Sampling Solutions for Welding Operations

Introduction

Welding operations may expose workers to toxic levels of gases such as carbon monoxide, nitrogen dioxide, and ozone. Airborne particulates resulting from welding are also a concern because they can produce a variety of metal fumes such as manganese and hexavalent chromium that are hazardous to workers' health. The International Agency for Research on Cancer (IARC) has classified welding fumes as Group 1 carcinogens because there is sufficient evidence that they cause cancer in humans. SKC offers a variety of solutions for direct-readout of target compounds, as well as active and passive sampling of target compounds.

SKC active samplers require an air sample pump to collect hazardous gases and vapours in air; passive samplers collect hazardous vapours by diffusion without the use of an air sample pump.

The target compounds in welding operations include:

- Carbon monoxide, nitrogen dioxide and ozone
- Metal fumes including hexavalent chromium and manganese

SKC Sampling Solutions

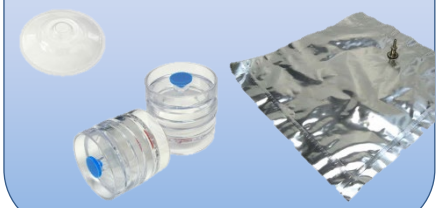
For over 50 years, SKC has led the research, design, and manufacture of quality sampling equipment and media to aid health and safety professionals in the evaluation of occupational and environmental hazards.

SKC sampling solutions for welding operations include air sample pumps, active and passive samplers, sample bags, filter cassettes and sorbent tubes, following agency methods and established protocols.

Air Sample Pumps

Passive Samplers

Sampling Media



Sample Collection

Active Air Sampling Solutions

Target Compound	Select Methods*	SKC Sample Collection Media and Part No.	SKC Sample Pump and Part No.	Notes
Carbon monoxide	OSHA ID 210	FlexFoil sample bag 252, 253, 262, or 263 Series	Pocket Pump TOUCH 220-1000TC	*Requires PTFE tubing*
Elements by cellulosic internal capsule sampler	NIOSH 7306	Solu-CAP™ 225-8517	AirChek TOUCH 220-5000TC	
Hexavalent chromium	NIOSH 7600 OSHA ID 215	Preloaded PVC filter cassette 225-802	AirChek TOUCH 220-5000TC	
Metal fumes (metals and metalloid particulates)	OSHA ID 121 OSHA ID 125G	Preloaded MCE filter cassette 225-3-01	AirChek TOUCH 220-5000TC	Analysis options: OSHA ID 121 - atomic absorption OSHA ID 125G - ICP
Metals (Elements)	NIOSH 7300	Preloaded MCE filter cassette 225-3-01 or preloaded PVC filter cassette 225-802	AirChek TOUCH 220-5000TC	
Nitrogen dioxide	NIOSH 6014 OSHA ID 182	Sorbent tube 226-40-02	Pocket Pump TOUCH 220-1000TC	
Ozone	OSHA ID 214	Preloaded coated glass filter cassette 225-9014	AirChek TOUCH 220-5000TC	

** Other methods may apply. SKC recommends those listed.*

Passive Air Sampling Solutions

Target Compound	Select Methods*/ SKC Validation	SKC Sample Collection Media and Part No.	Notes
Nitrogen dioxide	Research Report 1789	UME^{X} 200 500-200	Solvent extraction and ion chromatography with conductivity detection