



Johnson Matthey

Metal Joining

---

# Safety Data Sheet

---

---

## 1. Identification of the Substance/Preparation and of the Company/Undertaking

---

Identification of the Substance or preparation:

### Tenacity™No.5 Flux Powder

Description and Application of the substance/preparation:

A white powder brazing flux for use when brazing with silver type brazing filler metals with liquidus temperatures up to 900°C.

**Product category** - PC38 Welding and Soldering products (with flux coatings or flux cores) flux products.

**Company/Undertaking identification:** Johnson Matthey Metal Joining (a Business unit of Johnson Matthey plc)

**Contact details**

**Address:** York Way, Royston, Hertfordshire, SG8 7ER United Kingdom

**E-mail:** mj@matthey.com

**Telephone Number:** +44 (0) 1763 253 200

**Contact persons:** Mr J.A.Willingham, Mr A.W.Musgrove. Mr P J Webb

**Emergency:** +44 (0) 1763 253 000

---

## 2. Hazard Identification

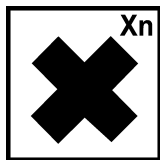
---

Classification according to Directive 67/548/EEC or Directive 1999/45/EC



T, Toxic

R23//24/25 Toxic by inhalation, in contact with skin and if swallowed.



Xn: Harmful

R62 Possible risk of impaired fertility

R63 Possible risk of harm to the unborn child

Based on the testing of similar products, the product as supplied will be moderately irritating in the case of skin contact and will be immediately irritating if the skin is already broken. Eye contact will cause immediate irritation.



## Safety Data Sheet Cont. – Tenacity™ No.5 Flux Powder

### 2. Hazard Identification Cont.

The main hazards associated with this product result from its use as a brazing flux. On heating the product will fume slightly and with overheating the fumes will increase. The fumes produced may include hydrogen fluoride and boron trifluoride, which can cause irritation of the nasal passages, eyes and throat. To minimise evolution of flux fume use with brazing filler metals that have liquidus temperatures no higher than 900°C. Severe, long term exposure to flux fume may result in fluorosis. In acute cases there is a danger of pulmonary oedema although this occurrence could also result from inhalation of metal fume, metal oxides fumes or torch gases. Inhalation of the fume will be irritating to the nose and throat and will cause smarting of the eyes. To minimise the release of flux powder dust into the working environment we would recommend mixing the flux powder to a paste with water, which should be applied to the work piece.

### 3. Nominal Composition

The product identified is a mixture of the substances identified below with non-hazardous additions.

Substance	CAS No.	EINECS No.	Applicable 'R' Phrases	% Concentration
Dipotassium hexafluorosilicate	16871-90-2	240-896-2	 T, R23/24/25	50 to 100
Potassium tetraborate	1332-77-0	215-575-5	 Xn, R62, R63 Repr. Cat. 3	25 to 50

#### Additional information

For the wording of the 'R' phrases used in the table refer to section 16.

### 4. First Aid Treatment

<b>Inhalation</b>	Remove from source of exposure and allow to rest in fresh air. In acute cases apply artificial respiration and if necessary summon medical aid.
<b>Ingestion</b>	Rinse mouth with water & give patient water or milk mixed with calcium carbonate (chalk) to drink. Do not induce vomiting. Summon medical aid.
<b>Eyes</b>	Irrigate with water or isotonic saline for up to 20 minutes. Seek medical attention if there is any hint of eye damage.
<b>Skin</b>	Remove any contaminated clothing and wash skin immediately with soap and water. Seek medical attention if sores develop. Launder clothing before re-use.

### 5. Fire Fighting Measures

Non flammable. Use full protection with breathing apparatus if involved in a fire as harmful fumes may be evolved. Use any extinguishing medium appropriate for surrounding fire.

### 6. Accidental Release Measures

Carefully sweep up and collect in a suitable container for re-use or disposal. Avoid contact with skin or eyes and do not inhale dust. Use protective equipment, gloves, eye protection, filter masks etc as considered appropriate to size and nature of the release. Dispose of all collected product as directed in Section 13.

## Safety Data Sheet Cont. – Tenacity™ No.5 Flux Powder

### 7. Handling & Storage

**Handling** Use only under conditions of good local ventilation or efficient extraction systems and do not inhale fumes evolved during use. Avoid contact with skin and eyes. Do not eat, drink, smoke or apply cosmetics whilst using these materials. Keep away from food, drink and animal feed stuffs and out of reach of children. Wash hands with soap and water following skin contact with the product and wash hands with soap and water after handling the product even if no direct skin contact has occurred. Observe good industrial hygiene practices.

**Storage** Store in a cool, dry place. Keep container closed when not in use. Do not freeze.

### 8. Exposure Controls

#### United Kingdom Workplace Exposure limits (EH40/2005) For The Fumes Evolved During Use

Element	Long Term (8 hour) *TWA Value	Short Term (15 minutes) *TWA Value
Fluoride (inorganic as F) (CAS No. 16984-48-8)	2.5 mg / m <sup>3</sup>	-
Hydrogen fluoride (as F) (CAS No. 7664-39-3)	1.5 mg / m <sup>3</sup>	2.5 mg / m <sup>3</sup>
* Time Weighted Average		

#### PERSONAL PROTECTION

Avoid exposure to fume by using good natural ventilation or local exhaust extraction. If risk of inhalation exists, personal respiratory protection should be worn. Local exhaust extraction systems should be tested for effectiveness to ensure adequate capture of the fume on initial installation and then checked on a regular basis to confirm on going effectiveness.

It is recommended that safety glasses are worn when handling or using this product for brazing. Where regular, on-going skin contact with the product cannot be avoided suitable gloves should be worn. Seek advice from glove supplier to most suitable type of glove to protect against this type of product. Show glove supplier this Safety Data Sheet. In cases where skin contact with the product may occur on an irregular basis the use of barrier creams will help to prevent skin irritation in such circumstances. Suitable gloves should also be worn where the nature of the brazing operation may result in hand contact with the molten flux or brazing filler metal to protect against burns.

Wash hands after using these products.

Use protective clothing appropriate to the nature and use of the product.

### 9. Physical & Chemical Properties

<b>Appearance</b>	White powder
<b>Odour</b>	No detectable odour
<b>pH</b>	9 of aqueous paste.
<b>Boiling/Melting Point</b>	Not applicable
<b>Flash Point</b>	Not applicable
<b>Flammability</b>	Not flammable
<b>Oxidising properties</b>	Not oxidising
<b>Solubility</b>	Partly soluble in water.

---

## 10. Stability & Reactivity

---

Product is stable, but may absorb moisture during storage and become lumpy.

Avoid contact with acids and strong oxidising agents.

No other adverse reactions are known

---

## 11. Toxicological Information

---

Potassium tetraborate has been classified a reproductive toxin category 3, Repr. Cat 3 and presents possible risks of impaired fertility and risks of harm to the unborn child.

Based on similar products LD50 (oral rat) would be expected to be in the order of >200 mg/kg

Based on similar products, the product would expect to be classified as moderately irritating, according to Draize skin test.

---

## 12. Ecological Information

---

Do not allow product to reach groundwater, water course or sewerage systems.

Water hazard class 2 (Self-assessment): hazardous for water.

---

## 13. Disposal Considerations

---

Disposal according to local and national regulations. Registered waste contractors should be aware of the composition and data given in Section 2 of this document.

---

## 14. Transport Information

---

### Land transport ADR/RID (cross-border)



<b>ADR/RID Class</b>	6.1 Toxic substance
<b>Danger code (Kemler)</b>	60
<b>UN-Number</b>	2655
<b>Packaging Group</b>	III
<b>Label</b>	6.1
<b>UN Shipping proper name</b>	2655 POTASSIUM FLUOROSILICATE mixture.
<b>Limited quantities (LQ)</b>	LQ9
<b>Transport category</b>	2
<b>Tunnel restriction code</b>	E

## 14. Transport Information Cont.

### Maritime transport IMDG



**IMDG Class** 6.1  
**UN Number** 2655  
**Label** 6.1  
**Packaging group** III  
**EMS Number** F-A, S-B  
**Marine pollutant** No  
**Segregation groups** Acids  
**UN Shipping proper name** POTASSIUM FLUOROSILICATE mixture.

### Air transport ICAO-TI and IATA-DGR

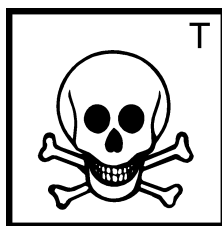


**ICAO/IATA Class** 6.1  
**UN/ID Number** 2655  
**Label** 6.1  
**Packaging group** III  
**UN Shipping proper name** POTASSIUM FLUOROSILICATE mixture.

## 15. Regulatory Information

Labelling elements according to EC guidelines

Toxic



Contains:  
Dipotassium hexafluorosilicate  
Potassium tetraborate

Risk Phrases	R25 R62 R63	Toxic by inhalation, in contact with skin and if swallowed. Possible risk of impair fertility Possible risk of harm to the unborn child
Safety Phrases	S20 S23 S26 S36/37/39 S45 S60	When using do not eat or drink Do not breathe fumes In case of eye contact, rinse immediately with water and seek medical advice Wear suitable protective clothing, gloves, and eye/face protection In case of accident or if you feel unwell seek medical advice immediately (show the label where possible) This material and its container must be disposed of as hazardous waste.

## 16. Other Information

---

### Risk Phrases from section 2

<b>R23/24/25</b>	Toxic by inhalation, in contact with the skin and if swallowed.
<b>R62</b>	Possible risk of impaired fertility
<b>R63</b>	Possible risk of harm to the unborn child

This Safety Data Sheet should be read in conjunction with the Safety Data Sheet for the brazing filler metal being used with the product before a full risk assessment of the brazing operation can be made.

Former HSE EH40 Exposure limit for boron trifluoride (BF<sub>3</sub>) CAS No.7637-07-2 "Short term exposure limit (15 minute reference period) 3 mg/m<sup>3</sup>

### REACH Substance of Very High Concern.

The product is manufactured in a facility where both boric acid CAS No. 10043-35-3 and sodium tetraborate CAS No. 1303-96-4 are used in the manufacture of brazing fluxes, and therefore the possibility of cross contamination to a level above the maximum impurity level for both substances of 0.1% cannot be excluded.

### Disclaimer

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is given in good faith, being based on the latest information available to Johnson Matthey PLC and is to the best of Johnson Matthey PLC's knowledge and belief, accurate and reliable at the time of preparation. However, no representation, warranty or guarantee is made as to the accuracy, liability or completeness and Johnson Matthey PLC assumes no responsibility therefore and disclaims any liability for any loss, damage or injury howsoever arising (including in respect of any claim brought by any third party) incurred using this information. The product is supplied on the condition that the end user accepts responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. Freedom from patent or any other proprietary rights of any third party must not be assumed.

### Liability

Copyright: Information and images contained on printed or electronic media or stored within web pages published by Johnson Matthey Public Limited Company ("Johnson Matthey") are copyright and the property of Johnson Matthey. Johnson Matthey authorises you to copy printed or electronic SDS documents either for non-commercial use or to support sales of genuine Johnson Matthey Metal Joining products. Any such copy shall retain all copyrights and other proprietary notices, and any disclaimer contained thereon. Please note that none of the content of these documents or web pages may be incorporated into, reproduced on, or stored in any other web site, or in any other publication, whether in hard copy or electronic form. You may not, without our permission, 'mirror' this information in your own documents, on a website, or modify or re-use text. Trademarks: The JM logo®, the Johnson Matthey® name and all product names referred to in printed or electronic documents or on pages published by Johnson Matthey are trademarks of the Johnson Matthey Group of companies.