



# FORBLUE i-SERIES : IC154

- Designed for higher performance of an electrode -

IC154, a product of AGC Inc., is perfluorosulfonic acid (PFSA) ionomer dispersion in an aqueous media (ethanol/water). PFSA ionomer is an ion-exchange polymer in acid form ( $H^+$ ), which is made from perfluorosulfonyl vinyl ether (PSVE) / tetrafluoroethylene (TFE) copolymer.

IC154 is high solid content dispersion, which is typically and widely employed as an electrode ionomer for proton exchange membrane fuel cells (PEMFC) for higher power generation enabled by its higher Ion Exchange Capacity (IEC).

IC154 is basically supposed to be used for a cathode electrode of PEMFC which determines power output, however it is also applicable as an anode electrode.



## Composition

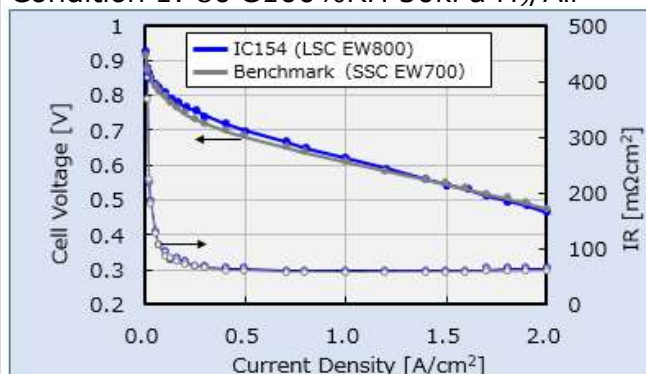
Component	Content (wt%)
PFSA polymer	$27 \pm 2$
Ethanol	$44 \pm 4$
Water	$29 \pm 4$

## Basic properties

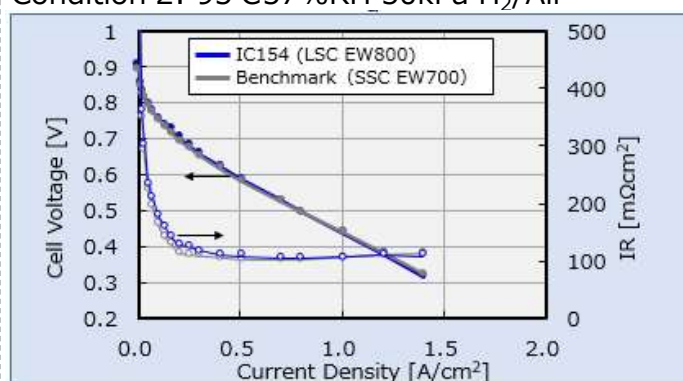
Property	Unit	Value or Remark
Ion Exchange Capacity (IEC, $H^+$ polymer basis)	meq/g	$1.25 \pm 0.1$
Equivalent Weight (EW, $H^+$ polymer basis)	g/eq	800 median (741~870)
Viscosity (at $76 \text{sec}^{-1}$ Shear Rate)	mPa·s	$180 \pm 100$
Color (APHA/Hazen scale)	-	<100 (Colorless, Transparent)

IC154 is composed of Long-Side-Chain sulfonic acid groups (LSC), and as a result of AGC internal evaluation, IC154 as LSC EW800 ionomer showed equivalent performance to EW700 composed of Short-Side-Chain sulfonic acid groups (SSC).

Condition 1: 80°C100%RH 50kPa  $H_2$ /Air



Condition 2: 95°C57%RH 50kPa  $H_2$ /Air



### Catalyst Layer

Cathode: IC154 vs. Benchmark / Anode: IC100

Catalyst: TEC10E50E (Product of TKK), I/C: 0.8, Pt: Cathode/Anode = 0.1 / 0.4  $\text{mg cm}^{-2}$

### Ink preparation

Solid: 10wt%, Water/Ethanol = 1/1 (Dispersed at 300rpm for 1hr by a planetary ball mill)

## **Supply Options**

The following types of containers are available for IC154 delivery to customers.

Grade	Content	Container	Price
IC154	800g as dispersion	1000mL Plastic Bottle 	Ask for Quote
	50kg as dispersion	60L Drum with Plastic Insert 	

## **Recommended Storage Conditions**

IC154 recommended storage is at 0-30 °C in the original containers delivered to you. Keep the container tightly sealed so that evaporation of the solvent does not cause a change in viscosity. Avoid exposing the container to extreme weather conditions, such as rain, direct sunlight, and temperatures below zero degrees. Use up the dispersion before properties change due to solvent evaporation.

## **Handling instructions**

IC154 contains ethanol, a flammable solvent. Please handle it with care. Refer to Safety Data Sheet for “FORBLUE i-SERIES” covering the grade “IC154” for further information.

## **Notice to customers**

Purchasers of this product are required to submit a written agreement regarding prohibition of resale to any third party and not to use for any other purposes without prior consent.

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For more detailed information, please contact us from following link.

[https://www.agc-chemicals.com/jp/en/fluorine/inquiry/form.html?f\\_id=FLN-JP-EN-0015](https://www.agc-chemicals.com/jp/en/fluorine/inquiry/form.html?f_id=FLN-JP-EN-0015)

AGC Inc.  
PEMFC Business Group, FORBLUE Division / Chemicals Company  
1-5-1, Marunouchi, Chiyoda-ku, Tokyo 100-8405 JAPAN

