



product information

AFLAS[®] Fluoroelastomers

DESCRIPTION

AFLAS[®] Fluoroelastomers are copolymers of tetrafluoroethylene and propylene. This combination gives AFLAS Fluoroelastomers unique properties over conventional FKM-type fluoroelastomers in demanding applications found in the oil & gas, chemical process, wire & cable, industrial equipment, food handling, pharmaceutical, heavy duty diesel and automotive industries. AFLAS Fluoroelastomers display outstanding resistance to heat, acids & bases, many solvents, ozone, and steam. Classified by ASTM D 1418-01 as FEPM.

AFLAS Fluoroelastomers are available in 3 types:

- **AFLAS 150 Series** – Standard Grade
 - Excellent chemical resistance and electrical properties.
 - Suitable for extrusion and compression molding.
- **AFLAS 100 Series** – High Strength Grade
 - High molecular weight gives this series its high mechanical strength.
 - Structure is identical to that of the 150 series.
- **AFLAS Latex Series** – Liquid Grade
 - Aqueous dispersion of the AFLAS polymer that is suitable as a binder or coating material.

MATERIAL FEATURES

- **Heat Resistance***: Mechanical properties of AFLAS do not deteriorate even when used for prolonged exposure to 200°C. AFLAS can be used continuously for 2 to 3 months at 230°C and for 10-30 days at 260°C.
- **Chemical Resistance**: Parts fabricated from AFLAS compounds perform well in the amine and base-rich environments commonly found in sour oil and gas exploration, completion and production. In automotive and heavy equipment applications, AFLAS stands up well to attack from amine-containing additives in oils and transmission fluids.
- **Steam Resistance***: Unaffected by extended exposure to 200°C steam.
- **Electrical Properties**: Excellent volume resistivity (greater than 10^{16} Ω-cm) unmatched by other fluoroelastomers.
- **Radiation Resistance***: Stable up to 200 MRad of gamma ray radiation.

*Application design may vary results.

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The logo for AGC (Asahi Glass Company) consists of the letters "AGC" in a bold, blue, sans-serif font. The letter "G" is stylized with a red and white graphic element.

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END USER BENEFITS

- Versatile applications due to good balance between properties and processability
- Can be extruded into complex profiles
- Specific grades meet requirements of USP Class VI – refer to individual product sheets
- Suitable for high pressure and high temperature (HPHT) applications
- Long service use (> 25 years) in harsh environments
- Can be compounded to be highly resistant to rapid gas decompression (e.g. NORSOK)
- Chemical durability (e.g. oil exploration and production fluids)
- Can be molded into intricate shapes

TYPICAL APPLICATIONS

- Wire & cable insulation
- Seals & gaskets
- O-rings
- Packing elements
- Submersible pump internals
- Hoses and tubing
- Linings
- Sheets
- Cords
- And more...

AFLAS FLUOROELASTOMER GRADES AVAILABLE

Grade	Storage shear modulus, G'	Application (Cure System):
150L	45 – 120	Linings (Peroxide)
150E	115 – 205	Extrusion (Peroxide)
150P	200 – 280	General Purpose (Peroxide)
150C	450 – 530	Extrusion – Wire and Cable (Electron Beam)
100S	290 – 385	General Purpose – High Strength (Peroxide)
100H	450 – 545	General Purpose – High Strength (Peroxide)
150CS Latex	N/A	Binder (None)
300S Latex	N/A	Coatings (Peroxide)

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PROCESSING RECOMMENDATIONS

AFLAS Fluoroelastomers are easily compounded by open mill mixers and internal mixers (e.g. open 2-roll mills and Banbury mixers) and compounds can be fabricated into finished parts and shapes using press molding, injection molding, extrusion and calendaring processes. AFLAS 100 and 150 series are vulcanized by organic peroxides with the aid of an appropriate co-agent, such as TAIC (triallylisocyanurate).

Formulation (PHR):

Polymer 100

MT Carbon 30

TAIC* 5

Peroxide** 1

Calcium Stearate 1

* Triallylisocyanurate

** 1,3-bis(t-butylperoxy)-diisopropylbenzene

Cure Conditions:

Press cure: 170°C / 20 minutes (> 0.25" thick sample)

Press cure: 177°C / 10 minutes (< 0.25" thick sample)

Post cure: 200°C / 4 hours (minimum required time)

If at any time you have questions or concerns about a specific application, please contact your account manager for assistance.

AFLAS COMPOUND TYPICAL PROPERTIES

Property	Units	150E	150P	100S	100H
Specific Gravity (raw gum)		1.55	1.55	1.55	1.55
Fluorine Content (raw gum)	%	57	57	57	57
Glass Transition Temperature	°C	-3	-3	-3	-3
Brittle Point	°C	-58	-58	-58	-58
TR-10	%	0	0	0	0
Volume Resistivity	Ω-cm	3 * 10 ¹⁶	3 * 10 ¹⁶	3 * 10 ¹⁶	3 * 10 ¹⁶
Dielectric Breakdown	%	23	23	23	23
Hardness	Shore A	71	72	70	70
Tensile Strength	MPa	14.7	17.7	16.2	18.5
Elongation	%	300	260	300	350

NOTE: The data listed here represents typical values for the stated grades of AFLAS® fluoroelastomers. This information should be used as a guide only and not to establish specification limits or design criteria. AGC Chemicals Americas assumes no obligation or liability for any advice furnished by us or for results obtained with respect to this product. All such advice is provided free of charge and the buyer assumes sole responsibility for results obtained in reliance thereon.

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HANDLING PRECAUTIONS

AFLAS Fluoroelastomers are stable at normal conditions and are not regulated by the U.S Department of Transportation. Avoid temperatures above 400°C. Fluoroelastomers can react with molten alkali metals and finely divided magnesium and aluminum at temperatures above 425°C. Thermal decomposition of this product at temperatures above 400°C will generate hydrogen fluoride, which is corrosive. No polymerization will occur under normal processing conditions.

The shelf life of AFLAS Fluoroelastomers can be guaranteed by AGC Chemicals for 6 months after date of delivery for unopened packages. However the properties are not impacted by storage time. Storage and handling facilities should be designed to minimize exposure to extreme temperatures and dusty environments.

Wear protective gear and avoid tobacco use at all times when handling fluoroelastomers. Consult your Material Safety Data Sheet for safe handling details or contact your AGC Chemicals Technical Representative for clarification.

For more information and samples contact

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