

# Smart SPME Arrow

## Note

This data sheet contains important notes for the operator. It is highly recommended for operators to become familiarized with the product prior to use.

- When using with AOC-6000 Plus, Arrow Conditioning Module, Agitator and Heatex Stirrer are essential.
- Due to its large external diameter, the SPME Arrow cannot be used with an ordinary GC injection port. Use only GC injection ports that have a wide diameter hole and are designed for the SPME Arrow.
- To facilitate the differentiation between the two different thicknesses of the Smart SPME Arrows, and to help avoiding any mistake, each Smart SPME Arrow comes either with a yellow (1.5 mm thickness) or with a red (1.1 mm thickness) plastic part.
- The color code, as provided in the table below reflects the type of the coating in combination with its thickness.
- Liners in the injector must be selected to fit Smart SPME Arrows with 1.1 mm or 1.5 mm diameter.
- All SPME Arrows have a phase length of 20 mm.



## Smart SPME Arrow Order Information

No.	Outer Diameter	Phase Type	Phase Thickness	Color Code	P/N(set of 1)	P/N(Set of 3)	P/N(Set of 5)
1	1.1 mm	Plydimethylsiloxane(PDMS)	100 µm	Red	227-35334-01	227-35334-03	227-35334-05
2*	1.5 mm	Plydimethylsiloxane(PDMS)	100 µm	Red	227-35338-01	227-35338-03	227-35338-05
3	1.1 mm	Acrylate	100 µm	Grey	227-35330-01	227-35330-03	227-35330-05
4	1.1 mm	Carbon Wide Range(WR)/PDMS	120 µm	Light Blue	227-35331-01	227-35331-03	227-35331-05
5*	1.5 mm	Carbon Wide Range(WR)/PDMS	120 µm	Light Blue	227-35335-01	227-35335-03	227-35335-05
6	1.1 mm	Divinylbenzene(DVB)/PDMS	120 µm	Violet	227-35332-01	227-35332-03	227-35332-05
7*	1.5 mm	Divinylbenzene(DVB)/PDMS	120 µm	Violet	227-35337-01	227-35337-03	227-35337-05
8	1.1 mm	DVB/Carbon WR/PDMS	120 µm	Dark Grey	227-35333-01	227-35333-03	227-35333-05
9*	1.5 mm	DVB/Carbon WR/PDMS	120 µm	Dark Grey	227-35336-01	227-35336-03	227-35336-05
10	1.5 mm	Plydimethylsiloxane(PDMS)	250 µm	Black	227-35339-01	227-35339-03	227-35339-05
Smart SPME Arrow Selection for method development 1 (No.1, 3, 4, 6, 10)							227-35340-01
Smart SPME Arrow Selection for method development 2 (No.1, 3, 4, 6, 10)							227-35341-01

\* SPME Arrow wide types - for use with solvents or reagents, that may lead to moderate swelling of PDMS phases.

## ■ SPME Arrow Temperature and Conditioning Recommendations

Phase Type	Phase Thickness	Maximum Temperature (°C)	Recommended Operating Temperature (°C)	Conditioning Temperature (°C) min/max	Preconditioning Time (min) min/max/Recom.	Conditioning Time (min) min/max/Recom.	Rinsing Solvent	Rinsing Time (min) min/max/Recom.
PDMS	100	300	200-280	200 / 300	15 / 120 /30	1 / 30 / 5	MeOH/EtOH /iProp	0.5 / 10 / 2
Acrylate	100	280	200-280	180 / 280	15 / 120 /30	1 / 30 / 5	MeOH/EtOH /aliphatic HC	0.5 / 10 / 2
Carbon WR	120	300	200-300	180 / 300	15 / 120 /30	1 / 30 / 5	MeOH	0.5 / 10 / 2
DVB	120	300	220-270	200 / 300	15 / 120 /60	1 / 30 / 10	MeOH/EtOH /iProp	0.5 / 10 / 2
DVB/Carbon WR	120	300	220-270	200 / 300	15 / 120 /60	1 / 30 / 10	MeOH/EtOH /iProp	0.5 / 10 / 2
PDMS	250	300	220-280	200 / 300	15 / 120 /60	1 / 30 / 10	MeOH/EtOH /iProp	0.5 / 10 / 2

MeOH = Methanol  
 iProp = Iso-Propanol (2-Propanol)      EtOH = Ethanol  
 aliphatic HC = aliphatic hydrocarbons (example n-Hexane)

## ■ Smart SPME Arrow Conditioning and Cleaning

### • Smart SPME Arrow Preconditioning

Prior to analytical use, it is mandatory to precondition each Smart SPME Arrow at a specified temperature in an inert gas phase environment. The life span of the Smart SPME Arrow can be extended if it is not unnecessarily preconditioned at maximum temperature.

Generally, it is recommended to precondition the Smart SPME Arrow 20°C above the planned operating temperature, while respecting the maximum temperature threshold.

### • Smart SPME Arrow Conditioning

It is part of the analytical process to condition the Smart SPME Arrow after thermal desorption of the analytes has been completed. This conditioning is a preparatory step for the next analytical run.

It is necessary to eliminate all possible contaminants from the Smart SPME Arrow which have not been desorbed and transferred to the GC column.

The large surface of the Smart SPME Arrow can trap impurities from the ambient atmosphere if a Smart SPME Arrow has been left in the open. Considering this, it is good recommended practice to run a blank prior to running a series of analytical samples.

### • Rinsing of Smart SPME Arrows

It is possible to clean the Smart SPME Arrow using an organic solvent, should the Smart SPME Arrow be subject to inappropriate storage, e.g keeping it in the open at ambient environment without protection for a prolonged period, or if obvious dust particles are sticking to the Smart SPME Arrow.

Do not use any other solvents than those mentioned here. Other solvents can cause a swelling of the Smart SPME Arrow which would lead to significant damage. It is important that a Smart SPME Arrow is not cleaned mechanically by any means; do not touch the Smart SPME Arrow with fingers, not even when wearing gloves. The cleaning process can be done manually by dipping the Smart SPME Arrow into a container filled with the appropriate solvent or in an automated manner by defining a vial for cleaning.

### • General Remarks for Smart SPME Arrow Conditioning and Cleaning

The life span of a Smart SPME Arrow depends to a great degree on the field and type of application. Using the SPME technique, by inserting the Smart SPME Arrow into a liquid with a high degree of matrix, the number of analyses can vary from a few to approximately 100 analyses. If the Smart SPME Arrow is positioned in the headspace of a vial and avoids any contact with liquid and matrix, it is typically possible to run several hundred extractions.

It is not possible to visually judge the SPME Arrow quality if there are no obvious signs of major mechanical damage, such as a fracture.

Any sign of staining, caused by a starting vitrification of the surface in case of a PDMS SPME Arrow, or signs of a yellowish discoloration in the case of a Polyacrylate Smart SPME Arrow, does not give any indication on the remaining life span of the particular Smart SPME Arrow.

As a rule of thumb, the life span of a Smart SPME Arrow can be extended if its exposure to high temperatures is minimized. Do not exceed the maximum temperature for each Smart SPME Arrow type.