

# “Eco-Cup G series” *Glass sample cups*

Eco-Cup G series disposable sample cups are used with Frontier Laboratories’ Pyrolyzers. G series sample cups are made of Pyrex glass. Because the cups are made of clear glass, the sample position, sample color change, residues, and contamination can easily be observed.

## FEATURES

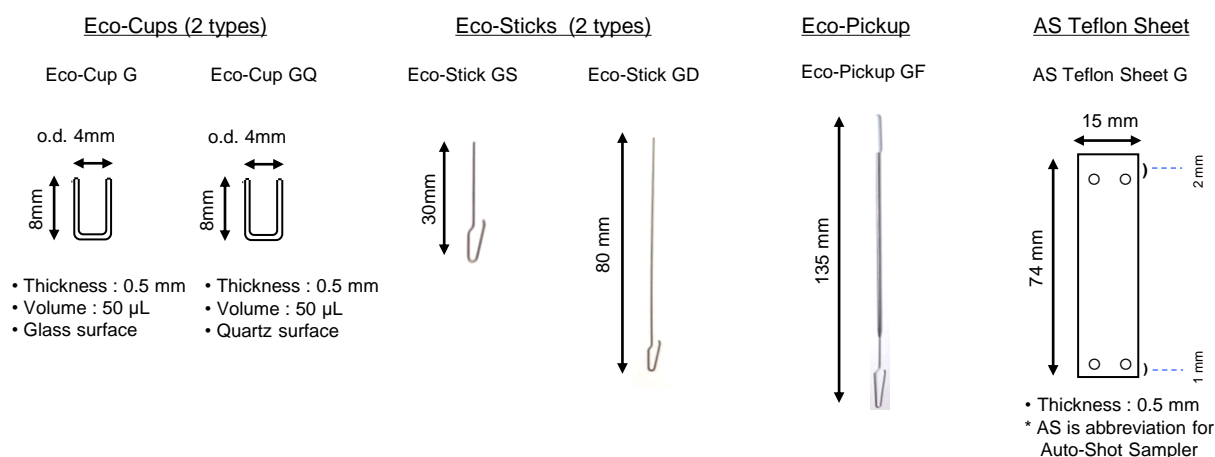
### Eco-Cup G

- It is economical, at about half the cost of deactivated stainless steel cups.
- Because of its inertness, it can be used for the analysis of reactive compounds like brominated flame retardants.
- Maximum temperature is 450 °C which is ideal for both thermal desorption and reactive pyrolysis applications.

### Eco-Cup GQ

- Its quartz surface is the ultimate inert surface.
- Maximum temperature is 600 °C.

## Eco-Cup G and GQ and related parts



## Specifications

Product name	Part number	Description
Eco-Cup G <sup>*1</sup>	PY1-EC50G	Glass, 50 µL, a package of 100 pcs, for thermal desorption and reactive pyrolysis (max use temp.: 450 °C)
Eco-Cup GQ <sup>*1</sup>	PY1-EC50GQ	Glass coated with a bonded quartz layer, 50 µL, a package of 30 pcs, for thermal desorption, reactive pyrolysis and pyrolysis (max use temp.: 600 °C)
Eco-Stick GS <sup>*2</sup>	PY1-ES10G	Deactivated stainless steel tool for picking up Eco-Cup G or GQ used for single-shot analysis, L= 30 mm, a package of 50 pcs
Eco-Stick GD <sup>*2</sup>	PY1-ES20G	Deactivated stainless steel tool for picking up Eco-Cup G or GQ used for single-shot analysis, L= 80 mm, a package of 50 pcs
Eco-Pickup GF <sup>*2</sup>	PY1-EP55GF	Glass sample cup retrieving tool, 5 pcs
AS Teflon Sheet G <sup>*3</sup>	AS1-7814	Teflon sheet for Auto-Shot (AS) cup chute, 3 pcs, with 4 spare screws

<sup>\*1</sup> These are designed to be disposable. Do not reuse these cups, especially with Auto-Shot Sampler. Cups may be cracked during cup ejection.

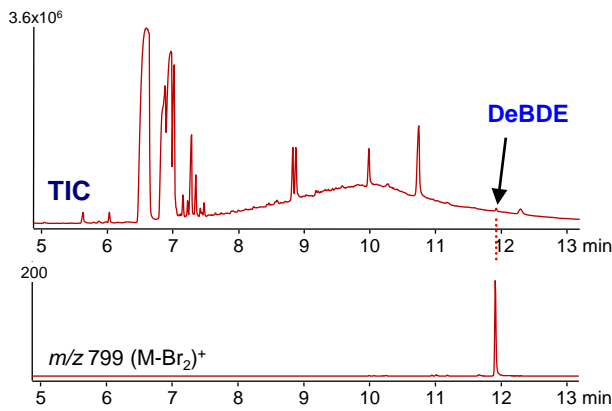
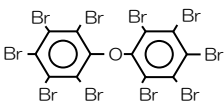
<sup>\*2</sup> Eco-Cup G and Eco-Cup GQ have smaller inner diameters than stainless steel cups. Use only the Eco-Stick and Eco-Pickup shown above.

<sup>\*3</sup> When using Eco-Cup G or Eco-Cup GQ with Auto-Shot Sampler, the Teflon sheet should be attached to the cup chute which decreases the risk of cracking the glass cups. The cup chute with the Teflon sheet attached can also be used with stainless steel Eco-Cups.

# Comparing the Eco-Cup G, GQ and deactivated stainless steel Eco-Cup

Thermal desorption (TD) - GC/MS of polystyrene (PS) containing 317 ppm of DeBDE<sup>(1)</sup>, a brominated flame retardant

1) Decabromodiphenyl ether (DeBDE), molecular weight : 959  
a compound which readily debrominates when subjected to excessive heat.



Peak area (m/z 799) and RSD% (n=3)

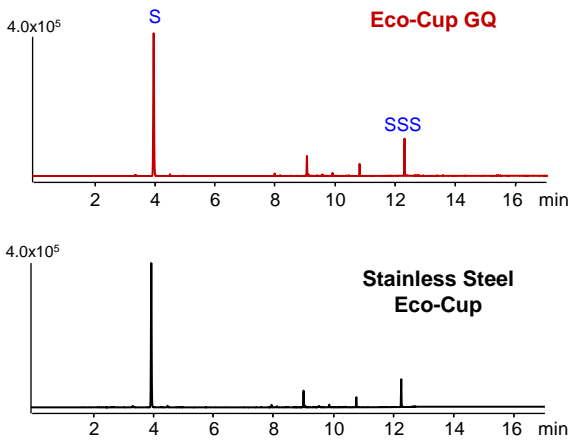
Type of cup	Peak area (count)	RSD (%)
Eco-Cup G	4,992	3.8
Stainless Steel Eco-Cup	5,517	4.1

Column : UA-PBDE, 15 m (0.25 mm i.d.), 0.15  $\mu$ m,  
TD : 200 - 340  $^{\circ}$ C (20  $^{\circ}$ C/min), GC : 80 - 320  $^{\circ}$ C (20  $^{\circ}$ C/min)

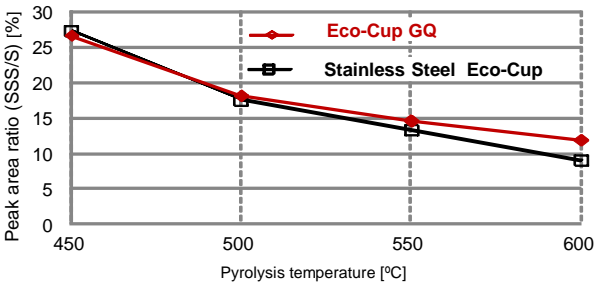
Pyrolysis (Py)-GC/MS analysis of polystyrene (PS)  
<Ratio of pyrolyzates and the associated analytical precision>

## Pyrograms of Polystyrene (Py temp.: 550 $^{\circ}$ C)

PS: 25  $\mu$ g , UA5-30M-0.25F, GC: 80-320  $^{\circ}$ C (20  $^{\circ}$ C/min)



Peak areas ratios of PS monomer (S) and trimer (SSS) vs. pyrolysis temperature



RSD% of SSS/S ratios vs. pyrolysis temperature (n=3)

Type of cups	Pyrolysis temperature			
	450 $^{\circ}$ C	500 $^{\circ}$ C	550 $^{\circ}$ C	600 $^{\circ}$ C
Eco-Cup GQ	1.49 %	1.73 %	1.57 %	1.73 %
Stainless Steel Eco-Cup	1.62 %	0.37 %	1.98 %	1.98 %



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