

# FERRIC CHLORIDE ETCHANT (PELLETS)

Part Nos.: 600-011 - 250 grams  
600-012 - 500 grams  
600-013 - 2.5 kilos  
600-017 - Etch in Bag

## Description

Ferric Chloride pellets for producing a solution for etching copper printed circuit boards and other metals.

## Preparation

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

Each 500g will make 1 litre of etching solution. Add hot, 35°C water (50-60% of the total liquid required) to a suitable container. Slowly stir in the pellets until dissolved. Add the remaining hot water to make up the total volume of etching solution, 250g makes ½ litre, 500g makes 1 litre and 2.5kg makes 5 litres. Finally transfer the liquid to a suitable etching tank such as Mega's PA series etching tanks.

## Usage

For safe and efficient etching always use at approximately 45°C in a Mega temperature controlled Bubble Etch Tank.

## Health and Safety

Always wear protective clothing. Full Health and Safety details are on the rear of this instruction sheet. A report by an occupational hygienist concluded that under the test conditions, NO LOCAL VENTILATION IS REQUIRED using this etchant in Mega's PCB processing tanks.

## Ferric Stain Remover

Stains left from drips or splashes of the etching solution can be removed with Mega's 600-039 Ferric Chloride Cleaner (1 Kg).

## Associated Products

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



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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) 600-017 Etch in Bag.  
600-013 (2.5kg)

#### MANUFACTURER'S/SUPPLIERS NAME, REGISTERED ADDRESS AND EMERGENCY TEL NO:

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

#### ORGANISATIONS NAME & ADDRESS AT WHICH MANUFACTURED

KEPETS GMBH. TEL: 0049 6445 5810  
NORDSTRASSE 24  
D-35641 SCHÖFFENGRUND  
LAUFDORF.  
GERMANY.

#### 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: 0-37

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

**THERMAL DECOMPOSITION TEMP** °C: 0-160  
**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 DI AND HCl

**HAZARDOUS POLYMERISATION WILL NOT OCCUR**

#### SECTION 11 TOXICOLOGICAL INFORMATION

**EFFECT 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 OF INGESTION:**  
LOW PROBABILITY OF RISK DUE TO ACRID TASTE 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): 440mg / 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 and 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 PHRASE NOs & WORDS:**  
36/39 Irritating to eyes and skin.

**SAFETY PHRASE NOs & 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 and eye / face protection

**OTHER INFORMATION**  
**RECOMMENDED USES AND RESTRICTIONS:** Use only as directed.