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Glystantin® FC G 20-00/50

Glystantin FC G 20-00/50 is an inhibited ready-to-use coolant based on ethylene glycol, exhibiting a very low electrical conductivity.

Properties

Glystantin FC G 20-00/50 has been developed especially for the use with fuel cell systems like PEMFC¹. It must not be used as engine coolant in conventional combustion engines. Conventional engine coolants having a very high electrical conductivity are not allowed in fuel cell cooling circuits.

Glystantin FC G 20-00/50 through its selected, non-ionic inhibitors exhibits a very low, long-term stable electrical conductivity. This assures safe operation of the fuel cell power unit.

Glystantin FC G 20-00/50 offers a safe freeze protection down to -36°C and good heat dissipation. Metals currently used in the construction of PEMFC cooling systems are well protected against corrosion.

¹ (Proton Exchange Membrane = Polymer Electrolyte Membrane Fuel Cell)

Chemical nature**Ethylene glycol and inhibitors****Appearance**

Clear, colorless liquid

Physical data

Density	20°C	ca. 1.065 g/cm³	ISO 12185
Viscosity	0°C	ca. 7.55 mm²/s	ASTM D 445
	20°C	ca. 3.52 mm²/s	
	40°C	ca. 1.98 mm²/s	
	60°C	ca. 1.29 mm²/s	
	80°C	ca. 0.91 mm²/s	
pH		ca. 6	ASTM D 1287
Refractive Index, 20°C		ca. 1.383	ASTM D 1218
Boiling Point		108°C	ASTM D 1120
Flash Point		none	ISO 2719
Pour Point		ca. -41°C	ASTM D 97
Freezing Point		ca. -36°C	ASTM D 1177
Electrical Conductivity			ASTM D 1125
(without temperature compensation)			
	25°C	ca. 1.3 μS/cm	
	50°C	ca. 2.4 μS/cm	
	88°C	ca. 5.2 μS/cm	

Stabilität

Glystantin FC G 20-00/50 operates at temperatures between -30°C and +90°C. Temperatures of -10°C to 90°C for 100 days resp. 2,500 h did not cause any sediment, haze or other negative changes of the fluid in our tests.

Please take into account that the stability of the electrical conductivity depends on the materials used in the fuel cell cooling system and should be individually checked.

Application

Glystantin FC G 20-00/50 is ready-to-use and does not need any make-up water. It contains 48 % (vol/vol) ethylene glycol. Further dilution with distilled or demineralized water is possible provided that the electrical conductivity of the water does not exceed 2 µS/cm at 25°C. However, by addition of water corrosion protection decreases. The amount of water should be less than 10%. Addition of extra ethylene glycol slightly improves the frost protection but impairs the corrosion protection as well

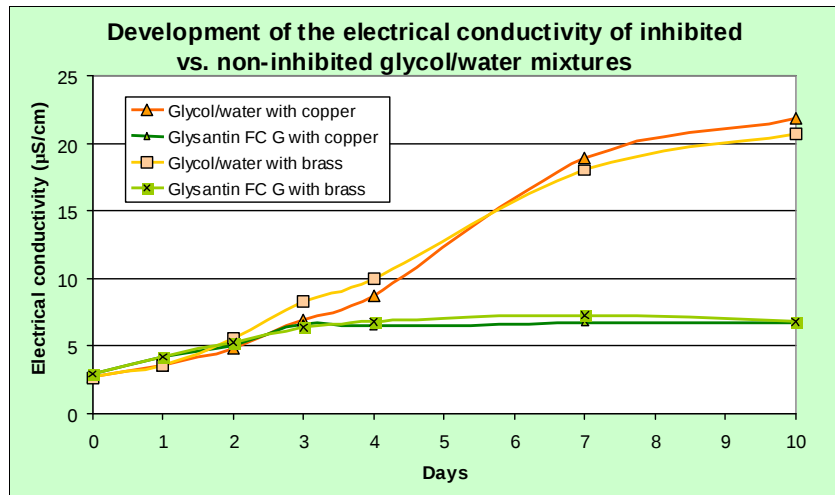
Miscibility

Mixing, even in small amounts with conventional coolant/antifreeze or other ion-containing fluids disables this fuel cell coolant. Scrupulous cleanliness is indispensable to maintain the quality of the coolant. Close containers with Glystantin FC G 20-00/50 tightly after usage.

Electrical Conductivity

In contrast to deionized water (DI-water) Glysantin FC G 20-00/50 protects the system from frost. The electrical conductivity of Glysantin FC G 20-00/50 - compared to non-inhibited glycol water mixtures – stays low, hence secures the electrical safety of the system and avoids loss of energy.

This performance is illustrated by the following test. The electrical conductivity of the system kept low after adding the special inhibitor package to the glycol/water mixture.



The long-term protection of Glysantin FC G 20-00/50 may be prolonged by using a suitable mixed-bed ion exchanger in the coolant circuit.

Material compatibility

As the development of fuel cell systems is rather innovative, the compatibility of the coolant with construction materials has to be tested for the individual application.

The following types of construction materials have been tested with Glysantin FC G products.

Compatible: Stainless steel, titanium, aluminum, copper, brass, graphite, PTFE, PE

Not compatible: Zinc, galvanized steel, cast iron, carbon steel

Polymer materials and elastomers often contain considerable amounts of fillers and adjuvants, which might impact the electrical conductivity of the coolant. Examples are EPDM, PVC, PA 66, silicone rubber, Viton, etc.

Quality control

The above-listed data represent average values at the time when going to press of this Technical Information. They are intended as guide to facilitate handling and cannot be regarded as specified data. Specified product data are issued as a separate product specification.

Storage Stability

Glysantin FC G 20-00/50 may be stored in unopened, air-tight containers at a temperature of 30°C max. for 1 (one) year. After that, the applicability should be tested by measuring electrical conductivity and pH.

Packaging

Glysantin FC G 20-00/50 is available in 120-liter plastic drums or in 1,000-liter IBC containers.

Safety

When using this product, the information and advice given in our **Safety Data Sheet** should be observed. Due attention should also be given to the **precautions** necessary for handling chemicals.

Note

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights, etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed.

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