

INSTRUCTIONS FOR USE

SKC Mini-Sampler for Welding Aerosol

Filter loading, flow rate setting, sampling and filter removal for the SKC Mini-Sampler for welding aerosol, used on the Face Level Sampling Headset to ISO 10882-1.

AMTC-IN-0013

Rev. 2 · October 2026

About this document

The SKC Mini-Sampler for Welding Aerosol, 225-6201, collects welding aerosol on a 13 mm filter right in front of the welder's mouth and nose. It is built for sampling manganese in welding aerosol to ISO 10882-1 and sits on a gooseneck arm of the SKC Face Level Sampling Headset 225-6200.

These instructions take you through one sample from start to finish. Read Safety (p. 5) and Product and supplied items (p. 6) first. Then follow Before use (p. 7), Procedure (p. 9) and After use and sample handling (p. 10) step by step. Fitting the headset itself is covered by the *SKC Face Level Sampling Headset — Fitting Guide*. Read ISO 10882-1 before your first sample: the standard sets the sampling strategy, and these instructions do not replace it.

The Mini-Sampler was developed in a research project carried out at Stockholm University, Sweden, and partly funded by the Swedish Work Environment Authority.

Keep these instructions for the lifetime of the product. The current revision is on the product page at analyt-mtc.com.

How these instructions mark information

⚠ CAUTION

A hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Practices not related to personal injury — damage to the product, the process or the sample.

Note
Information that helps understanding; never a hazard.

Document information

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Applies to	SKC Mini-Sampler for Welding Aerosol 225-6201
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Manufacturer	SKC Inc.

Revision history

Rev.	Date	Change
2	October 2026	Quality programme: new document type, number and identity pages.
1	October 2026	First issue.

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CHAPTER 1

Safety

Read the safety messages in this chapter before you prepare the sampler. Each appears again at the step it belongs to.

Intended use

The SKC Mini-Sampler 225-6201 is designed for sampling manganese in welding aerosol to ISO 10882-1. It sits on the SKC Face Level Sampling Headset 225-6200, with its inlet within 10 cm of the welder's mouth and nose and behind the face shield if one is worn. It takes 13 mm filters only. You can also use it for other substances in welding aerosol and for gravimetric analysis of the aerosol, but particles larger than 20 µm are then collected less efficiently. Read ISO 10882-1 before you sample with it.

Safety messages

NOTICE

The filter sits inside the retaining ring as you screw it on. Too much force on the ring damages the filter. Do not over-tighten the ring, and keep the filter in place while you screw it on.

⚠ CAUTION

Route the tubing safely. Loose tubing can catch and become a hazard. Fix it to the clothing, but leave the worker free to move.

CHAPTER 2

Product and supplied items

Welding fume concentration falls off steeply close to the plume, so the sample must be taken as near to the welder's nose and mouth as possible, behind the face shield if one is worn, because that is the air the welder inhales. The Mini-Sampler is small enough to sit within 10 cm of the mouth and nose.

The sampler is designed for manganese in welding aerosol to ISO 10882-1. You can also use it for other substances in welding aerosol and for gravimetric analysis of the aerosol, but particles larger than 20 µm are then collected less efficiently. Its performance is verified in G. Lidén and J. Surakka, "A Headset-Mounted Mini Sampler for Measuring Exposure to Welding Aerosol in the Breathing Zone", *The Annals of Occupational Hygiene*, Vol. 53, No. 2.

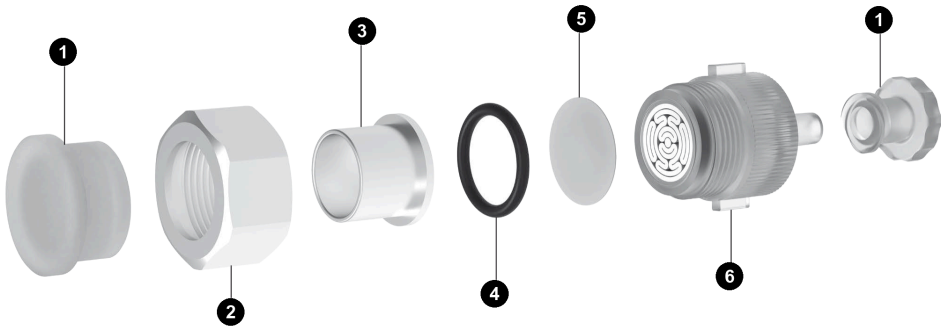


Figure 2-1. Mini-Sampler, exploded. (1) Sealing caps, inlet end (left) and outlet end (right); they keep the sample clean before sampling and on the way to the laboratory. (2) Retaining ring. (3) Sampler inlet. (4) O ring. (5) Filter, 13 mm. (6) Sampler body, with the male Luer-Slip outlet.

Supplied items

- the Mini-Sampler 225-6201, with the parts shown in Figure 2-1 (p. 6);
- the sealing caps for the inlet and the outlet;
- the tubing assembly, with a male Luer-Lok fitting.

Choosing the filter

Choose a 13 mm filter that suits the analysis you will run, chemical or gravimetric. A loaded filter builds up back pressure, so check that your sample pump can hold 750 mL/min against the back pressure you expect at the end of the sample.

For gravimetric analysis, weigh the filter before it goes into the sampler and again after you take it out. Aerosol that sticks to the inside of the sampler inlet is not part of the sample.

CHAPTER 3

Before use

What you need

- the Mini-Sampler 225-6201, with its sealing caps and tubing assembly;
- the Face Level Sampling Headset 225-6200, with its gooseneck tubes and female Luer-Lok adapter fittings;
- 13 mm filters for your analysis, powder-free gloves and tweezers;
- a sample pump that holds 750 mL/min;
- for the flow rate: the calibration adapter 225-6202 and a flowmeter of at least ±2.5 % accuracy with traceable calibration, for example a chek-mate calibrator 375-0550;
- for gravimetric analysis: an analytical balance.

Clean the parts

Prepare the sampler in a clean area where the air carries few particles. Clean all its parts with a detergent solution and let them dry completely before you load a filter.

Load the filter

Note
Wear powder-free gloves and handle the filter only with tweezers, so that nothing reaches it before the sample. For gravimetric analysis, weigh the filter on an analytical balance first.

1. Fit the sampler inlet into the retaining ring. Then fit the O ring into the retaining ring, behind the inlet (Figure 3-1 (p. 7), left).
2. Lay the filter in the retaining ring, on top of the O ring (Figure 3-1 (p. 7), right).

NOTICE

The filter sits inside the retaining ring as you screw it on. Too much force on the ring damages the filter. Do not over-tighten the ring, and keep the filter in place while you screw it on.

3. Screw the retaining ring, with the inlet, O ring and filter inside, onto the sampler body. Keep the filter in place as you do so.
4. Tighten the retaining ring with care.

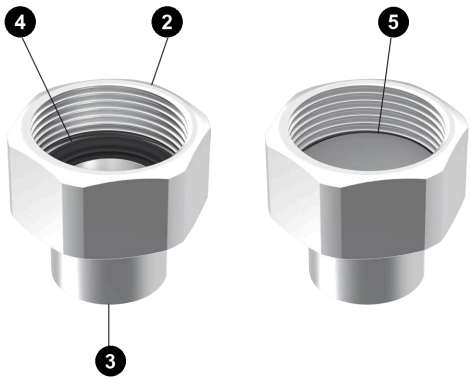


Figure 3-1. Retaining ring, seen from the body side. Left: with the sampler inlet (3) and the O ring (4). Right: with the filter (5) on the O ring. (2) Retaining ring.

Fit the sampler to a gooseneck tube

1. Screw a female Luer-Lok adapter fitting securely onto each end of one gooseneck tube of the headset 225-6200.
2. Press the male Luer-Slip outlet of the sampler body firmly into the Luer-Lok fitting at one end of the tube (Figure 3-2 (p. 8)).

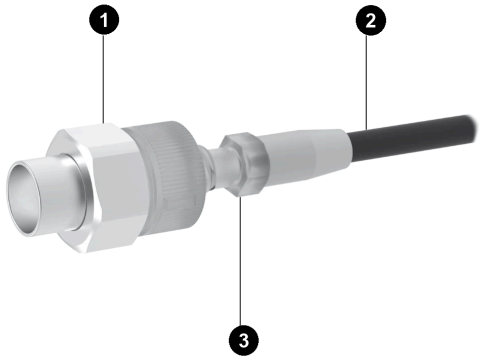


Figure 3-2. Sampler on the gooseneck tube. (1) Mini-Sampler. (2) Gooseneck tube. (3) Female Luer-Lok adapter fitting.

Set the flow rate

> **Note**
> **Use a traceable flowmeter.** ISO 10882-1 asks for a flowmeter with an accuracy of ±2.5 % or better and a calibration traceable to national standards. SKC recommends its chek-mate range of electronic flowmeters, with ±1 % accuracy.

Set the flow rate with the sampler, the gooseneck tube and the tubing connected.

1. Push the male Luer-Lok fitting of the tubing assembly supplied with the sampler into the free Luer-Lok fitting at the other end of the gooseneck tube. Connect the free end of the tubing to the inlet port of the sample pump.
2. Connect the sampler inlet to the outlet port of the flowmeter, using the calibration adapter 225-6202.
3. Switch the pump on and adjust the flow rate to **750 mL/min** on the flowmeter. Write down the flow rate reading.
4. Switch the pump off and disconnect the flowmeter tubing from the sampler inlet.
5. Put the sealing cap on the sampler inlet, so that nothing reaches the filter before the sample.

CHAPTER 4

Procedure

Fit the sampling train to the worker

The fitting of the headset frame and the gooseneck tubes is described in detail in the *SKC Face Level Sampling Headset — Fitting Guide*.

1. Fit the gooseneck tube, with the sampler on it, to the headset frame.
2. Put the headset on the worker.
3. Bend the gooseneck tube so that the sampler inlet faces forwards and sits as close to the mouth and nose as possible. If the worker wears a face shield, the inlet goes behind it.
4. Fasten the sample pump securely to the worker, ideally at the waist.
5. Check that every tubing connection is tight.

   ⚠ CAUTION

   Route the tubing safely. Loose tubing can catch and become a hazard. Fix it to the clothing, but leave the worker free to move.

6. Secure the tubing to the worker's clothing.

Start the sample

1. Take the sealing cap off the sampler inlet immediately before you start.
2. Switch the pump on.
3. Write down the date and the start time.
4. Check the flow rate and write it down.

Note
ISO 10882-1 asks you to check the flow rate at least every 2 hours during the sample.

End the sample

1. At the end of the sample, check the flow rate and write it down.
2. Switch the pump off.
3. Put the sealing cap back on the sampler inlet to protect the sample.

CHAPTER 5

After use and sample handling

Take the filter out

1. Hold the sampler with its inlet facing upwards and take off the inlet sealing cap.
2. Unscrew the retaining ring from the sampler body. The ring comes away together with the inlet, the O ring and the filter.
3. Set this unit down on a clean, flat surface, inlet upwards. Press the inlet down and carefully lift the retaining ring off. The inlet, the O ring and the filter stay on the surface (Figure 5-1 (p. 10)).
4. Wearing powder-free gloves, lift the filter off the O ring with tweezers.
5. For gravimetric analysis, weigh the filter on the same analytical balance you used before the sample.

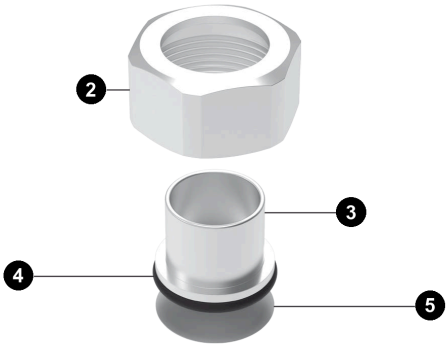


Figure 5-1. Lifting off the retaining ring. (2) Retaining ring. (3) Sampler inlet. (4) O ring. (5) Filter.

Send the sample to the laboratory

If the filter goes on for further analysis, load it into a clean Mini-Sampler, as in Load the filter (p. 7), and close the inlet and the outlet with the sealing caps. The caps keep contaminants out and the collected material in during transport.

Disposal

Dispose of the Mini-Sampler under local regulations; separate metal, glass and plastic parts for recycling where possible.

Further reading

- ISO 10882-1, Health and safety in welding and allied processes — Sampling of airborne particles and gases in the operator's breathing zone — Part 1: Sampling of airborne particles.
- G. Lidén and J. Surakka, “A Headset-Mounted Mini Sampler for Measuring Exposure to Welding Aerosol in the Breathing Zone”, *The Annals of Occupational Hygiene*, Vol. 53, No. 2.
- *SKC Face Level Sampling Headset — Fitting Guide*.

CHAPTER 6

Specifications

Key data

Design flow rate	750 mL/min
Filter	13 mm diameter only, for example MCE, 5 µm pore size, 225-8050
Inlet position	within 10 cm of the mouth and nose, on the Face Level Sampling Headset 225-6200
Inlet material	conductive aluminium alloy, so static charge does not disturb particle collection
Particle size	collection efficiency is reduced above 20 µm
Flowmeter for the flow rate (ISO 10882-1)	accuracy ±2.5 % or better, calibration traceable to national standards
Flowmeter recommended by SKC	chek-mate range of electronic flowmeters, accuracy ±1 %
Standard	ISO 10882-1

CHAPTER 7

Ordering information

Order from Analyt-MTC with the order codes.

Ordering information

Description	Order code
Mini-Sampler for Welding Aerosol, with sealing caps and tubing	225-6201
Calibration adapter for the Mini-Sampler, with tubing	225-6202
Face Level Sampling Headset	225-6200
MCE filter, 13 mm, 5 µm pore size	225-8050
chek-mate calibrator (flowmeter)	375-0550

CHAPTER 8

Service and contacts

Contact and support

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Before you call

Have the following at hand so that Analyt-MTC can help you quickly:

- the part number of the sampler, 225-6201, or of the part you need;
- the sample pump, flowmeter and filters you use with it;
- the analysis you sample for: manganese, other metals or gravimetric.

Contact Analyt-MTC for spare parts, technical questions and warranty matters concerning your SKC Mini-Sampler. Warranty is handled under Analyt-MTC's terms of sale. Analyt-MTC's contact details are above and on the back cover.

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