



## Section 1. Product and Company Identification.

**1.1 Model Number;** E/START1600 v2  
**1.2 Description;** ElectroStart® Batteryless Power Start 1600A 12V  
 Capacitor: 28 Volts. 80 Farads. 630 grams.

### 1.3 Manufacturer;

Sealey Group.  
 Kempson Way,  
 Bury St. Edmunds,  
 Suffolk.  
 IP32 7AR

**1.4 Emergency telephone number;** 44 (0) 1284 757 500 (Office Hours)

**Date of source compilation;** 05 August 2015

## Section 2. Hazards Identification.

Capacitor is hermetically sealed and does not present a hazard under normal conditions of use. Inappropriate handling and / or use can cause electrolyte to leak.

**Ingestion:** Contents of an open battery can be harmful if swallowed.

**Inhalation:** Contents of an open battery can cause respiratory irritation.

**Skin Contact:** Contents of an open battery can cause skin irritation.

**Eye Contact:** Contents of an open battery can cause irritation.

## Section 3. Substances.

3.1 Chemical Name (substance)	3.1 CAS No.	3.2 Concentration Weight	Classification	
			Hazard Class & Category Code	Hazard Statements <sup>1</sup>
Aluminium	7429-90-5	30 -45%	Flam. Sol. 1 Water-react. 2	H228 H261
Acetonitrile	75-05-8	25 - 30%	Flam. Liq. 2 Acute Tox. 4 Acute Tox. 4 Acute Tox. 4 Eye Irrit. 2	H225 H332 H312 H302 H319
Carbon, activated	7440-44-0	15 - 25%	-	-
Tetraethyl ammonium tetra fluoroborate	429-06-1	< 15%	-	-
Cellulose	9004-34-6	< 5%	-	-

For full text of Phrases and Statements, see Section 16.



## Section 4. First Aid Measures.

### 4.1 Description of first aid measures

#### Inhalation

If breathing difficulties develop, remove the person to fresh air.  
Loosen close fitting clothing.  
Ensure that person is warm.

#### Skin Contact

Remove contaminated clothing.  
Flush affected area(s) with copious amounts of water for at least 15 minutes.  
If irritation is experienced, get medical attention.

#### Eye Contact

Remove contact lenses, if present and easy to do.  
Irrigate eyes with water for at least 15 minutes while raising eyelid(s).  
Get medical attention.

#### Ingestion

If swallowed, do not induce vomiting.

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

No data available.

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

No data available.

## Section 5. Fire Fighting Measures.

### 5.1. Extinguishing media

Dry Sand, Graphite Powder, Dry Sodium Chloride based extinguishers

#### DO NOT USE:

Water, CO<sub>2</sub>, Foam or Halogenated Fire Extinguishers.

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

No data available.

### 5.3. Advice for fire-fighters

Fire Fighters should wear self-contained breathing apparatus and appropriate Personal Protective Equipment.



## Section 6. Accidental Release Measures.

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

In the event of capacitor rupture and leakage,

Ventilate the area.

Remove sources of ignition.

Wear appropriate protective clothing (see Section 8) to prevent eye and skin contact and to prevent inhalation of vapours or fumes.

### 6.2. Environmental precautions

No data available.

### 6.3. Methods and material for containment and cleaning up

Absorb released materials with inert absorbent (dry sand or soil).

Collect released materials into sealed plastic bag or container.

Prevent material from contaminating soil or entering sewers or waterways.

Do not dispose of released materials with domestic waste

Do not allow product to enter ground water, water course or sewerage system.

Dispose of released materials in accordance with local authority regulations.

### 6.4. Reference to other sections

See Section 7 for information on Safe Handling

See Section 8 for information of Personal Protective Equipment.

See Section 13 for information on disposal.

## Section 7. Handling and Storage.

### 7.1. Precautions for safe handling

Never dismantle or modify a capacitor.

Do not short circuit a capacitor. A short circuit causes heating and can lead to ignition of surrounding materials.

Physical contact with a short-circuited capacitor can cause skin burn.

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

Prevent contact with conductive materials.

Do not allow contact with water.

Store in original container. Keep container tightly closed.

Store in a dry, cool place.

Store away from ignition sources, heat, and incompatible materials.

### 7.3. Specific end use(s)

Intended for use as the capacitor for the Model Number identified in 1.1 with Description stated in 1.2.



## Section 8. Exposure Controls/Personal Protection.

### 8.1. Control parameters

*In the event of a damaged capacitor:*

Workplace exposure limits.

Substance	CAS number	Workplace exposure limit.			
		Long term.		Short term.	
		ppm	mg.m <sup>3</sup>	ppm	mg.m <sup>3</sup>
Aluminium Inhalable dust Respirable dust	7429-90-5	- -	10 4	- -	- -
Acetonitrile	75-05-8	40	68	60	102
Carbon, activated Inhalable dust Respirable dust	7440-44-0	- -	10 4	- -	- -
Cellulose Inhalable dust Respirable dust	9004-34-6	- -	10 4	- -	- -

### 8.2. Exposure controls

The use of Personal Protective Equipment (PPE) is not necessary under conditions of normal use.

If handling a leaking or ruptured capacitor, ensure that the following Personal Protective Equipment (PPE) is used.

#### Eye/Face Protection

Chemical grade full face shield

#### Skin Protection

Use Gloves specified to EN ISO 374

Protective rubber apron

Appropriate Personal Protection with long sleeves and long trousers.

#### Respiratory Protection

Acid gas filter mask or self-contained breathing apparatus.



## Section 9. Physical and Chemical Properties.

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

Appearance: Solid. Silver.

## Section 10. Stability and Reactivity.

<b>10.1.</b> Reactivity	No data available.
<b>10.2.</b> Chemical stability	Stable.
<b>10.3.</b> Possibility of hazardous reactions	No data available.
<b>10.4.</b> Conditions to avoid	No data available.
<b>10.5.</b> Incompatible materials	No data available.
<b>10.6.</b> Hazardous decomposition products	Carbon Monoxide, Carbon Dioxide, Nitrogen Oxides



## Section 11. Toxicological Information.

### 11.1. Information on toxicological effects

#### Toxicity

Material	Toxicity	Irritation
Acetonitrile	Dermal (rabbit) LD50: 400mg/kg	Eye (rabbit) 23mg (open)-SEVERE
	Inhalation (rat) LC50: 17100ppmh/4H	Skin (rabbit) 500mg (open)-mild
	Oral (rat) LD50: 13444.49 mg/kg	

*In the event of a damaged capacitor the following information refers to the exposure of the contents.*

#### Ingestion.

Accidental ingestion of the material may be harmful.

Nitrile poisoning exhibits similar symptoms to poisoning due to hydrogen cyanide.

Substances irritate the eyes and skin and are absorbed quickly and completely through the skin.

Acute toxic responses to aluminium are confined to the more soluble forms.

Borate poisoning causes nausea, vomiting, diarrhoea and pain in the upper abdomen.

Often persistent vomiting occurs, and there may be blood in the faeces.

Concentrated solutions of many cationics may cause corrosive damage to mucous membranes and the oesophagus.

Nausea and vomiting (sometimes bloody) may follow ingestion.

Cyanide poisoning can cause increased saliva output, nausea without vomiting, anxiety, confusion, dizziness, stiffness of the lower jaw, convulsions, spasm, paralysis, coma and irregular heartbeat and stimulation of breathing followed by failure. Often the skin becomes cyanosed (blue grey) and this often delayed.

#### Skin contact.

Skin contact with the material may be harmful; systemic effects may result following absorption.

This material can cause inflammation of the skin on contact in some persons.

The material may accentuate any pre-existing dermatitis condition.

Slight irritation may result from contact because of the abrasive nature of the aluminium oxide particle.

Thus it may cause itching and skin reaction and inflammation.

Cationic surfacants cause skin irritation and, in high concentrations, caustic burns.

Prevent open cuts, abraded or irritated skin from being exposed to this material.

Entry into the blood stream through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

#### Eye contact.

Many cationic surfacants are very irritating to the eyes at low concentration.

Concentrated solutions can cause severe burns with permanent clouding.

There is evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation.

Severe inflammation may be expected with pain.



## Section 11. Toxicological Information, continued.

### Chronic

Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long term occupational exposure.

May cause lung disease, depending on the size of the particle. The smaller the size, the greater the tendency to cause harm.

Exposure to large doses of aluminium has been connected with the generative brain disease Alzheimer's disease.

Chronic exposure to cyanides and certain nitriles may result in interference to iodine uptake by thyroid gland and its subsequent enlargement.

This occurs following metabolic conversion of the cyanide moiety to thiocyanate.

Prolonged or repeated skin contact may cause degreasing with drying, cracking and dermatitis following.

Borate can accumulate in the testes and deplete germ cells and cause withering of the testicles.

Hair loss, skin inflammation, stomach ulcer, and anaemia can all occur.

## Section 12. Ecological Information.

12.1. Toxicity See Section 11.

12.2. Persistence and degradability

	Persistence: Water/Soil	Persistence: Air
<b>Acetonitrile</b>	HIGH (Half-life = 360 days)	HIGH (Half-life = 541.29)
<b>Cellulose</b>	LOW	LOW

12.3. Bioaccumulative potential

<b>Acetonitrile</b>	LOW (BCF = 4)
<b>Cellulose</b>	LOW (LogKOW = -5.1249)

12.4. Mobility in soil

<b>Acetonitrile</b>	LOW
<b>Cellulose</b>	LOW

12.5. Results of PBT and vPvB assessment No data available.

12.6. Other adverse effects No data available.

## Section 13. Disposal Considerations.

### 13.1. Waste treatment methods

Disposal of the capacitor must be in accordance with local authority regulation requirements for hazardous waste treatment and hazardous waste transportation.

The capacitor should be completely discharged prior to disposal and the terminals taped or capped to prevent short circuit.

Do not dispose of capacitors at landfill sites.

Do not incinerate capacitors.



## Section 14. Transport Information.

### ADR. International Carriage of Dangerous Goods by Road.

14.1. UN number	UN 3499
14.2. Name and Description	Capacitor, electric double layer
14.3. Transport hazard class(es)	Class 9
14.4. Packing group	-
14.5. Environmental hazards	Does not present an environmental hazard.
14.6. Special precautions for user	No special precautions necessary.

### IATA. International Air Transport Association.

14.1. UN number	UN 3499
14.2. UN Proper Shipping Name/Description	Capacitor, electric double layer
14.4. Packing group	-

### **Special Provision A186**

This entry applies to electric double layer capacitors with an energy storage capacity greater than 0.3 Wh.

Capacitors with an energy storage capacity of 0.3 Wh or less are not subject to these Regulations.

Energy storage capacity means the energy held by a capacitor, as calculated using the nominal voltage and capacitance. All capacitors to which this entry applies, including capacitors containing an electrolyte that does not meet the classification criteria of any class or division of dangerous goods, must meet the following conditions:

- (a) capacitors not installed in equipment must be transported in an uncharged state. Capacitors installed in equipment must be transported either in an uncharged state or protected against short circuit;
- (b) each capacitor must be protected against a potential short circuit hazard in transport as follows:
  1. when a capacitor's energy storage capacity is less than or equal to 10 Wh or when the energy storage capacity of each capacitor in a module is less than or equal to 10 Wh, the capacitor or module must be protected against short circuit or be fitted with a metal strap connecting the terminals; and
  2. when the energy storage capacity of a capacitor or a capacitor in a module is more than 10 Wh, the capacitor or module must be fitted with a metal strap connecting the terminals.
- (c) capacitors containing dangerous goods must be designed to withstand a 95 kPa pressure differential;
- (d) capacitors must be designed and constructed to safely relieve pressure that may build up in use, through a vent or a weak point in the capacitor casing. Any liquid which is released upon venting must be contained by packaging or by equipment in which a capacitor is installed; and
- (e) capacitors manufactured after 31 December 2013 must be marked with the energy storage capacity in Wh.

Capacitors containing an electrolyte not meeting the classification criteria of any class or division of dangerous goods, including when installed in equipment, are not subject to other provisions of these Regulations.

Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, with an energy storage capacity of 10 Wh or less are not subject to other provisions of these Regulations when they are capable of withstanding a 1.2 m drop test unpackaged on an unyielding surface without loss of contents.

Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods that are not installed in equipment and with an energy storage capacity of more than 10 Wh are subject to these Regulations.



**Section 14. Transport Information, continued.**

Capacitors installed in equipment and containing an electrolyte meeting the classification criteria of any class or division of dangerous goods are not subject to other provisions of these Regulations provided the equipment is packaged in a strong outer packaging constructed of suitable material and of adequate strength and design in relation to the packaging's intended use and in such a manner as to prevent accidental functioning of capacitors during transport. Large robust equipment containing capacitors may be offered for transport unpackaged or on pallets when capacitors are afforded equivalent protection by the equipment in which they are contained.

**14.5. Environmental hazards** Does not present an environmental hazard.

**14.6. Special precautions for user** No special precautions necessary.

**IMDG. International Maritime Dangerous Goods.**

**14.1. UN number** UN 3499

**14.2. UN proper shipping name** Capacitor, electric double layer

**14.3. Transport hazard class(es)** Class 9

**14.4. Packing group** -

**14.5. Environmental hazards** Does not present an environmental hazard.

**14.6. Special precautions for user** No special precautions necessary.

**14.7. Transport in bulk – Maritime only.** Bulk transport is not applicable to this product



## Section 15. Regulatory Information.

**15.1.** Safety, health and environmental regulations/legislation specific for the substance or mixture  
HSE Workplace Exposure Limits - EH40

**15.2.** Chemical safety assessment  
No data available.

## Section 16. Additional Information.

Full text of Phrases and Statements used in Section 3;

H228 Flammable solid.  
H225 Highly flammable liquid and vapour.  
H261 In contact with water releases flammable gases.  
H302 Harmful if swallowed.  
H312 Harmful in contact with skin.  
H319 Causes serious eye irritation.  
H332 Harmful if inhaled.

The above information is believed to be accurate and represents the best information currently available.

No warranty is expressed or implied by the above information.

We assume no liability resulting from use of the above information.

The end user should conduct their own investigations to determine the suitability of the above information for their particular purpose.

Issue level	Date	Revisions
1	08/08/19	First issue.
2	14/08/19	Section 14

End of Safety Data Sheet.