Good. Compatible with select potting compounds and varnished wires with no deteriorating effects on end properties.

Electrical

Dielectric Strength after 48/23/50:

Grade A	NEMA TF - 1	8000v min. avg., 6000v min. indiv.
Grade B	NEMA TF - 1	4000v min. avg., 2500v min. indiv.
Grade C - 1	NEMA TF - 1	2500v min. avg., 1500v min. indiv.

Dielectric Strength after 96/23/96:

Grade A	NEMA TF - 1	80% of Original Value.
Hydrolytic Stability after 336 hrs. @ 70°C over Constant Water Reflux	MIL-I-3190/8	5000 volts min. avg.

Thermal

Thermal Endurance	MIL-I-3190/8	Class 220°C (R)
	MIL-I-3190/6 & UL 1441	Exceeds MIL-I-3190/6, latest revision, and UL 1441, Class 200°C
Brittleness Temperature	ASTM-D350	- 73°C
Flame Resistance	UL 1441 ASTM-D350 NEMA TF-1 MIL-I-3190/8, Method A	Passes (VW-1) Passes Passes Passes
Smoke Density (NBS Chamber)	ASTM-E662 Avg. flaming 19.7 OD.	Passes. Avg. non-flaming 3.7 OD.;
Pushback after 168 hrs. @ 250°C	MIL-I-3190/8	No cracks or ruptures. 6000 volts min. avg. dielectric strength

Note:

Information contained here is precise and reliable. However, being unique, each end-use should be evaluated to satisfy its specific requirements.



Electrical Insulating Sleeving

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