



**Fluoroelastomer  
Coated  
Fiberglass  
Sleeving**

**Class 220**

(-70°C to +220°C)

(-94°F to +428°F)

Data sheet

# Varglas Viton® 231 Sleeving

## Description

Varglas Viton® 231 Sleeving is a braided fiberglass/modified Viton® composite with exceptional physical and electrical properties. It has excellent abrasion and cut-through resistance and offers improved flexibility throughout a wide operating temperature range. Its resistance to solvents, both aromatic and aliphatic; fuels, including JP-5; and oils, including Skydrol; place this fluoroelastomer above other available polymer-coated fiberglass braids.

## Specifications

Varglas Viton® 231 Sleeving conforms to, and is listed on the Qualified Products List (QPL) for, MIL-I-3190/7, latest revision (Grade A), and exceeds the requirements of NEMA TF-1 and ASTM-D372.

Under the component program of Underwriters Laboratories, Varglas Viton® 231 Sleeving complies with VW-1 flammability requirements under UL File #E53690. It is incorporated in systems work, per UL Safety Standard 1446, to facilitate product acceptance by UL.

## Applications

Varglas Viton® 231 Sleeving is used in DC generators and motors to reduce arcing problems and elsewhere when the need to maintain a silicone-free environment is important. Its flame resistance and excellent resistance to abrasion make it ideally suited for the insulation of leads and connections of critical electrical components as well as for wire harnesses in areas where continuous operating temperatures run as high as 220°C. Varglas Viton® 231 is also used in transformers where resistance to high impingement velocity oils is required and, generally, where better solvent and oil resistance is needed.

## Sizes

AWG #24 through 3" I.D. Other sizes subject to inquiry.

## Standard Color

Black, white and natural.

## 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.

Sizes over 1" I.D. are generally supplied in 36" lengths.

Viton® is a registered trademark of the DuPont Company.

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## Electrical Insulating Sleeving

Varflex Corporation, 512 West Court Street, Rome, NY • Phone (315) 336-4400 • Fax (315) 336-0005

Toll Free 1-800-648-4014 • www.varflex.com • e-mail: sales@varflex.com

# Varglas Viton® 231 Typical Properties

Property	Procedure	Performance
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## Physical

Tensile Strength, Coating	ASTM-D412	2000 psi @ 24°C; 600 psi @ 149°C
Ultimate Elongation, Coating	ASTM-D412	150% @ 24°C; 75% @ 149°C
Hardness, Coating	ASTM-D2240	80 (Durometer, Shore A)
Flexibility and Toughness, Coating	UL 1441	Passes (Penetration Test)

## Chemical

Resistance to Atmospheric Oxidation, Sun and Water	—	Excellent
Resistance to Ozone Concentrations	—	Unaffected at levels as high as 100 ppm
Fungus Resistance	MIL-E-5272	Passes
Solvent*, Chemical and Oil Resistance	MIL-I-3190/7	Passes (Excellent)

\* Do not use Ketone type solvents as a cleaning liquid for Varglas Viton® 231. We recommend using V.M. & P. Naphtha.

## Electrical

### Dielectric Strength after 48/23/50:

Grade A	NEMA TF - 1	700v min. avg., 5000v 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.
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Hydrolytic Stability after 336 hrs. @ 70°C over Constant Water Reflux	MIL-I-3190/7	6000 volts min. avg.
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## Thermal

Thermal Endurance	MIL-I-3190/7	Class 220°C (R)
Brittleness Temperature	ASTM-D350	- 70°C
Flame Resistance	UL 1441	Passes (VW-1)
	ASTM-D350	Passes
	NEMA TF-1	Passes
	MIL-I-3190/7, Method A	Passes
Oxygen Index	—	85%
Radiation Resistance	DuPont Bulletin E-37758	Up to 10 <sup>6</sup> rads with little or no effect on physical properties
Smoke Density	Rohm & Haas SD Test XP-2	Passes; test requires a minimum SDR <sub>4</sub> of 15%.

## Note.

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



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