

Health & Safety Laboratory

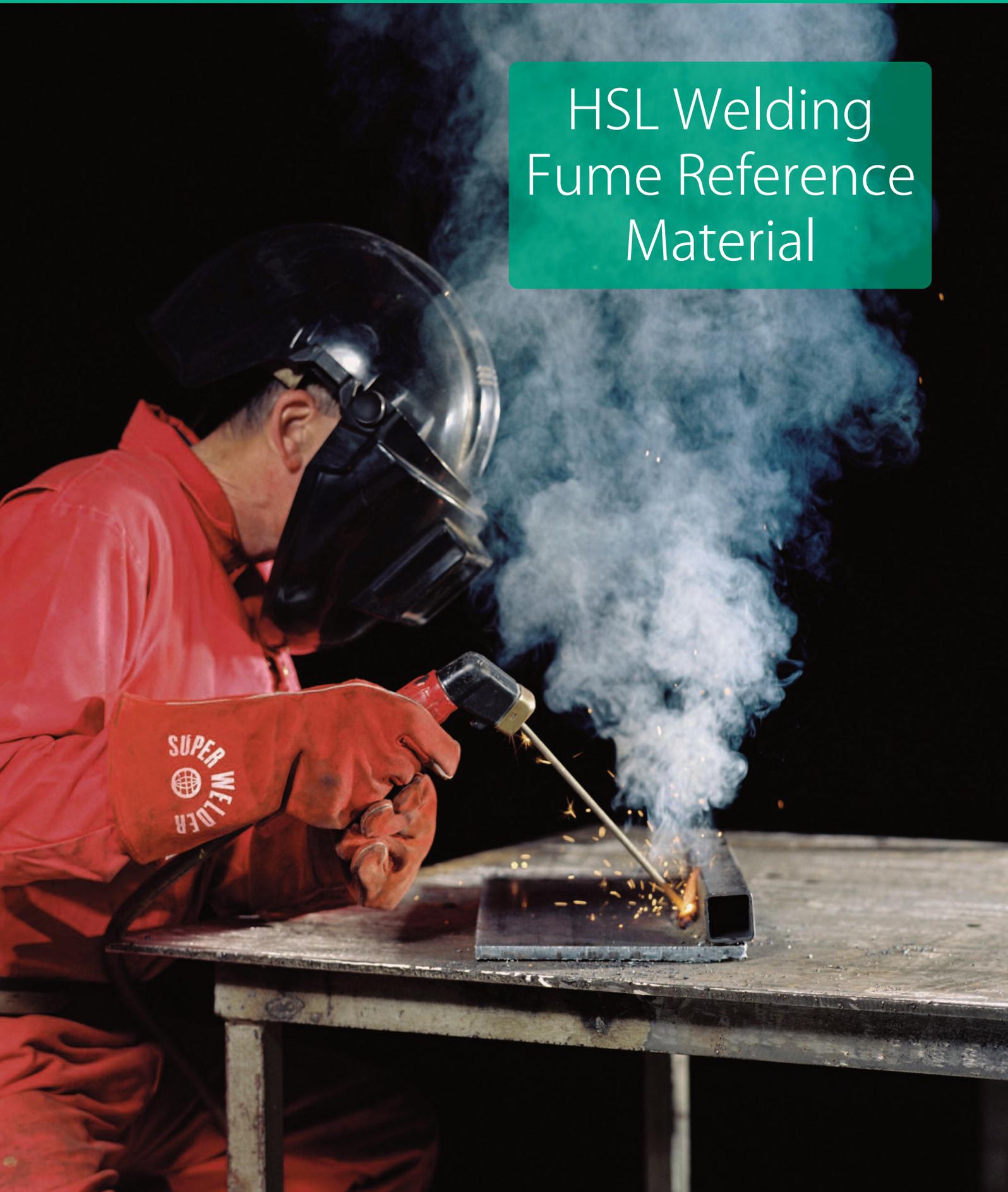
An agency of the Health & Safety Executive



HEALTH & SAFETY
LABORATORY

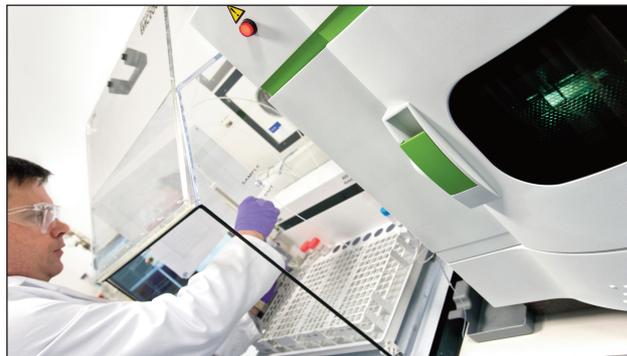
Enabling a better working Britain

HSL Welding Fume Reference Material



Background

The health of welders is at risk through exposure by inhalation to toxic metals and metalloids. Occupational hygienists need to determine the effectiveness of measures taken to control workers' exposure, and this is generally achieved by making personal airborne exposure measurements, the accuracy of which relies heavily upon the availability and use of validated measurement methods. Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES) and, more recently, Mass Spectrometry (ICP-MS) are multi-element techniques of choice in many analytical laboratories for the determination of toxic metals on filters collected from workplace air. Over the years, standard analytical methods have been developed by national agencies such as HSE, NIOSH and OSHA promulgating the use of such techniques. More recently, drawing heavily upon procedures set out in such national standards, ISO standards have now been codified such as ISO 15202 (analysis using ICP-AES) and ISO 30011 (analysis using ICP-MS).



The Problem

An inherent difficulty with analysis using ICP techniques is that typically a sample dissolution step is required. The efficiency of this step is often the dominant step in determining the overall analytical accuracy in the laboratory. Where available, matrix-matched reference materials, of known composition, can be used to assess analytical recoveries.

The Solution

HSL has now developed two bulk welding fume materials to assist in checking this digestion step. These two reference materials have been certified using protocols set out in ISO Guide 35 with analytical support from partner national laboratories employing validated dissolution procedures described in methods such as NIOSH 7300, OSHA 125G and ISO 15202-2.

Product Overview

Reference material HSL MSWF-1 is a fume derived from the laser welding of galvanised mild steel components and is certified for major components such as the Fe, Mn and Zn content. Reference material HSL SSWF-1 is a fume derived from the laser welding of stainless steel components and is certified for major components such as the Cr, Fe, Mn and Ni content. Indicative elemental values for other species will also be provided. Accompanying these materials will be a data certification sheet. A more detailed certification report detailing the product certification process will be available from the HSL website. The two materials will be available as a set consisting of a 1 g sample of each fume type. Each bottle will provide ca. 100 test portions at the recommended 10 mg sample aliquot size, sufficient for method setup studies and for routine method recovery checks.



Product Benefit

For the first time, matrix-matched welding fume reference materials, of known composition, are now available in bulk for laboratories to assess the performance of the key sample dissolution step.

Availability

These two reference materials are available to purchase from HSL from January 2013. Advance orders are now being taken.

To order - Please visit the HSL online shop at www.hsl.gov.uk

For product enquiries - Please call +44 (0)1298 218553 or e-mail proficiency.testing@hsl.gov.uk.

For technical enquiries - Please contact Owen Butler on +44 (0)1298 218560 or owen.butler@hsl.gov.uk.

