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SINTHAI CHEMICALS & TRADING LTD.,PART

81 RADCHAVONG RD, SUMPHANTHAWONG , BANGKOK THAILAND 10100

E-MAIL : sinthaichemical@hotmail.com

TEL : 662 66233315-6 FAX : 662 6233317

Aristoflex AVC

Solid content is determined as follow : 100% - water (Karl Fisher) – tert BuOH (GPC)

Test Method tert BuOH see file below

Test Method viscosity see file below

The viscosity was measured with Brookfield viscosimeter typ RVT at 20 rpm, with spindle 7 (1% gel) and spindle 6 (0.5% gel) at 20 C

Item	Specification	Unit	Method
Appearance Visuell	White powder		Clariant
Solid content	min. 92.0	%	Clariant
Water Karl –Fischer	max.7.0	%	DIN 51777
pH Value 1% in dist. Water, 20 C	4.0-6.0	-	EN1262
Viscosity Brookfield 1% in dist. Water, 20C	48000 – 80000	mPas	EN ISO 2555

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Aristoflex[®] AVC

Gelling agent for aqueous systems and thickening agent for oil-in-water emulsions

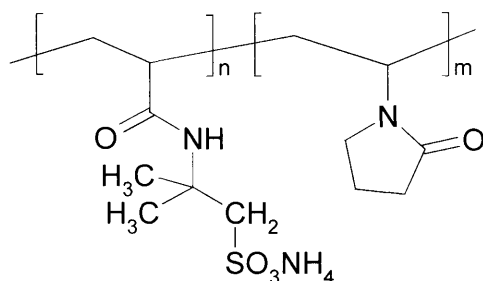
Chemical name

Polymeric sulfonic acid, neutralized

INCI designation

Ammonium Acryloyldimethyltaurate/VP Copolymer

General formula



Product properties ^{*)}

Appearance [20 °C]

white powder

Chemical-physical data

Solid content min.	92.00 %
Water	max. 7.00 %
pH value (1% in dist. water)	4.0 - 6.0
Viscosity (1% in dist. water)	48000 - 65000 mPas

Production Process

Copolymerization of acrylamidomethylpropane sulfonic acid and vinylpyrrolidone in the presence of ammonia and cross linking agent. Aristoflex AVC does not contain any hydrocarbon or aromatic solvents.

Application

Aristoflex AVC is a synthetic polymer used as gelling agent for aqueous systems and as texturizer, thickener for oil-in-water emulsions. The polymer is pre-neutralized, easy to use and provides formulations with excellent yield value, corresponding to superior stability even in the absence of additional emulsifier. Emulsions formulated with Aristoflex AVC provide favourable shear thinning effects and viscoelastic properties. Besides the rheological aspects, excellent sensoric properties (good skin feel, low degree of stickiness and/or tackiness) characterize formulations comprising Aristoflex AVC. Based on a polymer backbone derived from sulfonic acid, O/W emulsions can be formulated even at low pH, enabling easy incorporation of e.g. AHA's.

Aristoflex AVC has a good compatibility with organic solvents (ethanol, acetone) and is stable towards UV radiation and high shear stress.

The amount of Aristoflex AVC used in personal care formulations is typically in the range of 0.5 – 1.2 %

^{*)} These characteristics are for guidance only and not to be taken as product specifications. The tolerances are given in the product specification sheet. For further product properties, specifications, safety and ecological data, please refer to the MSDS.

Aristoflex® AVC

Preparation of emulsions

Aristoflex AVC can be used to prepare O/W emulsions in both hot and cold process. Aristoflex AVC is typically added to the oil phase (comprising emollient and emulsifier), slight agitation facilitates dispersion. Any small aggregates can be broken up easily with gentle stirring. The mixing reactor should be completely dry of moisture to prevent the polymer from migrating prematurely to any water already present and becoming gummy.

Production facility requirements will usually govern the emulsification method applied. Aristoflex AVC can be used for both direct emulsification (i.e. adding the oil phase to the water phase) and inverse emulsification (i.e. adding the water phase to the oil phase). As Aristoflex AVC is pre-neutralized, no neutralisation step is required. Finally, the emulsion is homogenized with high shear mixing equipment.

Emulsions comprising Aristoflex AVC are brilliant and glossy, they provide excellent spreadability and fast absorption. The O/W emulsions are characterized by dry aesthetic feel without tackiness and are especially suitable as light, elegant formulations.

Preparation of emulsifier-free cream-gels

Another special feature of Aristoflex AVC is the stabilisation of water-insoluble liquids (e.g. oil) WITHOUT using additional emulsifiers. The resulting O/W formulations are also known as pseudo-emulsions.

Using Aristoflex AVC, emulsifier-free cream-gels can be formulated, opening the door to novel, modern formulations with special rheological profiles (creamy, not 'gelly', non sticky/tacky) and

superior skin compatibility. The resulting compositions are light and creamy, differing greatly from the gelly or gelatine-like appearance often achieved when formulating with 'traditional' thickeners.

The stabilising effect of Aristoflex AVC is explained by the cross-linked structure of the polymer, providing a yield value and thus 'trapping' the oil droplets or solids (e.g. pigments) in the water/polymer matrix.

'Yield value' reflects the minimum force that must be applied to the liquid to start disrupting the structure imparted by Aristoflex AVC, so flow can occur.

Preparation of aqueous gels

Aqueous gels (e.g. hair gels) are prepared by adding the water phase to Aristoflex AVC. Special care should be taken for good agitation.

The transparency of the resulting aqueous gels is depending on the amount of Aristoflex AVC used in the formulation. Concentrations of Aristoflex AVC 1% and higher provide transparent, clear gels. Slightly turbid gels can be transformed into clear formulations by addition of approx. 5% solvent, e.g. glycerin. The best gel clarity is obtained using water which is relatively free of metal ions (demineralized or deionized).

Aristoflex AVC has a good compatibility with other polar organic solvents. Hydro-alcoholic, transparent gels can be made comprising more than 50% ethanol. Typically, the water/ethanol mixture is added to Aristoflex AVC. Ethanol can be used to dissolve active ingredients while avoiding the use of solubilizers such as PEG-40 Hydrogenated Castor Oil, Polysorbate 20, or similar ingredients. In this way it is easy to prepare hydro-alcoholic gels containing perfume oils, oil-

soluble UV-filters, actives (e.g. bisabolol), film formers etc. In case of high Ethanol content additional preservation is not required.

To manufacture hydro-alcoholic gels based on Aristoflex AVC the best option is to first prepare the aqueous gel, and subsequently add to the gel a solution of the active (or film former) dissolved in ethanol. The addition is preferably done by using a slow moving anchor stirrer to minimise trapping of air bubbles.

Limitations

Similar to all other polyelectrolytes, e.g. carbomers, Aristoflex AVC is sensitive to electrolytes. Therefore, Aristoflex AVC is not suitable to thicken shampoos, shower gels and other systems comprising larger amounts of salt.

Aristoflex AVC can be used in a broad pH range of 4.0 – 9.0. As Aristoflex AVC is an ammonium salt, pH higher than 9.0 will release ammonia.

Storage recommendations

The product is stable when stored in closed original containers. It must be protected from humidity during storage.

Further information on handling, storage and dispatch is given in the EC safety data sheet.

This information is based on our present state of knowledge and is intended to provide general notes on our products and their uses. It should not therefore be construed as guaranteeing specific properties of the products described on their suitability for a particular application. Any existing industrial property rights must be observed. The quality of our products is guaranteed under our General Conditions of Sale.

Aristoflex AVC

Polymeric sulfonic acid, partially neutralised

Product Specification

<u>Item</u>	<u>Specification</u>	<u>Unit</u>	<u>Method</u>
Appearance	white powder		Clariant
Solid content	min. 92.0	%	Clariant
Water content Karl-Fischer	max. 7.0	%	DIN 51777
pH value 1% in deionised water @ 20°C	4.0 - 6.0		DIN EN 1262
Viscosity Brookfield 1% in deionised water @ 20°C	48000 - 65000	mPas	DIN EN ISO 2555

Remarks: Product is sieved - Mesh size 2mm

Product Code : 138240
CAS No : 335383-60-3

Version : 4
Date of Issue : 09/08/2004

This product specification would cease to be binding if the customer has not purchased the product during the preceding 12 months. This information is based on our present state of knowledge and is intended to provide general notes on our products and their uses. It should therefore not be construed as guaranteeing specific properties of the products described or their suitability for a particular application. Any existing industrial rights must be observed. ISO-, EN- and DIN-Standards are published by: Beuth-Verlag, Burggrafenstr. 6, D-10787 Berlin, Germany. They are also available from the National Standard authority of each country. DGF-Standards are published by: Wissenschaftliche Verlagsgesellschaft mbH, Birkenwald Str. 44, D-70191 Stuttgart, Germany. This Product Specification is not signed. If you have any questions, please contact the local Clariant Office or Clariant Produkte (Deutschland) GmbH, Division Functional Chemicals, Management Systems / Quality Assurance, D-65926 Frankfurt, Germany. email: fun.ms.qa@clariant.com *** Please visit our website <http://fun.clariant.com>

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