

141-311
149 080

FERRIC CHLORIDE ETCHANT (PELLETS)

600-011 250g, 600-012 500g, 600-013 2.5kg

Description

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

Preperation

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.

Supplier:

Mega Electronics Ltd
Mega House
The Grip Industrial Estate
Linton
Cambridge
CB1 6NR

Tel No: (01223) 893900

Fax No: (01223) 893894

SECTION 1 PRODUCT IDENTIFICATION AND MANUFACTURE

NAME: FERRIC CHLORIDE HEXAHYDRATE CRYSTALS. PART NO: 800-011 (250g)
800-012 (500g)
800-013 (2.5kg)

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 893000

ORGANISATIONS NAME & ADDRESS AT WHICH MANUFACTURED:

KEPET'S GMBH
NORDSTRASSE 24
D-35841 SCHÖFFENGRUND
LAUFDOHR
GERMANY.
TEL: 0049 084 4560 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 AWAYS 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
(Aqueous solution)

BOILING POINT °C: 280-288 (1013mbar)

FLASH POINT °C (OpenCup): N/A

MELTING POINT °C: 37

AUTOIGNITION TEMP °C: N/A

OXIDISING PROPERTIES: STRONG OXIDISER

EXPLOSIVE PROPERTIES: NON FLAMMABLE

EXPLOSIVE LIMITS AT 20°C (% VOL IN AIR)

LOWER: UPPER:

RELATIVE DENSITY: 1.66

SOLUBILITY IN WATER:
220g/l at 20°C

VOLATILE CONTENT

VAPOUR PRESSURE mmHg at 20°C
(of principle component and name):

EVAPORATION RATE
(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

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 ACID 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): 200mg / kg
LD50 (ORAL MOUSE): 440mg / kg.

SECTION 12 ECOLOGICAL INFORMATION

Possible environmental effects and behaviour/COOP/aquatic toxicity
EC50 (DAPHNIA): 7.3mg / l (fem)
LC50 (FISH): 28mg / l (fem)
OOP: N/A - No other data available.

SECTION 13 DISPOSAL CONSIDERATIONS

Safe disposal of product, its residues and packaging materials.
In accordance with local regulations and packaging materials.
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

SECTION 16 REGULATORY INFORMATION

INDICATION OF DANGER: BLACK SL ANDREWS'S CROSS, HARMFUL

CONTAINS: FERRIC CHLORIDE HEXAHYDRATE

RISK PHRASE NOS & WORDS:
R36/38 Irritating to eyes and skin.

SAFETY PHRASE NOS & WORDS:
S28 In case of contact with eyes / rinse immediately with plenty of water and seek medical advice.
S36/37/38 Wear suitable protective clothing, gloves and eye / face protection

OTHER INFORMATION

RECOMMENDED USES AND RESTRICTIONS: Use only as directed.

PUBLICATION REFS: Compiled in accordance with CHIP Regulations 1993.
HSC Approved Code of Practice, Document L37.

SECTION REVISION AND DATES
Legend: N/A = Not applicable or Not Available
N.D. = Not Determined or Not Determinable.
EST. = Estimated