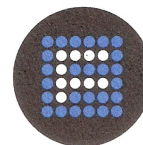
**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND  
COMPANY/UNDERTAKING****Product identifier****Product name:** AMCO 321**Other means of identification****Product code:** 333**Recommended use of the chemical and restrictions on use****Recommended use:** Galvanizing powder flux**Details of the supplier of the safety data sheet****Manufacturer:** Force Industries Division.  
28 Industrial Blvd. Paoli, PA 19301.**Emergency Telephone number**For hazardous materials incidents only, call CHEMTREC Emergency Response Number:  
1-800-424-9300.

For all other inquiries about this product, call Force Industries Division at 610-647-3575.

**SECTION 2: HAZARDS IDENTIFICATION****2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**Acute Toxicity 4 (Oral)  
Skin Corrosion 1B  
STOT SE 3  
Aquatic Acute 1  
Aquatic Chronic 1  
Carcinogenicity- Category 2  
Reproductive toxicity- Category 2  
Specific target organ toxicity – repeated exposure- Category 2  
Acute aquatic toxicity – Category 1  
Chronic aquatic toxicity- Category 1**Hazard statement(s)**H302 Harmful if swallowed  
H314 Causes severe skin burns and eye damage  
H315 Causes skin irritation  
H319 Causes serious eye irritation  
H335 May cause respiratory irritation  
H373 May cause damage to organs through prolonged or repeated exposure (lead)  
H351 Suspected of causing cancer (lead)  
H361 Suspected of damaging fertility or the inborn child (lead)  
H400 Very toxic to aquatic life  
H410 Very toxic to aquatic life with long lasting effects  
EUH201A Warning! Contains lead



## 2.2 GHS Label elements, including precautionary statements

## Emergency overview

<b>Appearance:</b>	Grey
<b>Physical state:</b>	Powder
<b>Odor:</b>	None
<b><u>DANGER</u></b>	

## Precautionary statement(s)

- P260 Do not breathe dust/fumes/gas/mist/vapors/spray.  
 P264 Wash thoroughly after handling.  
 P270 Do not eat, drink, or smoke while using this product.  
 P271 Use only outdoors or in a well-ventilated area.  
 P273 Avoid release to the environment.  
 P280 Wear protective gloves/clothing and eye/face protection.
- P301+P312+P330 IF SWALLOWED: Call a POISON CENTER/doctor and rinse mouth.  
 +P331 Do not induce vomiting.
- P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
- P332+P313 If skin irritation occurs: Get medical advice/attention.  
 P337+P313 If eye irritation persists: Get medical advice/attention.
- P362 Take off contaminated clothing.  
 P363 Wash contaminated clothing before reuse.  
 P391 Collect spillage.  
 P402 Store in a dry place.
- P403+P233 Store in a well-ventilated place. Keep container tightly closed.  
 P405 Store locked up.  
 P501 Dispose of contents/container in accordance with local/regional/national /international regulations.

## 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS –none.



### SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS No.</u>	<u>EINECS No.</u>	<u>Weight %</u>
Zinc Chloride	7646-85-7	231-592-0	< 30%
Ammonium Chloride	12125-02-9	235-186-4	< 15%
Tin	7440-31-5	231-141-8	< 25%
Lead	7439-92-1	231-100-4	< 15%
Zinc	7440-66-6	231-175-3	< 30%

Others, if any, are non-hazardous and claimed as trade secret.

### SECTION 4: FIRST AID MEASURES

#### 4.1 Description of first aid measures

##### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move patient out of dangerous area.

EYES: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Blindness can result.

SKIN: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Material can get absorbed through the skin. If rash or burns develop, consult a physician. Material is corrosive. Wash contaminated clothing before reuse and discard shoes.

INGESTION: If swallowed, do not induce vomiting. Give large quantities of water. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

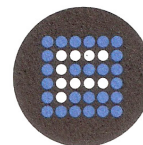
INHALATION: Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician

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

The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in section 11.

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

No data available



## SECTION 5: FIRE-FIGHTING MEASURES

### 5.1 Extinguishing media

Does not support combustion. Be aware of other materials in surrounding area to determine if water, fog, foam or CO<sub>2</sub> may be used.

### 5.2 Special hazards arising from the substance or mixture

May release ammonia, zinc oxide, and HCl. Toxic metal halide fumes produced. Dense smoke may be generated.

### 5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

### 5.4 Further information

No data available.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid breathing dust, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. For personal protection see section 8.

### 6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

### 6.3 Methods and materials for containment and cleaning up

If molten, allow to solidify, contain, absorb, sweep-up and dispose. Flush area to chemical sewer.

### 6.4 Reference to other sections

For disposal see section 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1 Precautions for safe handling

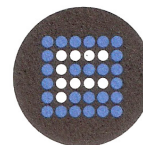
Wash thoroughly after handling to remove residue. Do NOT breathe dust/fumes. Professionally wash contaminated clothing. Material will naturally absorb moisture and cake solid.

### 7.2 Conditions for safe storage, including any incompatibilities

Store Flux at ambient conditions, keep extremely dry and controlled conditions. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.



## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

#### Components with workplace control parameters

Components	OSHA PEL	ACGIH
Zinc Chloride	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup> TWA
Ammonium Chloride	10.0 mg/m <sup>3</sup>	10.0 mg/m <sup>3</sup> TLV
Tin	2 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>
Lead	0.05 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Zinc	No Data	No Data

### 8.2 Exposure controls

#### Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

#### Personal protective equipment

##### Eye/face protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

##### Skin protection

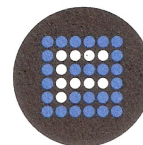
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

##### Full contact:

Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min

Splash contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min

This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated. It should not be construed as offering an approval for any specific use scenario.

**Body Protection**

Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection** Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure** Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES****9.1 Information on basic physical and chemical properties**

Appearance (physical state, color, etc.)	Grey powder
Odor	None
Flash point	Not Applicable
Evaporation rate	Not Applicable
Specific gravity	3.91
Solubility(ies)	Insoluble in water

**SECTION 10: STABILITY AND REACTIVITY****10.1 Chemical stability**

Stable under recommended storage conditions

**10.2 Possibility of hazardous reactions**

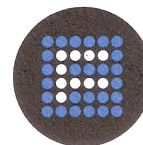
Will not occur / none.

**10.3 Incompatible materials**

Strong acids, nitric and sulfuric acids, cyanide

**10.4 Hazardous decomposition products**

In presence of water and heat, ammonia, HCl and zinc oxide



## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1 Component toxicity

Components	LC50/Inhalation	LC50/Dermal	LD50/Oral
Ammonium chloride	No data available	No data available	1410 mg/kg/Rat
Zinc Chloride	No data available	No data available	350 mg/kg/Rat
Tin	No data available	No data available	No data available
Lead	No data available	No data available	No data available
Zinc	No data available	No data available	No data available

### 11.2 Effects of Acute Overexposure:

- a. Inhalation: No data available
- b. Eyes: No data available
- c. Skin Contact: No data available
- d. Ingestion: No data available

### 11.3 Primary Route of Exposure:

No data available

### 11.4 Effects of Chronic Exposure:

No data available

### 11.5 Target Organs:

No data available

### 11.6 Reproductive Effects

No data available

### 11.7 Carcinogenicity:

Effects on animals are classified A3 (proven) by ACGIH. Effects on humans is classified 2B (possible) by IARC. May cause damage to the following organs: blood, kidneys, and central nervous system (CNS).

## SECTION 12: ECOLOGICAL INFORMATION

### 12. ECOLOGICAL INFORMATION

#### 12.1 Toxicity

Components	LC50/96hr/48hr/24hr	EC50/96/48hr/24hr	Bioaccumulation Concentration Factor	No Observable Effect Concentration/96hr/48hr/24 hr
Zinc Chloride	0.4 – 2.2 mg/l (carp)	0.2 mg/l (flea)	No data available	No data available
Ammonium Chloride	46.27 mg/l (Prosopium williamsoni, 96 hr)	136.6 mg/L (Daphnia Magna, 48hr)	No data available	No data available

# SAFETY DATA SHEET



**FORCE  
INDUSTRIES  
DIVISION**

<b>Tin</b>	<b>No data available</b>	<b>No data available</b>	<b>No data available</b>	<b>No data available</b>
<b>Lead</b>	<b>No data available</b>	<b>No data available</b>	<b>No data available</b>	<b>No data available</b>
<b>Zinc</b>	<b>No data available</b>	<b>No data available</b>	<b>No data available</b>	<b>No data available</b>

## 12.2 Persistence and degradability

No data available

## 12.3 Bio-accumulative potential

No data available

## 12.4 Mobility in soil

No data available

## 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

## 12.6 Other adverse effects

No data available

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional to dispose of in accordance with federal, state, and local regulations.

#### Contaminated packaging

Dispose of as unused product.

## SECTION 14: TRANSPORT INFORMATION

**UN Number:** 2331

**UN Proper shipping name:** Zinc chloride, anhydrous

**Transport Hazard Class:** 8

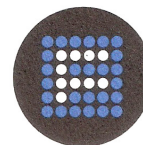
**Packing group, if applicable:** PGIII, RQ (Lead)

**Marine pollutant (Yes/No):** Yes

Unless your shipments qualify for an exemption, you must mark the products with the marine pollutant label and add the words "Marine Pollutant" to the product's basic description on the bill of lading.



# SAFETY DATA SHEET



FORCE  
INDUSTRIES  
DIVISION

Special precautions which a user needs to be aware of or needs to comply with in connection with transport or conveyance either within or outside their premises.

ERG Guide No. 154

## SECTION 15: REGULATORY INFORMATION

### CERCLA Reportable Quantities

The product contains Zinc Chloride - Reportable Quantity- 1000 lbs. per 49 CFR 172.101

The product contains lead – Reportable Quantity – 10 lbs. per 49 CFR 172.101

Not regulated in packages less than 26.6 lbs.

### SARA Title III Section 311/312 Hazard Categories:

Acute Health Hazard

Chronic Health Hazard

### SARA Title III 313 Reportable Substances

If listed below components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

Zinc Chloride 7646-85-7

Zinc Compounds N982

Lead 7439-92-1

### Toxic Substance Control Act (TSCA)

If listed below, non-proprietary substances are subject to export notification Section 12 (b) of TSCA:

None listed

### California Proposition 65

This product does contain a chemical known in the State of California to cause cancer – Lead.

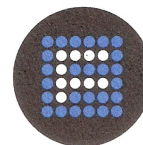
### Chemical Inventory Status

Unless otherwise noted; this product is compliant with the inventory listings of the countries shown below. For information listings for countries not shown, contact the Product Regulatory Department.

Canada - DSL (Domestic Substance List): All raw materials used in this product are listed on DSL

USA - TSCA (TOXIC SUBSTANCE CONTROL ACT): All raw materials used in this product are listed on TSCA Inventory.

Europe - All raw materials used in this product are listed on EINECS Inventory.



<b>SECTION 16: OTHER INFORMATION</b>
--------------------------------------

**Full text of H-Statements referred to under sections 2 and 3.**

Acute Toxicity 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment- Chronic Hazard, Category 1
Skin Corr. 1B	Skin corrosion/irritation, Category 1B
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H335	May cause respiratory irritation
H410	Very toxic to aquatic life
H400	Very toxic to aquatic life with long lasting effects

**HMIS:**

Health: 3  
 Flammability: 0  
 Reactivity: 0

**PREPARATION DATE:** May 2, 2017

**SUPERCEDES:** July 2, 2007

**PREPARATION INFORMATION:** Technical Service Department, Force Industries Division

**DISCLAIMER:** The data set forth in these sheets are based on information provided by the suppliers of the raw materials and chemicals used in the manufacture of the aforementioned product. Force Industries makes no warranty with respect to the accuracy of the information provided by their suppliers, and disclaims all liability of reliance thereon. Force Industries warrants only that its products conform to their published specifications and no other express warranty is made with regards thereof. We do not guarantee favorable results, and we assume no liability in connection with the use of the products. They are intended for use by persons having technical skill and knowledge, at their own discretion and risk.