Johnson Matthey Metal Joining

Materials Safety Data Sheet

1. Product Name: Brazing Fluxes

Product Description & Use: General purpose and special purpose brazing fluxes.

Product Identification:

Product Names	Form*	Working Range°C	pH†	Composition Group
Easy-flo™ Flux Paste	A	575 to 825	8	1
Easy-flo™ Flux Paste Aluminium Bronze Grade	A	550 to 775	5	4
Easy-flo™ Flux Paste Dipping Grade	A	550 to 750	9	1
Easy-flo™ Flux Powder	B	550 to 800	8	1
Easy-flo™ Flux Powder Medium Temperature Grade	B	600 to 800	▲	1
Easy-flo™ Flux Paste Stainless Steel Grade	A	550 to 775	8	1
Easy-flo™ Flux Powder Stainless Steel Grade	B	550 to 775	8	1
Mattiflux™ 100 Flux Paste	A	550 to 800	9.5	1
Mattiflux™ 3A Flux Paste	C	600 to 875	8	1A
Silver-flo™ Flux Paste	A	550 to 775	9	1
Silver-flo™ Flux Powder	A	450 to 775	▲	1
Tenacity™ No.2 Flux Powder	B	550 to 800	8	1
Tenacity™ No.2 Modified Flux Powder	B	550 to 800	8	1
Tenacity™ No.4A Flux Powder	B	600 to 850	8	2
Tenacity™ No.5 Flux Powder	B	600 to 900	9	2
Tenacity™ No.5A Flux Powder	D	600 to 900	8	2A
Tenacity™ No.6 Flux Paste	C	550 to 800	5.5	1A
Tenacity™ No.6 Flux Powder	D	550 to 800	8	1A
Tenacity™ No.12 Flux Powder	B	800 to 1300	▲	5
Tenacity ™ No. 14 Flux Powder	B	550 to 750	8	1
Tenacity™ No.20 Flux Powder	B	750 to 1000	▲	7
Tenacity™ No.125 Flux Paste	A	750 to 1200	7	3
Tenacity™ No.125 Flux Powder	B	750 to 1200	7	3
Flux Coating on filler metal rods	E	550 to 850	8	6

pH† of aqueous suspension ▲ Not measured

Form*

A = White aqueous paste
B = White powder
C = Brown Paste
D = Brown Powder
E = White / coloured compact flux coating

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2. Nominal Composition

Group 1.	Mixture of : potassium bifluoride, potassium tetraborate, potassium fluoroborate, boric acid and boric anhydride
Group 1A	Mixture of: Potassium bifluoride, potassium tetraborate, potassium fluoroborate, boric acid, boric anhydride and elemental boron.
Group 2	Mixture of: Potassium bifluoride, potassium tetraborate, potassium fluorosilicate, boric acid and boric anhydride
Group 2A	Mixture of: Potassium bifluoride, potassium tetraborate, potassium fluorosilicate, boric acid, boric anhydride and elemental boron
Group 3	Mixture of: Potassium tetraborate, potassium fluorosilicate, boric acid and borax
Group 4	Mixture of: Potassium tetraborate, potassium fluoroborate, zinc chloride, sodium chloride and lithium chloride.
Group 5	Mixture of: Borax, boric acid and potassium tetraborate.
Group 6	Mixture of: Potassium bifluoride, potassium tetraborate, potassium fluorosilicate, bonded with an organic polymer.
Group 7	Mixture of: Boric acid and borax

Note: The individual chemical substances that are identified above are known to react with each other during manufacture of the individual flux products to form new more complex compounds, the nature of which have not been established. The Health and Safety information, EC Material Classification etc. for the products have been determined by means of physical testing, see Section 11 Toxicological Data.

CAS Numbers For Chemical Substances Identified above.

Substance	CAS Number.
Borax	1303-96-4
Boric acid	10043-35-3
Boric anhydride	1303-86-2
Elemental boron	7440-42-8
Lithium chloride	7447-41-5

Substance	CAS number
Potassium bifluoride	7789-29-9
Potassium fluoroborate	14075-53-7
Potassium fluorosilicate	16871-90-2
Potassium tetraborate	1332-77-0
Sodium chloride	7647-14-5
Zinc chloride	7646-85-7

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3. Hazard Identification

The products identified above are classified as harmful as supplied.

The main hazards with these products occur when used as brazing fluxes. On heating the flux 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 always use the products with brazing filler metals that have liquidus temperatures 50°C less than the maximum working temperature shown within the table in Section 1.

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 brazing filler metal fume or torch gases. Inhalation of flux fume will be irritating to the nose and throat and will cause smarting of the eyes.

Fluxes are harmful by ingestion, and will be irritating to the eyes. Skin contact may cause moderate irritation.

Tests carried out on fluxes indicate that they are moderately irritating to the skin and if the skin is broken immediate irritation will occur on contact.

4. First Aid Treatment

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.
Ingestion	Rinse mouth with water & give patient water or milk mixed with calcium carbonate (chalk) to drink. Do not induce vomiting. Summon medical aid.
Eyes	Irrigate with water or isotonic saline for up to 20 minutes. Seek medical attention if there is any hint of eye damage.
Skin	Remove any contaminated clothing and wash skin 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

Powder	Carefully sweep up and collect in a suitable container for re-use or disposal.
Paste	Either collect in suitable container for re-use or disposal. For larger spills, cover with sand or other inert absorbent material and collect in suitable container for disposal. Wash area with water.
	Avoid contact with skin or eyes and do not inhale dust.

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7. Handling & Storage

Handling Use only under conditions of good local ventilation or efficient extraction systems and do not inhale fumes or dust 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. Observe good industrial hygiene practices.

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

8. Exposure Controls

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

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^3	-
Hydrogen fluoride (as F) (CAS No. 7664-39-3)	1.5 mg / m^3	2.5 mg / m^3
* Time Weighted Average		

PERSONAL PROTECTION

Avoid exposure to fume with good ventilation or local extraction. If risk of inhalation exists, personal respiratory protection should be worn. Safety glasses should be worn as well as gloves if required. Wash hands after using these products. The use of protective clothing is recommended. The use of barrier creams may help prevent skin irritation.

9. Physical & Chemical Properties

Appearance	White or brown powder or paste, see Section 1
Odour	No detectable odour
pH	See Section 1
Boiling/Melting Point	See Section 1
Flash Point	Not applicable
Flammability	Not flammable
Oxidising properties	Not oxidising
Solubility	Water-low solubility, no specific data.

10. Stability & Reactivity

Containers of powder left open may absorb moisture and become lumpy. Pastes are water based and, whilst stable, will lose water via evaporation if left open. Avoid contact with acids and strong oxidising agents.

No other adverse reactions are known.

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11. Toxicological Information

Toxicological data for these preparations: LD50 (oral-rat) >200mg/Kg

Classified as moderately irritating, according to Draize skin test.

12. Ecological Information

Likely to be harmful to all species of animal life. As far as is known no other threat is posed to the environment.

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

Not classified as hazardous for land, sea or air transport. No UN No's have been issued for fluxes.

15. Regulatory Information

EC Supply	Harmful	
Risk Phrases	R20/22	Harmful by inhalation and if swallowed
	R36/38	Irritating to eyes and skin
Safety Phrases	S20/21	When using do not eat, drink or smoke
	S22	Do not breath dust
	S23	Do not breath fumes
	S26	In case of eye contact, rinse immediately with water and seek medical advice
	S45	In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)
	S51	Use only in well ventilated areas

16. Other Information

This Material Safety Data Sheet conforms to 91/155/EEC – 2001/58/EC

For additional guidance see:

Johnson Matthey Metal Joining Materials Safety Data Sheet "Health and safety in Brazing".

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16. Other Information

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^3
* Time Weighted Average		

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