Determination of fluorine and chlorine in catalyst

Seat №.: **AQF_MR_028E** Category： Chemical

Instruments: **AQF-2100H System HF-210,GA-210,ABC-210/ASC-240S**

Method： Combustion-ion chromatography

Related standard

It is critically important to know the halogen content in the sample for checking its performance. 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-2100H which safely combusts samples with an ion chromatograph.

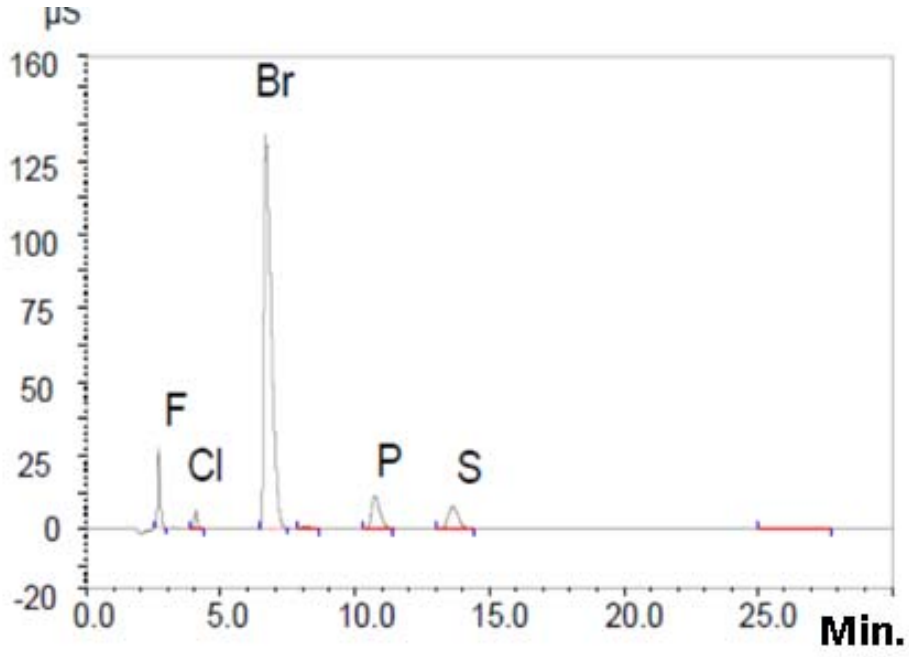
Sample name	Catalyst
Sample status	
Measuring items	Fluorine (F), Chlorine (Cl)
Measurement principle	Sample is thermally decomposed in argon (Ar) atmosphere, then combusted in oxygen (O_2) atmosphere. Halogens in the sample are converted to hydrogen halide and halogen gas and sulfur turns into sulfur 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). Analyzing flow **[Sample weighing] ⇒ [Combustion] ⇒ [Collection of combustion gas] ⇒ [IC analysis]**
Parameters	**1. AQF-2100H** Sample size： 30mg Sample boat： Ceramic sample boat, SXSMBS Additive： WO_3 100mg Pyrolysis tube： Quartz tube filled with quartz wool Absorbent： Hydrogen peroxide / water Mode： Constant volume mode HF-210 Heater Temp. Inlet： 1000degC Outlet： 1100degC Gas flow Ar： 200 ml/min O_2： 400 ml/min GA-210 Absorbent volume： 5ml Sampling loop： 100 ul Absorption tube： For 10 ml Water supply： 2 Ar flow for water supply： 100 ml/min

2. Ion chromatograph

Ion chromatograph	: DIONEX ICS-1500
Column	: DIONEX Ion Pack AG12A / Ion Pack AS12A
Eluent	: 2.7mM Na_2CO_3 / 0.3mM $NaHCO_3$
Eluent flow	: 1.50ml / min
Detector	: Conductivity
Suppressor	: ASRS-4-mm
Measuring time	: 30min
Sampling loop	: 100 ul using GA-210 sampling loop
Calibration	: F Cl Br S : 0.1ppm to 5.0ppm

Results

Chromatogram



Results

	1st	2nd	Average(ppm)
F	78.5	81.5	80.0
Cl	351	369	360

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-240S. When ASC-240S 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.