



**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

**1.1 Product Identifier**

Trade name or designation of the mixture      **Easy-flo™ Flux Powder**

Synonyms      None.

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**1.2 Relevant identified uses of the substance or mixture and uses advised against**

**Identified uses**      Brazing flux for use with low-temperature silver brazing type filler metals that have liquidus temperatures of less than 750°C.

**Uses advised against**      None known.

**1.3 Details of the supplier of the safety data sheet**

**Company name**      Johnson Matthey Metal Joining

**Address**      York Way, Royston, Herts

SG8 5HJ

United Kingdom

**e-mail**      [mj@matthey.com](mailto:mj@matthey.com)

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

**Telephone number**      +44 (0) 1763 253 200

**1.4 Emergency telephone number**      +44 (0) 1763 253 000

**SECTION 2: Hazards Identification**

**2.1 Classification of the substance or mixture**

Classification according to Regulation (EC) No. 1272/2008

CLP classification



GHS08: Health hazard

Repr. 2: H361d      Suspected of damaging the unborn child.



GHS07: Irritant

Acute Tox. 4 H302      Harmful if swallowed

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

DPD classification



Xn: Harmful

R22, R63:      Harmful if swallowed. Possible risk of harm to the unborn child.

**Hazard Summary**

**Physical hazards**      Not classified for physical hazards.

**Health hazards**      As supplied, the product is harmful by ingestion, and will be irritating to the eyes. Skin contact may cause moderate irritation. If the skin is broken immediate irritation will occur on contact.

**Environmental hazards**      Not classified for hazards to the environment.

**Specific hazards**      The main hazards associated with this product arise when it is used as a brazing flux. On heating it will fume slightly and with overheating the flux 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 the evolution of flux fume always use the product with brazing filler metals that have liquidus temperatures of no greater than 750°C.

**Main symptoms**      Sensitisation. Irritation of nose and throat. Irritation of eyes and mucous membranes.

**2.2 Label elements**

Label according to Regulation (EC) No. 1272/2008

## Hazard Pictograms



GHS07



GHS08

## CLP Signal word

## Warning

## Hazard-determining components of labelling:

potassium difluorodihydroxyborate(1-)  
potassium tetraborate

## Hazard Statements (CLP)

H302 Harmful if swallowed  
H361d Suspected of damaging the unborn child.

## Precautionary statements (CLP)

P281 Use personal protective equipment as required.  
P264 Wash thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P308+P313 IF exposed or concerned: Get medical advice/attention.  
P405 Store locked up.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

## 2.3 Other hazards

Not a PBT or vPvB substance or mixture.

Presence of Substances of Very High Concern (SVHC) according to REACH Regulation terms.

## SECTION 3: Compositional information

## 3.2 Mixtures

## General information

Substance	CAS No.	EINECS No.	Hazards	% Concentration
Potassium difluorodihydroxyborate (1-)	85392-66-1	286-925-2	Acute Tox. 4, H302	25 to 50
			Xn, R22, R63	
Potassium tetraborate	12045-78-2	215-575-5	Repr. 2, H361fd	25 to 50
			Xn, R63, Repr. Cat 3	
Boric acid	10043-35-3	233-139-2	Repr. 1B, H360FD	< 1
			Xn, R22	

## SVHCs

Boric acid CAS No. 10043-35-3 is used as an ingredient in the manufacture of this flux, but undergoes reaction with other substances during manufacture of the product, which results in the formation of the potassium difluorodihydroxyborate compound. While the boric acid should be completely reacted away during the manufacturing process some possibility of some residue of un-reacted Boric acid being present in the product cannot be excluded above the 0.1% SVHC limit.

In addition, 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 of for both substances of 0.1% cannot be excluded.

## Compositional comments

The full text for all hazard statements is displayed in Section 16. All concentrations are in percent by weight unless ingredient is a gas.

## Additional information

None.

## SECTION 4: First aid measures

## General information

Get medical attention if any discomfort develops. Seek medical attention for all burns, regardless of how minor they may seem. Show this safety data sheet to the doctor in attendance.

## 4.1 Description of first aid measures

## Inhalation

Remove from source of exposure and allow to rest in fresh air. In acute cases apply artificial respiration and if necessary summon medical aid.

## Skin contact

Generally the product does not irritate the skin.



<b>Eye contact</b>	Irrigate with water or isotonic saline for up to 20 minutes. Seek medical attention if there is any hint of eye damage.
<b>Ingestion</b>	Rinse mouth with water & give patient water or milk mixed with calcium carbonate (chalk) to drink. Do not induce vomiting. Do not drink. Summon medical aid.
<b>4.2 Most important symptoms and effects, both acute and delayed</b>	In acute cases there is a danger of pulmonary oedema although this occurrence could also result from inhalation of brazing filler metal fume or torch gases.  Inhalation of the fume will be irritating to the nose and throat and will cause smarting of the eyes.  The product is toxic by ingestion, and will be irritating to the eyes.  Skin contact may cause moderate irritation.
<b>4.3 Indication of any immediate medical attention and special treatment needed</b>	Treat symptomatically. No specific antidote.

### SECTION 5: Fire fighting measures

<b>General fire hazards</b>	Non-flammable.
<b>5.1 Extinguishing media</b>	
<b>Suitable extinguishing media</b>	CO <sub>2</sub> , extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
<b>Unsuitable extinguishing media</b>	Not applicable.
<b>5.2 Special hazards arising from the substance or mixture</b>	Hydrogen fluoride (HF).
<b>5.3 Advice for fire-fighters</b>	
<b>Special protective equipment for fire-fighters</b>	Use full protection with breathing apparatus if involved in a fire as harmful fumes may be evolved.
<b>Special fire fighting procedures</b>	Not applicable.

### SECTION 6: Accidental release measures

<b>6.1 Personal precautions, protective equipment and emergency procedures</b>	
<b>For non-emergency personnel</b>	Avoid contact with skin or eyes.  Use personal protective equipment during clean-up operation, gloves, eye protection etc. as considered appropriate to the size and nature of the release. Do not inhale dust.
<b>For emergency responders</b>	Not applicable.
<b>6.2 Environmental precautions</b>	If product is likely to enter watercourse or sewerage system, inform necessary authorities. Product should be prevented from entering sewers, drainage systems and surface or groundwater. Dispose of all collected product / absorbent material as directed in Section 13.
<b>6.3 Methods and material for containment and cleaning up</b>	Scrape up as much of the spill as possible and place collected product into a suitable container for disposal. Wash contaminated area with soap and water and mop up as much as is possible.  Use absorbent material to mop up remaining diluted product. Place mopped up product and any absorbent material into a suitable container for disposal.
<b>6.4 Reference to other sections</b>	For safe handling see section 7. For personal protection, see section 8. For waste disposal, see section 13.

### SECTION 7: Handling and storage

<b>7.1 Precautions for safe handling</b>	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.
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- 7.2 Conditions for safe storage, including any incompatibilities** Store in a cool, dry place. Keep container closed when not in use. Do not freeze.
- 7.3 Specific end use(s)** No further relevant information available.

**SECTION 8: Exposure controls/personal protection**

**8.1 Control parameters**

**Occupational exposure limits**

Element	Long term (8 hour) TWA Value	Short term (15 mins) TWA Value
Potassium hydrogendifluoride (10-25%) (CAS 7789-29-9)	2.5 mg / m <sup>3</sup> (as fluorine)	-

TWA = Time weighted average

**Biological limit values** No biological exposure limits noted for the ingredient(s).

**Recommended monitoring procedures** Follow standard monitoring procedures.

**8.2 Exposure controls**

**Appropriate engineering controls** Avoid exposure to fume by using good natural ventilation or local exhaust extraction. 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.

**Individual protection measures, such as personal protective equipment**

**General information** If risk of inhalation exists, personal respiratory protection should be worn.

**Eye/face protection** It is recommended that safety glasses are worn when handling or using this product for brazing.

**Skin protection**

**- Hand protection** 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.

**- Other** None

**Respiratory protection** If risk of inhalation exists, personal respiratory protection should be worn.

**Thermal hazards** On heating product will fume slightly and with overheating the flux fumes will increase. The fumes produced may include hydrogen fluoride and boron trifluoride, which can cause irritation of the nasal passages, eyes and throat.

**Hygiene measures** Wash hands after using these products.

**Environmental exposure controls** See section 6.

**SECTION 9: Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

- Appearance** White powder.
- Physical state** Solid
- Form** Powder
- Colour** White
- Odour** No detectable odour.
- Odour threshold** Not applicable.
- pH** 8 (of aqueous paste)
- Melting point/freezing point** Not determined.
- Initial boiling point and boiling range** Not determined.
- Flash point** Not determined.



Evaporation rate	Not determined.
Flammability (Solid, gas)	Not determined.
<b>Upper/lower flammability or explosive limits</b>	
Flammability limit – lower (%)	Not determined.
Flammability limit – upper (%)	Not determined.
Vapour pressure	Not determined.
Vapour density	Not determined.
Relative density	Not determined.
Solubility	Partly soluble.
Partition coefficient (n-octanol/water)	Not determined.
Decomposition temperature	Not determined.
Viscosity	Not applicable.
Explosive properties	Product does not present an explosion hazard.
Oxidizing properties	Not determined.
<b>9.2 Other information</b>	No further relevant information available.
Bulk density	Not determined.
VOC (Weight %)	Not determined.

## SECTION 10: Stability and reactivity

10.1 Reactivity	Product is stable. Containers of powder left open may absorb moisture and become lumpy.
10.2 Chemical stability	Stable at normal conditions.
10.3 Possibility of hazardous reactions	Avoid contact with acids and strong oxidising agents.
Hazardous decomposition products	Hydrogen fluoride.
10.4 Conditions to avoid	Avoid contact with acids and strong oxidising agents.
10.5 Incompatible materials	Avoid contact with acids and strong oxidising agents.

## SECTION 11: Toxicological information

General information	Occupational exposure to the substance or mixture may cause adverse effects.
<b>Information on likely routes of exposure</b>	
Ingestion	Ingestion may cause irritation and malaise.
Inhalation	Fumes inhaled may include hydrogen fluoride and boron trifluoride, which can cause irritation of the nasal passages, eyes and throat.
Skin contact	Skin contact may cause moderate irritation. If the skin is broken immediate irritation will occur on contact.
Eye contact	Not likely given nature of product.
Symptoms	Sensitisation. Irritation of nose and throat. Irritation of eyes and mucous membranes.
11.1 Information on toxicological effects	

Values relevant for classification:	Test	Result
		LD <sub>50</sub> (oral – rat)

Individual elements	Test	Result
Potassium tetraborate (CAS 12045-78-2)	LD <sub>50</sub> (oral – rat)	3500-4100 mg/kg

Acute toxicity Not classified.



<b>Skin corrosion/irritation</b>	Not classified.
<b>Respiratory sensitisation</b>	When heated, the vapours/fumes given off may cause respiratory tract irritation.
<b>Skin sensitisation</b>	Not classified.
<b>Germ cell mutagenicity</b>	No test data available for the product.
<b>Carcinogenicity</b>	Risk of cancer cannot be excluded with prolonged exposure.
<b>Reproductive toxicity</b>	Potassium tetraborate has been classified a reproductive toxin category 2, Repr. Cat 2. and is suspected of damaging fertility or the unborn child.

**IARC Monographs. Overall Evaluation of Carcinogenicity**

Not classified According to <http://monographs.iarc.fr/ENG/Classification/index.php> accessed 08.04.2013

<b>Specific target organ toxicity – single exposure</b>	Not applicable.
<b>Specific target organ toxicity – repeated exposure</b>	Not applicable.
<b>Aspiration hazard</b>	Not applicable.
<b>Mixture versus substance information</b>	Not applicable.
<b>Other information</b>	None.

**SECTION 12: Ecological information**

**12.1 Toxicity** Potassium tetraborate:

Component	Test	Method	Test results
Potassium tetraborate	CL50	Daphnia (en bore (B) 48h daphnia magna straus)	133 mg/l
Potassium tetraborate	CL50 / 96h	Fish (en bore (B) – limanda limanda)	40 mg/l

<b>12.2 Persistence and degradability</b>	No further relevant information available.
<b>12.3 Bioaccumulative potential</b>	No further relevant information available.
<b>Partition coefficient n-octanol/water (log Kow)</b>	No further relevant information available.
<b>Bioconcentration factor (BCF)</b>	Unknown.
<b>12.4 Mobility in soil</b>	
<b>Mobility in general</b>	No further relevant information available.
<b>12.5 Results of PBT and vPvB assessment</b>	Not applicable.
<b>12.6 Other adverse effects</b>	Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.

**SECTION 13: Disposal considerations**

**13.1 Waste treatment methods**

<b>Residual waste</b>	Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
<b>Contaminated packaging</b>	Not applicable.
<b>EU Waste code</b>	Not applicable.
<b>Disposal methods/information</b>	Dispose according to local and national regulations. Registered waste contractors should be aware of the composition and data given in section 2 of this document.

**SECTION 14: Transport information**

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

<b>14.1 UN number</b>	Not classified for transport
<b>14.2 UN proper shipping name</b>	-



14.3 Transport hazard class(es)	-
14.4 Packing group	-
14.5 Environmental hazards	-
Tunnel restriction code	-
Labels required	-
14.6 Special precautions for user	-

**Maritime transport IMDG**

14.1 UN number	Not classified for transport
14.2 UN proper shipping name	-
14.3 Transport hazard class(es)	-
14.4 Packing group	-
14.5 Environmental hazards	-
Marine pollutant	-
Labels required	-
EmS No.	-
14.6 Special precautions for user	-
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	-

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

14.1 UN number	Not classified for transport
14.2 UN proper shipping name	-
14.3 Transport hazard class(es)	-
14.4 Packing group	-
14.5 Environmental hazards	-
Labels required	-
ERG Code	-
14.6 Special precautions for user	-

**SECTION 15: Regulatory information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

<b>EU Regulations</b>	Not listed under REACH Article 59(1) Candidate List as currently published by ECHA.
<b>Authorisations</b>	Not listed.
<b>Restrictions on use</b>	No restrictions on use.
<b>Other EU regulations</b>	Not regulated.
<b>Other regulations</b>	The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP regulation) as amended and respective national laws implementing EC directives. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006.
<b>National regulations</b>	Not listed.
<b>Water hazard class</b>	Water hazard class 1 (Self-assessment): slightly hazardous for water.
<b>Substances of very high concern (SVHC) according to REACH article 57:</b>	None.

**15.2 Chemical safety assessment** No Chemical Safety Assessment has been carried out.



**SECTION 16: Other information**

**List of abbreviations**

AOEL: Acceptable Operator Exposure Limit.  
 ACGIH: American Conference of Governmental Industrial Hygienists.  
 CAS: Chemical Abstracts Service.  
 CLP: Classification, Labelling and Packaging regulation governing substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.  
 EC: European Community.  
 GHS: Globally Harmonised System of classification and labelling of chemicals.  
 HSE: Health & Safety Executive.  
 IARC: International Agency for Research on Cancer.  
 IATA: International Air Transport Association.  
 IBC: Intermediate Bulk Container.  
 IMDG: International Maritime Code for Dangerous Goods.  
 LC: Lethal Concentration.  
 LC50: Lethal Concentration 50 percent kill.  
 LD: Lethal Dose.  
 LD50: Lethal Dose 50 percent kill.  
 LOAEL: Lowest Observed Adverse Effect Level.  
 LOEC: Lowest Observed Effect Concentration.  
 MARPOL: International Convention for the Prevention of Marine Pollution from Ships.  
 NIOSH: The National Institute for Occupational Safety and Health.  
 NOAEC: No Observed Adverse Effect Concentration.  
 NOAEL: No Observed Adverse Effect Level.  
 OSHA: Occupational Safety and Health Administration.  
 PBT: Persistent, Bioaccumulative and Toxic.  
 PEL: Permissible Exposure Limit.  
 ppm: Parts Per Million  
 REACH: Registration, Evaluation, Authorisation & restriction of Chemicals  
 SVHC: Substances of Very High Concern  
 vPvB: Very Persistent and very Bioaccumulative.

**References**

ESIS: European chemical Substances Information System  
 IRAC: International Agency for Research on Cancer

**Full text of any hazard statements and precautionary statements found in sections 2 to 15.**

H302 Harmful if swallowed.  
 H360FD May damage fertility. May damage the unborn child.  
 H361d Suspected of damaging the unborn child.

P281 Use personal protective equipment as required.  
 P264 Wash thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.  
 P308+P313 IF exposed or concerned: Get medical advice/attention.  
 P405 Store locked up.  
 P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

R22 Harmful if swallowed.  
 R63 Possible risk of harm to the unborn child.

**Training information** Training given should be followed when using this material.

**Other information** When assessing the risks of using this product a complete assessment of the risks can only be made in conjunction with the SDS for the brazing filler metal and taking into account any hazards associated with the brazing process, such as the gases given off from any torch flames.

**Former Occupational Exposure Limits EH40/2004**

Element	Long term (8 hour) TWA Value	Short term (15 minutes) TWA Value
Boron trifluoride (CAS No. 7637-07-2)	-	2.8 mg / m <sup>3</sup>

TWA = Time weighted average

**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.





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