



## Synthra Methionine/Choline (Catalog No. 007)

Synthra Methionine/Choline is a specially designed radiosynthesizer for the efficient production of [ $^{11}\text{C}$ ]labeled compounds [ $^{11}\text{C}$ ]methionine and [ $^{11}\text{C}$ ]choline. Automating the synthesis is simple with the easy-to-use configuration software SynthraView. The Synthra Methionine/Choline module offers both, fully automatic as well as manual modes of operation.

### Gas Phase Capabilities

- ➔ High specific activities are achieved from in-target produced [ $^{11}\text{C}$ ]CO<sub>2</sub> ranging from 5 Ci/ $\mu\text{mol}$  to 20 Ci/ $\mu\text{mol}$  (Higher specific activities are possible when using methane target).

The [ $^{11}\text{C}$ ]CO<sub>2</sub> produced in target is quantitatively trapped in the stainless steel capillary tubing at -180 °C. Subsequently, the [ $^{11}\text{C}$ ]CO<sub>2</sub> is released into the methane oven where it is converted to [ $^{11}\text{C}$ ]CH<sub>4</sub> by reduction on a Ni-catalyst. The [ $^{11}\text{C}$ ]CH<sub>4</sub> is trapped at -120 °C on Carboxen®. In a successive gas phase reaction the iodination of [ $^{11}\text{C}$ ]CH<sub>4</sub> to [ $^{11}\text{C}$ ]MeI is carried out in a gas phase recirculation system with gaseous I<sub>2</sub> at 730 °C. During circulation [ $^{11}\text{C}$ ]MeI accumulates on a Porapak™ column. Finally, it is released at 200°C and ready for any kind of labeling reaction.

### [ $^{11}\text{C}$ ]Labeling Possibilities

- ✓ **[ $^{11}\text{C}$ ]Methyl iodide Production:** [ $^{11}\text{C}$ ]MeI is ready for release 7 minutes after trapping the [ $^{11}\text{C}$ ]CO<sub>2</sub>. The yield for the [ $^{11}\text{C}$ ]methyl iodide formation is under good conditions above 50 % non-decay corrected. (ndc).
  - Up to 10 sequential methyl iodide preparations are possible from a single box set-up.
  - The [ $^{11}\text{C}$ ]methyl iodide can be used to synthesize [ $^{11}\text{C}$ ]choline by captive chemistry in a loop or to synthesize [ $^{11}\text{C}$ ]methionine by solid support heterogeneous reactions on a cartridge.

### General Features

- ✓ **Heating and cooling capabilities**
  - Six heating zones
  - Three with cooling capabilities
  - Temperature range: -196 °C – 950 °C
- ✓ **Detectors and controllers**
  - Four shielded radiation detectors



- Three electronic flow controllers (HCN option: Four flow controllers)
- One Pressure sensors as leak detector
- ✓ **Valves**
  - Chemically inert valves with small dead volume < 35  $\mu\text{L}$ , 5 bar rated
- ✓ **Dimensions** (w x d x h): 42 x 50 x 41 cm
- ✓ **Weight:** approx. 25 kg

### Synthesis Features

- ✓ **Four reagent vials**
  - One small (1 – 3 mL) and three large (10 - 15 mL) volume glass vials for reagents
- ✓ **One cartridge holder**
- ✓ **SPE unit** for final product formulation

### Additional Synthesis Options

- ➔ **Methane option:** A reduced gas phase suitable for the use of CH<sub>4</sub> target.
- ➔ **[ $^{11}\text{C}$ ]HCN option** (Catalog No.003hcn): The [ $^{11}\text{C}$ ]CH<sub>4</sub> is released with NH<sub>3</sub> gas into a high temperature area where it undergoes a Pt-catalyzed conversion into [ $^{11}\text{C}$ ]HCN at 950 °C.

# Synthra C-11 Family

## Product Description and Technical Specifications



### → Product solvent evaporator

(Catalog No. 000pse)

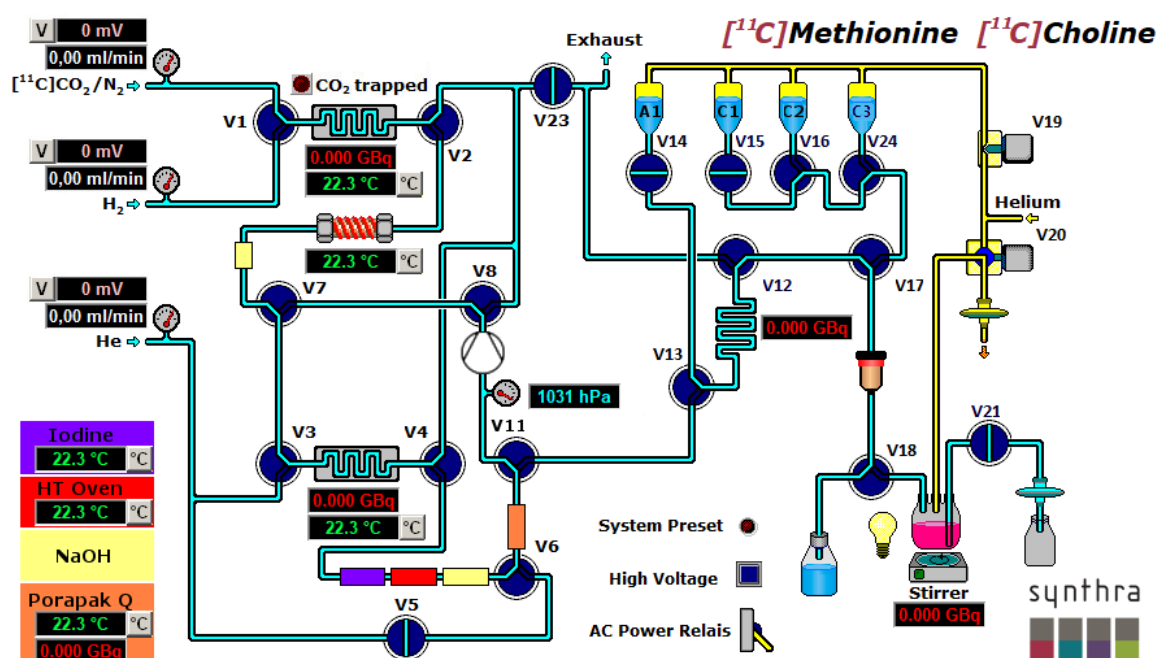
### → Triflate/column oven (RT – 200 °C)

## GMP Features

- ✓ Synthesis files for [<sup>11</sup>C]methionine and [<sup>11</sup>C]choline
- ✓ **GMP compliant.** Electronic control and data collection (27/18 channels)
- ✓ **21CFRpart11 & LIMS** compatible

## Terminal Control

- ✓ A laptop (Win 10 Pro) with preinstalled controlling software SynthraView is included
- ✓ Four digital inputs for communication with external devices upon request



The Graphical User Interface (GUI) of the SynthraView software.