

Sheet No.

**AQF PT 003E** Resin & Plastic

## Determination of fluorine in fluororesin \_\_\_\_\_ 1/2

Instruments : AQF-100  
 Method : Combustion-ion chromatography  
 Related standard :

Concentrations of fluorine, chlorine, bromine, iodine, and sulfur can be determined and accurately by using a combustion ion chromatography (CIC) system combining an Automatic Quick Furnace Model AQF-100 which safely combusts samples with an ion chromatograph.

Sample name	Fluororesin																																				
Sample status																																					
Measuring items	Fluorine (F)																																				
Measurement principle	Sample is thermally decomposed in argon (Ar) atmosphere, then combusted in oxygen (O <sub>2</sub> ) atmosphere. Halogens in the sample are converted to hydrogen halide and halogen gas and sulfur turns into sulfur oxide. These components are collected into absorbing solution and converted to halide ion and sulfate ion. The resulting solution is analyzed by injecting into an ion chromatograph (IC). <b>Analyzing flow</b> [Sample weighing]→[Combustion]→[Collection of combustion gas]→[IC analysis]																																				
Parameters	<p><b>1. AQF-100</b></p> <p>Sample size : 2mg                      Sample boat : Quartz sample boat, TX2SBT                      Additive : Not used                      Pyrolysis tube : Quartz tube filled with quartz wool                      Absorbent : Hydrogen peroxide / water                      Mode :</p> <p>Heater Temp. Inlet : 900degC                      Outlet : 1000degC                      Gas flow Ar : 200 ml/min                      O<sub>2</sub> : 400 ml/min</p> <p>GA-100 Absorbent volume : 20ml                      Sampling loop : 20 ul                      Absorption tube : For 20 ml                      Water supply : 2                      Ar flow for water supply : 150 ml/min</p> <p>ABC-100/ASC-120S</p> <table border="1"> <thead> <tr> <th></th> <th></th> <th>1st</th> <th>2nd</th> <th>3rd</th> <th>4th</th> <th>5th</th> <th>End</th> <th>Cool</th> </tr> </thead> <tbody> <tr> <td>Position</td> <td>(mm)</td> <td>130</td> <td>140</td> <td>150</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Time</td> <td>(sec)</td> <td>100</td> <td>120</td> <td>180</td> <td></td> <td></td> <td>120</td> <td>30</td> </tr> <tr> <td>Speed</td> <td>(mm/sec)</td> <td>10</td> <td>10</td> <td>10</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p style="text-align: right;">Ar Time 0 (sec) O<sub>2</sub> Time 600(sec)</p>			1st	2nd	3rd	4th	5th	End	Cool	Position	(mm)	130	140	150					Time	(sec)	100	120	180			120	30	Speed	(mm/sec)	10	10	10				
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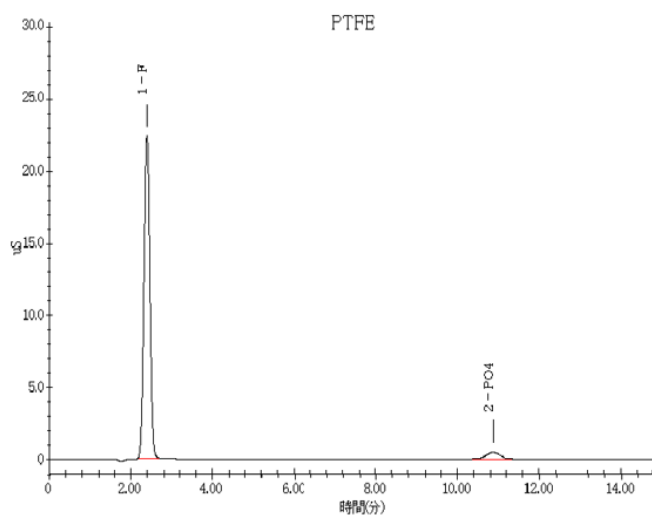
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## 2. Ion chromatograph

Ion chromatograph : DIONEX DX-120  
 Column : DIONEX Ion Pack AG12A / Ion Pack AS12A  
 Eluent : 2.7mM Na<sub>2</sub>CO<sub>3</sub> / 0.3mM NaHCO<sub>3</sub>  
 Eluent flow : 1.50ml / min  
 Detector : Conductivity  
 Suppressor : ASRS-300 4-mm  
 Measuring time : 15min  
 Sampling loop : 20 ul using GA-100 sampling loop  
 Calibration : F Cl Br S :5ppm to 40ppm

Results

### Chromatogram



### Results

Sample	Calculated value (%)	F (%)	Average (%)	RSD(%)
PTFE	76	76.5 , 75.7 , 76.3	76.2	0.50
ETFE	Approx.60	60.3 , 60.2 , 61.1	60.5	0.85

Remarks

\*Handling of reagents: Confirm labels and safety data sheets of reagents and handle them with enough care.

\*Automation is possible by using an Automatic Sample Changer, ASC-120S.

\*When ASC-120S is used, the boat to be used will be a ceramic boat, TX3SCX.

\*This application sheet is provided as reference, and does not assure the measurement results. Please consider analysis environment, external factors and sample nature for optimal conditions before the measurement.

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