

# 600-017 Etch in Bag Kit

## Description

Ferric Chloride Pellets in a dual chamber etching bag with storage box and neutraliser. One kit will etch 1600cm<sup>2</sup> of base material – 10 complete copper Eurocards 100 x 160mm

## Preparation

BEFORE HANDLING, WEAR PROTECTIVE CLOTHING AND READ THE HEALTH AND SAFETY INFORMATION ON THE REAR OF THIS SHEET

Add 250ml of hot tap water to the bag and seal above the liquid. The top part of the bag should be folded over the rod and then the sealing clip slid over the sealing rod. The clip should project an equal amount at each end of the bag. See Fig.2 and Fig. 3. As a guide 250ml of water can be obtained by filling the narrow measuring back to 2cm from the top. Gently move the liquid over the pellets to dissolve them.

## Usage

Place the PCB into the bag as in Fig. 1. Seal the bag as in Fig. 2 & 3. The bottom clip Fig. 4 can be removed and the etching process will begin. Lay the bag flat in a bowl of warm water to accelerate etching process and gently press flat with the palms of each hand alternatively. This causes the liquid to flow over the board with minimal wear on the bag. When the board is etched – hold it as in Fig. 6,7,8 and 9 and remove clip Fig. 10. Wash the top chamber out Fig. 11 remove the clean board, dry the top of the bag and if being stored reseal.

## Waste Disposal

Add the special grey powder supplied in the top chamber of the bag (as in picture 1). Stroke out the air and seal the bag just below the top edge. Pull off the bottom seal and mix the used etching solution well with the powder by shaking and then kneading. Some vapour formation takes place and the mixture becomes warm. Pull back the top seal half-way after kneading the remove excess air and vapour. Reseal the bag and knead again briefly. If excess vapour forms, release as before. In a few hours the mixture in the sealed bag will harden to form a solid mass. The bag is now ready for safe disposal.

## Health & Safety

Always wear protective clothing. Full Health and Safety information is supplied on this sheet.

## Associated Products

A range of associated products for use with this etchant are featured in our free product catalogue. Please telephone us for your copy.

## Supplier:



### Mega Electronics Limited

Mega House, Grip Industrial Estate, Linton, Cambridge, CB1 6NR  
Telephone: +44(0) 1223 893900 Fax: +44 (0) 1223 893894  
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THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE BELIEVED TO BE ACCURATE - HOWEVER NO GUARANTEE OR WARRANTY EXPRESSED OR IMPLIED IS GIVEN

## SECTION 1

### PRODUCT IDENTIFICATION AND MANUFACTURE

NAME: FERRIC CHLORIDE HEXAHYDRATE CRYSTALS.  
PART NO: 600-011 (250g) 600-012 (500g) 600-013 (2.5kg)  
600-017 ETCH IN BAG KIT

### MANUFACTURER'S/SUPPLIERS NAME, REGISTERED ADDRESS AND

#### EMERGENCY TEL NO:

MEGA ELECTRONICS LTD.,  
THE GRIP INDUSTRIAL ESTATE,  
LINTON, CAMBRIDGE.  
ENGLAND, CB1 6NR.  
TELEPHONE: +0044 01223 893900

### ORGANISATIONS NAME & ADDRESS AT WHICH MANUFACTURED

KEPETS GMBH.  
NORDSTRASSE 24  
D-35641 SCHÖFFENGRUND  
LAUFDORF.  
GERMANY.  
TEL: 0049 064 45/50 23-4

### SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	%BY WT	CAS & EEC Nos:	HAZARD	R PHRASE NOS:
FERRIC CHLORIDE HEXAHYDRATE	100	N/A	Xn Irritating to eyes & skin.	

### SECTION 3 HAZARDS IDENTIFICATION

MAY BE CORROSIVE TO MUCOUS MEMBRANES, EYES AND SKIN. ITS EFFECTS ARE SIMILAR TO THOSE OF ANY CAUSTIC SUBSTANCE. THE ESTIMATED ONE TIME LETHAL DOSE FOR 70 kg MAN IS 30g.

### SECTION 4 FIRST AID MEASURES

#### INHALATION:

MOVE TO FRESH AIR AND KEEP AT REST. IF RECOVERY IS NOT RAPID, SEEK MEDICAL ATTENTION.

#### SKIN CONTACT:

REMOVE CONTAMINATED CLOTHING. WASH AFFECTED AREA WITH SOAP AND WATER. IF IRRITATION OCCURS AND PERSISTS, SEEK MEDICAL ATTENTION.

#### EYE CONTACT:

FLUSH WITH WATER FOR 15 MINUTES. SEEK MEDICAL ATTENTION

#### INGESTION:

RINSE MOUTH OUT WITH WATER. DO NOT INDUCE VOMITING. SEEK MEDICAL ATTENTION.

**MEDICAL NOTES:** N/A

### SECTION 5 FIRE FIGHTING MEASURES

#### EXTINGUISHING MEDIA

NON FLAMMABLE, SO NO LIMITATIONS

#### COMBUSTION PRODUCTS

N/A

#### FIRE/EXPLOSION SCENARIOS

DECOMPOSES TO RELEASE CL AND HCL

#### SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS

SELF CONTAINED BREATHING APPARATUS SHOULD BE WORN.

### SECTION 6 ACCIDENTAL RELEASE MEASURES

#### PERSONAL PROTECTION

REFER TO SECTION 8; PERSONAL PROTECTION

#### ENVIRONMENTAL PRECAUTIONS

AVOID ENTRY INTO DRAINS & WATERWAYS.

#### WORKPLACE PRECAUTIONS

N/A

#### METHODS FOR CLEARING UP:

SWEEP AND GATHER PRODUCT; AVOID GENERATION OF DUST.

### SECTION 7 HANDLING AND STORAGE

#### HANDLING PRECAUTIONS

PREFERABLY HANDLE IN CONFINED SPACES. IF USING LARGE QUANTITIES, USE NON CORROSIVE EQUIPMENT.

**STORAGE INCLUDING ANY SPECIAL REQUIREMENTS (TEMPERATURE, VENTILATION, ETC)**

STORE IN PLASTIC CONTAINERS. KEEP IN WELL VENTILATED AREA, AWAY FROM REACTIVE SUBSTANCES.

### SECTION 8 EXPOSURE CONTROL/PERSONAL PROTECTION

#### ENGINEERING CONTROLS/ VENTILATION

NORMAL GOOD ROOM VENTILATION SHOULD BE SUFFICIENT.

**RESPIRATORY PROTECTION :** N/A

**EYE PROTECTION :** RECOMMENDED SPLASHPROOF GOGGLES

### HAND PROTECTION

RECOMMENDED IMPERVIOUS GLOVES e.g. NITRILE.

**SKIN PROTECTION:** RECOMMENDED IN FORM OF COVERALLS.

### SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE:** CRYSTALS **COLOUR:** YELLOW / BROWN

**ODOUR:** NONE

**ACIDITY/ALKALINITY pH:** 2.0

(Molar aqueous solution)

**BOILING POINT Im1-°C:**280-285 (1013mbar)

**MELTING POINT °C:** 37°C

**FLASH POINT °C (Open/Closed Cup):** N.A.

**AUTOIGNITION TEMP °C:** N.A.

**THERMAL DECOMPOSITION TEMP °C:** 160°C

**OXIDISING PROPERTIES:** STRONG OXIDISER

**EXPLOSIVE PROPERTIES:** NON FLAMMABLE

**EXPLOSIVE LIMITS AT 25°C (% VOL IN AIR)**

**LOWER: UPPER:**

**RELATIVE DENSITY:** 1.66

**SOLID CONTENT %:**

**SOLUBILITY IN WATER:** 920g /L at 20°C

**INSOLUBILITY IN ALCOHOL, ETHER AND ACETONE.**

**VOLATILE CONTENT**

**VAPOUR PRESSURE mmHg at 20°C**

**RELATIVE VAPOUR DENSITY (air = 1):**

(of principle component and name):

**EVAPORATION RATE**

**CONDUCTIVITY:**

(n-butyl acetate = 1):

### SECTION 10 STABILITY AND REACTIVITY PROPERTIES

**CONDITIONS TO AVOID:** NONE

**MATERIALS TO AVOID:** SOLUTIONS OF FERRIC CHLORIDE ACT AS AN ACID AND ARE POWERFUL OXIDISING AGENTS, DISSOLVING THE MAJORITY OF METALS (Cu, Ni, Sn, Pb, Mn, Fe, Co, etc)

#### HAZARDOUS DECOMPOSITION PRODUCTS:

INCLUDE CL AND HCL

**HAZARDOUS POLYMERISATION WILL NOT OCCUR**

### SECTION 11 TOXICOLOGICAL INFORMATION

**EFFECTS OF EYE CONTACT:** IRRITATION, TEARING, REDNESS RISK OF BURNS

**EFFECT OF SKIN CONTACT:** IRRITATION WHEN IN CONTACT WITH DAMP SKIN. RISK OF BURNS, RISK OF DERMATITIS AFTER REPEATED CONTACT. PERSISTENT PIGMENTATION OF SKIN ON REPEATED CONTACT.

**EFFECT OF INHALATION:** IRRITATION OF NOSE AND THROAT, COUGHING AND DIFFICULTY BREATHING AFTER PROLONGED OR REPEATED EXPOSURE. ULCERATION OF THE NOSE AND BROWN STAINING OF THE TEETH.

**EFFECT OR INGESTION:** LOW PROBABILITY OF RISK DUE TO ACRID TAST. IRRITATION AND BURNS TO MOUTH, THROAT AND STOMACH. NAUSEA, VOMITING, STOMACH CRAMPS AND DIARRHOEA. RISK OF SHOCK.

LD50 (ORAL HUMAN): 30g/70kg (est.)

LD50 (ORAL RAT): 900mg / kg

LD50 (ORAL MOUSE): 400mg / kg

### SECTION 12 ECOLOGICAL INFORMATION

Possible environmental effects and behaviour / ODP / aquatic toxicity.

EC50 (DAPHNIA) : 7.3mg / l (iron)

LC50 (FISH) : 26mg / l (iron)

ODP: N.A. – No other data available.

### SECTION 13 DISPOSAL CONSIDERATIONS

safe disposal of product, its residues an packaging materials. In accordance with local regulations via licensed contractor. May be neutralised to neutral pH

Dispose in a controlled landfill site. See also Sections 7 & 8 for handling precautions and personal protection where applicable.

### SECTION 14 TRANSPORT INFORMATION Not restricted.

### SECTION 15 REGULATORY INFORMATION

INDICATION OF DANGER ; BLACK ST ANDREW'S CROSS. HARMFUL

**CONTAINS:** FERRIC CHLORIDE HEXAHYDRATE

**RISK PHRASES & WORDS:**

36/38 Irritating to eyes and skin

**SAFETY PHRASES & WORDS:**

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

S26/37/39 Wear suitable protective clothing, gloves & eye/face protection

### SECTION 16 OTHER INFORMATION

**RECOMMENDED USES & RESTRICTIONS:** Use as directed

According to: 91/155/EEC, CHIP III

Update 040703.