

# METALLI

## SAFETY DATASHEET – TENACITY™ No. 6 FLUX PASTE

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

- 1.1 Product Identifier**  
Trade name of designation of the mixture **Tenacity™ No. 6 Flux Paste**  
Synonyms None.  
Issue date 10 April 2013  
Version number 2
- 1.2 Relevant identified use of the substance or mixture advised against**  
Identified uses Brazing flux for use with low-temperature silver brazing type filler metals that have liquid temperatures of less than 750° C.  
Uses advised against None known.
- 1.3 Details of the supplier of the safety data sheet**  
Company name Metalli A/S  
Nyholms alle 46  
2610 Rødovre  
Denmark  
E-mail [info@metalli.dk](mailto:info@metalli.dk)  
Telephone number +45 3670 0544

### SECTION 2: Compositional information

#### 2.1 Mixtures

##### General information

Substance	CAS No.	EINECS No.	DPD-Classificering	CPL-Classificering	% Concentration
Potassium difluorodihydroxyborate (1-)	85392-66-1	286-925-2	 Xn, R22	 HS07, H302 Acute tox. Cat. 4	40 to 80
Lithium fluoride	7789-24-4	232-152-0	 T, R25 Xi, R36, R37, R38	 GHS08	<5
Boron	7440-42-8	231-151-2	 Xn, R20/22 R30	 GHS03 GHS08	<5

#### Composition comments

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

#### Additional information

None.

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### SECTION 3: Hazards Identification

#### 3.1 Classification of the substance or mixture

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

**Classification** Xn ; R22

#### 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 fume will increase. The fumes produced may include hydrogen fluoride and boron trifluoride, which can cause irritation of the nasal passages, eyes and throat.

Severe long term exposure to flux fume may result in fluorosis.

To minimize 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.

#### 3.2 Label elements

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



S-Phrases

R-Phrases

S-Phrases

R22

R62

R63

S29

R22

S2

**Harmful if swallowed**

**Possible risk of impaired fertility**

**Possible risk of harm to the unborn child**

**Do not empty into drains**

Harmful if swallowed

Keep out of the reach of children

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<b>S23</b>	Do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the manufacturer)
<b>S37</b>	Wear suitable gloves
<b>S46</b>	If swallowed, seek medical advice immediately and show this container or label.
<b>S51</b>	Use only in well-ventilated areas

**3.3 Other hazards** Not a PBT or vPvB substance or mixture.

### 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** Remove any contaminated clothing and wash skin immediately with soap and water. Seek medical attention if sores develop. Launder clothing before re-use.

**Eye contact** Irrigate with water or isotonic saline for up to 20 minutes. Seek medical attention if there is any hint of eye damage.

**Ingestion** Rise mouth water & give patient water or milk mixed with calcium carbonate (chalk) to drink. Do not induce vomiting. Summon medical aid.

#### 4.2 Most important symptoms and effects, both acute and delayed

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.

#### 4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically. No specific antidote.

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### SECTION 5: Fire fighting measures

	<b>General fire hazards</b>	Non-flammable
<b>5.1</b>	<b>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</b>	<b>Special hazards arising from the substance or mixture</b>	Hydrogen fluoride (HF).
<b>5.3</b>	<b>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</b>	<b>Personal precautions, protective equipment and emergency procedures</b>	
	<b>For non-emergency personnel</b>	Avoid contact with skin or eyes. Use personal equipment during clean-up operation, gloves, eye protection etc. as considered appropriate to the size and nature of the release.
	<b>For emergency responders</b>	Not applicable.
<b>6.2</b>	<b>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</b>	<b>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 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</b>	<b>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</b>	<b>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.
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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.

- 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 applicable.

### 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
Fluoride (10-25%) (CAS 1698448-8)	2.5 mg / m <sup>3</sup>	–

#### Biological limit values

No biological exposure limits 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

If 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 gloves supplier to most suitable type of gloves to protect against this type of product. Show gloves 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.

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- Other	None
<b>Respiratory protection</b>	If risk of inhalation exists, personal respiratory should be worn.
<b>Thermal hazards</b>	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.
<b>Hygiene measures</b>	Wash hands after using these products.
<b>Environmental exposure controls</b>	See section 6.

### SECTION 9: Physical and chemical properties

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

<b>Appearance</b>	Brown paste.
<b>Physical state</b>	Liquid
<b>Form</b>	Paste
<b>Colour</b>	Brown
<b>Odour</b>	No detectable odour
<b>Odour threshold</b>	Not determined
<b>pH</b>	Not determined
<b>Melting point/freezing point</b>	Not determined
<b>Initial boiling point and boiling range</b>	Not determined
<b>Flash point</b>	Not determined
<b>Evaporation rate</b>	Not determined
<b>Flammability (Solid, gas)</b>	Not determined
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit – lower (%)</b>	Not determined
<b>Flammability limit – upper (%)</b>	Not determined
<b>Vapour pressure</b>	Not determined
<b>Vapour density</b>	Not determined
<b>Relative density</b>	Not determined
<b>Solubility</b>	Partly soluble
<b>Partition coefficient (n-octanol/water)</b>	Not determined
<b>Decomposition temperature</b>	Not determined
<b>Viscosity</b>	Not applicable
<b>Explosive properties</b>	Product does not present an explosion hazard
<b>Oxidizing properties</b>	Not determined
<b>9.2 Other information</b>	No further relevant information available
<b>Bulk density</b>	Not applicable
<b>VOC (Weight %)</b>	Not applicable

### SECTION 10: Stability and reactivity

<b>10.1 Reactivity</b>	Product is stable. Containers of powder left open may absorb moisture and become lumpy.
<b>10.2 Chemical stability</b>	Stable at normal conditions.

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10.3	<b>Possibility of hazardous reactions</b>	Avoid contact with acids and strong oxidizing agents
	<b>Hazardous decomposition products</b>	Hydrogen fluoride
10.4	<b>Conditions to avoid</b>	Avoid contact with acids and strong oxidizing agents.
10.5	<b>Incompatible materials</b>	Avoid contact with acids and strong oxidizing agents.

### SECTION 11: Toxicological information

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

11.1	<b>Information on toxicological effects</b>	No data available for product.
	<b>Acute toxicity</b>	Not classified.
	<b>Skin corrosion/irritation</b>	Not classified.
	<b>Respiratory sensitization</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 further relevant information available.
	<b>Carcinogenicity</b>	Risk of cancer cannot be excluded with prolonged exposure.
	<b>Reproductive toxicity</b>	Possible risk of impaired fertility. Possible risk of impaired fertility. Limited evidence of a carcinogenic effect.

#### IARC Monographs. Overall Evaluation of Carcinogenicity

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

**Specific target organ toxicity – single exposure**  
Not applicable

**Specific target organ toxicity – Repeated exposure**  
Not applicable

**Aspiration hazard**  
Not applicable

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**Mixture versus substance information** Not applicable  
**Other information** None.

### SECTION 12: Ecological information

12.1	<b>Toxicity</b>	No further relevant information available
12.2	<b>Persistence and degradability</b>	No further relevant information available.
12.3	<b>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.
12.4	<b>Mobility in soil</b>	
	<b>Mobility in general</b>	No further relevant information available.
12.5	<b>Results of PBT and vPvB Assessment</b>	Unknown.
12.6	<b>Other adverse effects</b>	Water hazard class 1 (German Regulation) (Self-assessment): slightly Hazardous for water.

### SECTION 13: Disposal considerations

13.1	<b>Water treatment method</b>	
	<b>Residual waste</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.
	<b>Contaminated packaging</b>	Not applicable
	<b>EU waste code</b>	Not applicable.
	<b>Disposal methods/information</b>	Dispose according to local 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)

14.1	<b>UN number</b>	Not classified for transport
14.2	<b>UN proper shipping name</b>	-
14.3	<b>Transport hazard class(es)</b>	-
14.4	<b>Packing group</b>	-
14.5	<b>Environmental hazards</b>	-
	<b>Tunnel restriction code</b>	-
	<b>Labels required</b>	-
14.6	<b>Special precautions for user</b>	-

#### Maritime transport IMDG



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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 regulation specific for the substance or mixture

EU Regulations	Not regulated
Substances of very high concern (SVHC) according to REACH article 57:	None.
Authorisations	Not regulated.
Restrictions on use	No restrictions on use.
Other EU regulations	Not regulated.
Other regulations	The product is classified and labeled 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.
National regulations	Not regulated
15.2 Chemical safety assessment	No Chemical Safety Assessment has been carried out.

### SECTION 16: Other information

List of abbreviations	PBT:	Persistent, bioaccumulative and toxic.
	vPvB:	Very Persistent and very Bioaccumulative

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<b>References</b>	REACH:	Registration, Evaluation, Authorisation & restriction of Chemicals
	SVHC:	Substances of Very High Concern
	ESIS:	European chemical Substances information System
	IRAC:	International Agency for Research on Cancer
<b>Full text of any statements or R/S phrases used in sections 2 to 15</b>	R20/R22	Harmful by inhalation and if swallowed
	R22	Harmful if swallowed
	R25	Toxic if swallowed
	R30	can become highly flammable in use
	R36	Irritating to eyes
	R37	Irritating to respiratory system
	R38	Irritating to skin
	S20	When using do not eat or drink
	S26	In case of eye contact, rinse immediately with water and seek medical advice
	S36/37/39	Wear suitable protective clothing, gloves and eye/face protection
	S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
	S60	This material and its container must be disposed of as hazardous waste
	<b>Training information</b>	Training given should be followed when using this material
<b>Other information</b>	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

### REACH Substance of very High Concern.

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 (-1) compound. While the boric acid should be completely reacted away during the manufacturing process the possibility of some residue of unreacted 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 for both substances of 0.1% cannot be excluded.

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