

# DATA BULLETIN

## *$\delta^{18}\text{O}$ analyses of fruit juice samples using iso **FLOW***

Stable isotope analysis of fruit juices is widely used to assess whether a juice has been reconstituted from concentrate using local water or to confirm if it is from the claimed point of origin.  $\delta^{18}\text{O}$  isotope analysis allows the sample to be directly related to the origin thanks to the natural meteorological variation of the water in the source environment. The fully automated iso **FLOW** headspace analyzer with **isoprime precision** isotope ratio mass spectrometer provide precise  $\delta^{18}\text{O}$  measurement, fully compliant with international standards.

Different fruit juices were filled in 3.5 ml vials and placed on the heated, 180 position sample tray of the iso **FLOW**. The temperature was maintained at a stable  $30^{\circ}\text{C} \pm 0.1^{\circ}\text{C}$ . A gas mixture of 5%  $\text{CO}_2$  in helium was used for equilibration. For calibration, three waters of known isotopic composition were used. The data presented below are average values and standard deviations of three analyses of the same fruit juice in three consecutive vials.

SAMPLE	$\delta^{18}\text{O}$ [‰ <sub>VPDB</sub> ]
apple juice	$-5.71 \pm 0.03$
tomato juice	$-4.18 \pm 0.06$
orange and mango juice	$6.31 \pm 0.06$
multivitamin - 12 fruit juice	$0.70 \pm 0.03$
freshly-pressed orange juice	$4.76 \pm 0.03$
apple, pineapple and kiwi smoothie	$-2.93 \pm 0.03$

All of the sample data demonstrates excellent precision for a range of different fruit juices, including freshly squeezed juice and a viscous smoothie.

For the  $\delta^{18}\text{O}$  analyses of fruit juices, the iso **FLOW** was operated in standard liquid mode with no modification. The samples were purged, equilibrated and analyzed in a single unattended automatic sequence. Sample processing, acquisition, and calibration were all done automatically using the **IONOS**® software.

### INSTRUMENT:

iso **FLOW** and **isoprime precision**

### DETAILS:

mode: equilibration

sample: 400  $\mu\text{l}$  fruit juice



### STANDARDS:

CEN/TC 174 - ENV 12141

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