

Material Safety Data Sheet

1. Product Identification

Material: Stainless steel welding fume (HSL SSWF-1)
Laboratory chemical matrix reference material

Producer: The Health and Safety Laboratory
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Buxton
Derbyshire
UK
SK17 9JN

Contact: Owen Butler (00 44 (0)1298 218000)

Hours of operation: Monday-Friday (09:00-17:00 GMT)

2. Product Description, Composition and Use

Physical Form: Condensed fume from laser spot welding of stainless steel components. Bulk fume sieved to pass a 200 μm aperture. Oxidic material consistent with the following major crystalline phases identified by X-ray diffraction as Fe_3O_4 , $\text{Fe}_3\text{Mn}_3\text{O}_8$, Mn_3O_4 and FeCr_2O_4 .

In summary a spinel type oxide is the dominant crystalline phase which can be represented predominately by the general formula AB_2O_4 (where A = Fe or Mn and B = Cr, Fe or Mn). Similarly, Nickel is anticipated to be present predominately as a mixed spinel oxide (e.g. Fe_2NiO_4) as are probably the forms of the minor Cu and Zn species. Characteristic XRD peaks for these latter species are masked by the spectra originating from the dominant spinel oxide compounds present.

Composition:	Iron	30 % (m/m)
	Manganese	23 % (m/m)
	Chromium	8 % (m/m)
	Nickel	4 % (m/m)
	Copper	< 0.5 % (m/m)
	Zinc	< 0.5 % (m/m)

CAS Number: -

Identified use: A bottled unit HSL SSWF-1 consists of a nominal 1 g of bulk fume. This laboratory chemical matrix reference material has been produced to assist analysts in verifying the performance of the analytical methods they employ in the elemental analysis of welding fume samples collected from the working environment. In particular this material is designed to check the performance of applying a dissolution step, as codified in standard validated methods such as ISO 15202-2, ASTM D7035, NIOSH 7300, OSHA 125G, EN 13656 and EPA 3052 with subsequent analysis using atomic spectrometric techniques.

This material can also be used to assist in developing new sample dissolution procedures, preparing matrix recovery quality control charts or in the training of new analysts. This material is not to be used for instrument calibration.

3. Hazard Identification

Classification of the mixture

Iron (as Fe₃O₄): **Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]:**

Skin irritation (Category 2).

Eye irritation (Category 2).

Specific target organ toxicity – single exposure (Category 3).

Classification according to EU Directive No 67/548/EEC:

Irritating to eyes, respiratory system and skin.

Manganese (as Mn₃O₄): **Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]:**

Acute toxicity, Dermal (Category 3).

Skin irritation (Category 2).

Eye irritation (Category 2).

Specific target organ toxicity – single exposure (Category 3).

Classification according to EU Directive No 67/548/EEC:

Irritating to eyes, respiratory system and skin.

Chromium (as FeCr₂O₄): **Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]:**

Not classified

Classification according to EU Directive No 67/548/EEC:

Not classified

Nickel (as Fe₂NiO₄):

**Classification according to Regulation (EC) No
1272/2008 [EU-GHS/CLP]:**

Skin sensitization (Category 1).

**Classification according to EU Directive No
67/548/EEC:**

May cause sensitization by skin contact. May cause
cancer by inhalation.

Labelling

Iron (as Fe₃O₄):

**Labelling according to Regulation (EC) No
1272/2008 [CLP]**



Hazard statement(s):

H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statement(s)

P261 Avoid breathing dust.
P280 Wear protective gloves/protective
clothing/eye protection.
P305/351/338 If in eyes, rinse cautiously with water for
several minutes. Remove contact lens, if
present and easy to do. Continue
rinsing.

**Labelling according to European Directive
67/548/EEC as amended**

R-phrase(s)

R36/37/38 Irritating to eyes, respiratory system and
skin.

S-phrases

- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Manganese (as Mn₃O₄):**Labelling according to Regulation (EC) No 1272/2008 [CLP]****Hazard statement(s):**

- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H335 May cause respiratory irritation

Precautionary statement(s)

- P261 Avoid breathing dust
- P280 Wear protective gloves/protective clothing/eye protection
- P305/351/338 If in eyes, rinse cautiously with water for several minutes. Remove contact lens, if present and easy to do. Continue rinsing.

Labelling according to European Directive 67/548/EEC as amended**R-phrases**

- R36/37/38 Irritating to eyes, respiratory system and skin.

S-phrases

- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection

Nickel (as Fe₂NiO₄):

Labelling according to Regulation (EC) No 1272/2008 [CLP]



Hazard statement(s):

H350 May cause cancer
H317 May cause an allergic skin reaction

Precautionary statement(s)

P261 Avoid breathing dust
P280 Wear protective gloves/protective clothing/eye protection
P305/351/338 If in eyes, rinse cautiously with water for several minutes. Remove contact lens, if present and easy to do. Continue rinsing.

Labelling according to European Directive 67/548/EEC as amended

R-phrase(s)

R49 May cause cancer by inhalation
R43 May cause sensitization by skin contact.

S-phrase(s)

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection

4. Routes of Exposure and First Aid Measures

- Inhalation:** Remove sources of contamination or remove victim to fresh air. Obtain medical advice immediately.
- Eyes:** Rinse with water. Ensure to remove contact lens before rinsing.
- Skin:** Wash gently and thoroughly with water and non-abrasive soap. If irritation persists obtain medical attention.
- Ingestion:** Rinse mouth thoroughly with water. If vomiting occurs naturally rinse mouth and repeat administration with water. Obtain medical advice immediately.

5. Fire Fighting Measures

- Suitable Fire Extinguishers:** Not Applicable
- Unsuitable Fire Extinguishers:** Not Applicable
- Hazardous Decomposition:** Not Applicable
- Special Procedures:** Not Applicable

6. Accidental Release Measures

- Exposure Controls:** Restrict access to area until completion of clean up. Ensure clean up is conducted by trained personnel, who are adequately protected. Wet swab spilled material; scrape up into sealable container and label.
- Personal Protection:** For use in a laboratory setting only.
Recommended use of laboratory safety glasses, disposable gloves and laboratory coat.

Disposal: The material should be handled and disposed of in accordance with guidelines for handling laboratory reagents in force at the site of end use or disposal.

7. Handling and Storage

The material should be used, handled and stored only in an analytical chemistry laboratory setting. The material should only be handled in a fume cupboard or other similar enclosures. Any ventilated enclosures should be fitted with High Efficiency Particle Aerosol (HEPA) filters on the extraction port.

The material is a laboratory chemical matrix reference material and should be stored sealed in the supplied container in a dry enclosure when not in use.

8. Exposure Controls

Control Limits:	HSE EH40/2005 Workplace exposure limits (WEL) (2nd edition 2011)	
	8-hour TWA	15 minute STEL
	Inhalable limit values	
Iron oxide (fume)	5 mg m ⁻³	10 mg m ⁻³
Manganese and its inorganic compounds (as Mn)	0.5 mg m ⁻³	-
Chromium and Chromium (II/III) compounds (as Cr)	0.5 mg m ⁻³	-
Nickel and its inorganic compounds		
Compounds: Nickel and water insoluble nickel compounds (as Ni)	0.5 mg m ⁻³	-
Copper oxide (fume)	0.2 mg m ⁻³	-

**DFG Senate Commission for the
Investigation of health hazards of
chemical compounds in the work area
(Germany)**

**8-hour TWA 15 minute STEL
Respirable limit value**

Zinc oxide (fume) 1 mg m⁻³ 1 mg m⁻³

Biological Exposure Limits: Not Applicable

9. Physical and Chemical Properties

Appearance: Powder.

Odour: Metallic.

pH: No data available.

Boiling Point: No data available.

Melting Point: No data available.

Flash Point: Not Applicable.

Combustibility: Non-combustible.

Auto-Flammability: Non-flammable.

Explosive: None.

Oxidising Properties: Not applicable.

Vapour Pressure: Not applicable.

Relative Density: No data available.

Solubility: No data available.

Partition Coefficient: Not applicable.

Miscibility: Not applicable.

Vapour Density: Not applicable.

Evaporation Loss: Not applicable.

Viscosity: Not applicable.

10. Stability and Reactivity

Stability: Stable.

Hazardous Polymerisation: Not applicable.

Hazardous Decomposition

Products: None known.

11. Toxicological Information

Toxic Effects: Limited evidence for human carcinogenicity. Current classification: Group 2B (IARC Monograph 49, 1990)

Chronic Effects: Long term respiratory exposure and short term high exposure may result in coughing, wheezing and decreased pulmonary function.

12. Ecological Information

Mobility: Not likely to be mobile

Persistence and Degradability: Not likely to biodegrade

Bio-accumulative Potential: No data available

Aquatic Toxicity:

No data available

13. Disposal Considerations

The material should be handled and disposed of in accordance with guidelines for handling laboratory reagents in force at the site of end use or disposal.

14. Transport Information

Not classified as hazardous for shipment

UN Number

ADR/RID:

IMDG:

IATA:

UN proper shipping name

ADR/RID:

IMDG:

IATA:

Transport hazard class(es)

ADR/RID:

IMDG:

IATA:

Packaging group

ADR/RID:

IMDG:

IATA:

Environmental hazards

ADR/RID:

IMDG:

IATA:

15. Regulatory Information

This safety datasheet complies with the requirements of Regulation (EC) No 1907/2006

16. Other information

The above information is believed to be correct and based upon the present state of our knowledge and is applicable to this product with respect to appropriate safety precautions.

This laboratory chemical matrix reference material has been produced in accordance with international guidelines for the preparation and certification of reference materials.