product information

AFLAS® 100S

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.

MATERIAL FEATURES

- High curing performance
- Excellent base and amine resistance unmatched by FKM-type fluoroelastomers
- Extremely high electrical resistivity, compared with other elastomers
- High heat resistance compared to FKMs
- Outstanding steam resistance
- Low compression set

END USER BENEFITS

- Commonly used grade for rotating shaft seals
- Can be molded into intricate shapes for oil and gas applications
- Long service use (> 25 years) in harsh environments
- Can be compounded to be highly resistant to rapid gas decomposition (e.g. NORSOK)
- Chemical durability (e.g. oil exploration and production fluids)
- Meets requirements of USP Class VI

TYPICAL APPLICATIONS

- O-rings
- Gaskets
- Oilfield parts
- Heavy Duty seals
- And more…

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CURE AND CONDITIONS

AFLAS100S must be optimally formulated to take full advantage of its physical properties. Note that the optimal formulation depends on the intended use.

AFLAS 100S is peroxide-curable. The best performing peroxide is Perkadox® P-14Sfl or Vul-Cup® 40KE. TAIC* is the recommended co-agent and is required for the cure. Press cure is accomplished at 170°C for 20 minutes. Press cure conditions (temperature and time) should be decided in consideration of various factors, such as the size of parts, required properties, scorch safety and mold release.

To achieve the best physical properties, AFLAS 100S also requires a post cure. The recommended standard condition is 200°C for ≥ 4 hours. The strength can be further enhanced by adjusting the condition to 230°C for ≥ 4 hours. Depending on the size of the part, the cure time must be optimized.
*Triallylisocyanurate

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

Perkadox® is a registered trademark of Akzo Nobel Chemicals, B.V.
Vul-Cup® is a registered trademark of Arkema, Inc.

AFLAS 100S RPA (CURE) COMPOUND DATA

177°C, 100CPM, 3° Strain, 12 minutes

Property	Units	AFLAS 100S
Min S'	dNm	11.2
Max S'	dNm	60.0
50% Cure	min	1.6
90% Cure	min	5.5

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AFLAS® 100S COMPOUND COMPARATIVE PROPERTIES

Property	Units	AFLAS 100S
Tg (Glass transition temperature)	°C	-3
TR-10	°C	+3
Brittle Point	°C	-40
Compression Set (70hrs @ 200°C)	%	26
Tensile Strength, Yield	MPa/psi	20/2900
M100	MPa/psi	7/1015
Elongation	%	230
Fluorine Content	%	57
Mooney (ML1+10)	kN/m	160 (100°C) 115 (121°C)
G' Storage Modulus (nominal) of Raw Gum	kPa	340

Formulation(PHR):

AFLAS® 100S	100
MT 990 Carbon	30
TAIC*	5
Peroxide**	1
Sodium Stearate	1

Cure Conditions:
Press cure: 170°C / 20 minutes

Post cure: 200°C / 4 hours

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

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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AFLAS 100S COMPATIBILITY DATA

Heat Resistance 200°C for 1000 hours	**Units**	**AFLAS 100S**	**2-FKM polyol (Type I FKM)**
Retention of Tensile Strength	(%)	101	81
Retention of Tensile Elongation	(%)	91	116
Change in Hardness	(Points)	+3	+1
Heat Resistance 230°C for 200 hours	**Units**	**AFLAS 100S**	**2-FKM polyol (Type I FKM)**
Retention of Tensile Strength	(%)	88	93
Retention of Tensile Elongation	(%)	107	113
Change in Hardness	(Points)	-1	-1
50% NaOH Resistance 70°C for 720 hours	**Units**	**AFLAS 100S**	**2-FKM polyol (Type I FKM)**
Retention of Tensile Strength	(%)	100	Disintegration
Retention of Tensile Elongation	(%)	100	Disintegration
Change in Hardness	(Points)	0	Disintegration
Volume Change	(%)	-1	Disintegration
IRM 903 Oil Resistance 150°C for 1000 hours	**Units**	**AFLAS 100S**	**2-FKM polyol (Type I FKM)**
Retention of Tensile Strength	(%)	88	N/A
Retention of Tensile Elongation	(%)	101	N/A
Change in Hardness	(Points)	-10	N/A
Volume Change	(%)	+13.1	N/A
AMS 3023 Oil Resistance 200°C for 70 hours	**Units**	**AFLAS 100S**	**2-FKM polyol (Type I FKM)**
Retention of Tensile Strength	(%)	88	73
Retention of Tensile Elongation	(%)	102	65
Change in Hardness	(Points)	-6	+2
Volume Change	(%)	+6	0

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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 400ºC. Fluoroelastomers can react with molten alkali metals and finely divided magnesium and aluminum at temperatures above 425ºC. Thermal decomposition of this product at temperatures above 400ºC 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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