

ARC INNOVATIONS



**ECOSTAR
BACKFILL**

Ec0star (refer to MSDS and TDS)

Ec0star complies with the 32.5 specification when tested as per SANS 50197.

Ec0star achieved strengths of approximately 5.7MPa for 28 days by using 8% of binder.

Arc Innovations has a delivery capacity of 8-10 trucks per day. Each truck has a capacity of up to 32 tons meaning that Arc Innovations can deliver around 250 – 320 tons per day.

Conventional backfill binders bleed at a rate between 29 to 36%. Ec0star is currently at 18% to 22%. Based on the 18% to 22% bleed, that is approximately 15% more gained backfill volume underground.

The efficiency % per ton of Backfill placed is currently 80%. Arc Innovations have already started to look at ways to make improvements on the product. The phase 2 product that is currently being finalised will have a 0% bleed that is required to attain tight-fill and reduce the amount of water seeping through the rock or into excavations. This has also been tested and verified at external laboratories.

The higher bleed of backfill placed results in more water accumulating underground. This means that larger volumes of water will require pumping resulting in higher maintenance on pumps. Bleed water running through fissures cause disruption to other underground works thus lowering the production rate of the mine. The movement of the material through fissures also require additional amounts of backfill to be placed. This was one of the crucial aspects that Arc Innovations experienced underground.


Mining Charter Compliance

There are many advantages of purchasing Ec0star in terms of the Mining Charter Compliance as Ec0star is a 100% locally manufactured product and Arc Innovations are a level two B-BBEE compliant company with 65% black ownership.

Flow Rate

The flow rate of Ec0star is approximately 6.9 seconds.

Benefits Of Using Ec0Star

- Strengths of 5.7MPa achieved for 28 days using 8% binder.
 - Product complies with 32.5 specification when tested as per SANS 50197.
 - Efficiency % per ton of backfill placed is currently 80%.
 - A 100% efficiency of backfill placed can be achieved in the phase 2 of the product.
 - Currently 15% more gained backfill volume underground compared to conventional backfill binders.
 - Ec0star is a 100% locally manufactured product.
 - The flow rate is approximately 6.9 seconds.
- 

Description

Ec0Star is a propriety blended cementitious material designed to be blended with mine tailings to achieve stable backfill.



Typical Uses :

Ec0Star is typically used in backfill operations to achieve a stable backfill product in a weep or non-weep system.

Further benefits are:

- Ability to set and strengthen in low waterflow.
- Low bleeding.
- Good flowability and pumpability for long durations.
- Low pump pressures.
- Low carbon footprint.
- Increase production achievable with the same labour force and equipment.



Special Features :

Ec0Star increases fluidity and lubrication in underground pipeline systems.



Limitations :

Ec0Star should not be used in an unventilated environment.



Physical Properties :

pH	12.0
Specific Gravity	2750-2900kg/m ³
Colour	GREY

Please read MSDS in conjunction with the TDS.



Packaging :

30kgs Bags or bulk tanker



Storage :

Keep in bulk silos or cool containers off the ground.



Shelf Life :

6 months if correctly stored.



Technical Advice

The technical department is available to assist with advice on the correct application of the Ec0Star.



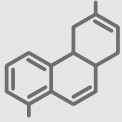


1. Company Details

Name: ARC Innovations (PTY)LTD

Address: 82 Bonnyvale road, Norton Home Estates
Benoni, 1501

In case of an emergency contact either Cyril Attwell (0784563833) or
Umar Kadwa (0844560011)



2. Composition

Product name : Ec0star

CAS no : CAS # 12168-85-3

CAS # 10034-77-2

CAS # 12042-78-3

CAS # 12068-35-8

CAS # 13397-24-5

CAS # 1305-78-8



3. Hazardous Identification

Hazard Classification – Irritant

(ii) Hazard ID - Rating

- (a) Health Rating : 1 - Slight
- (b) Flammability : 0 - None
- (c) Instability : 2 - Moderate
- (d) Contact Rating : 2 - Moderate

(iii) Personal Protective Equipment: Wear gloves and long sleeves

(iv) Overview: Ec0star dust acts as a skin and respiratory irritant. Dust and wet Ec0star act as a serious eye irritant. Long term exposure may lead to contact dermatitis.



4. First Aid Measures

First Aid Inhaled : Remove exposed person to fresh air. Prolonged exposure at high dust concentrations may cause a cough and phlegm.

First Aid Skin : Wash with water and soap.

First Aid Eyes : Wash eyes with large volumes of water. Seek medical attention.

The fornices (behind the eyelids) should always be checked for congealed material.

First Aid Ingested : Ingestion in a harmful quantity is very unlikely to occur.

If ingested drink plenty of water and consult a doctor immediately.

DO NOT INDUCE VOMITING.



5. Fire Fighting Measures

This product is not combustible, use agent most appropriate to extinguish surrounding fire.



6. Accidental Release Measures

Personal precautions : Dust mask where TLV is exceeded. Wear eye shielding. Any type of glove which prevents contact with the product

Environmental precautions : Non toxic in small quantities. Large quantities in water will lead to high pH values, up to 12.5. Aquatic life will be endangered.

The Ec0star will harden, possibly forming a crust. It may dissolve slowly in acid conditions

(1) Small spills

(a) Containment Sweep up. Prevent dust becoming airborne

(b) Clean-up Sweep up. Prevent dust becoming airborne

(2) Large spills

(a) Containment Sweep up. Prevent dust becoming airborne (b) Clean-up Sweep up.

Prevent dust becoming airborne



7. Handling and storage

During handling aerated Ec0star has liquid properties which disperse after settlement.

Storage Colour Code : Orange

Suitable Material : Paper or plastic bags. Silos, bin.



8. Exposure Controls/Personal Protection

Occupational exposure limits : TWA OEL RL 5mg/m³ respirable dust, 10mg/m³ total inhalable dust.

Personal protection : Dust mask, safety glasses or goggles, gloves 9. Physical & Chemical Properties

Physical Properties :

Fine grey to white powder. Particle size < 0.1 mm. Relative density 2.2 to 3.8 g/ml Melting point > 1500°C

Alkalinity can exceed pH of 12 in water.

Chemical Properties :

No hazardous decomposition products



10. Stability and Reactivity

Stable, but product will solidify over a period of hours if moistened or wet. Absorbs moisture from the air and solidifies over prolonged periods if not kept in a protected dry atmosphere.



11. Toxicological Information

Dust acts as a skin and respiratory irritant. Dust and wet Ec0star cause serious eye irritation. Long term exposure may lead to contact dermatitis



12. Ecological Information

Non toxic in small quantities. Large quantities in water will lead to high pH values, up to 12.5. Aquatic life will be endangered. The Ec0star will harden, possibly forming a crust. It may dissolve slowly in acid conditions.



13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. Dispose of container and unused contents in accordance with local regulations.



14. Transport Information

In terms of the National Road Traffic Act, act 93 of 1996 regulations and SANS 10228 (The identification and classification of dangerous goods for transport by road and rail modes), Ec0star and Ec0star blends are not hazardous.

In terms of the International Maritime Dangerous Goods Code, Ec0star and Ec0star blends are not hazardous and as such do not have a U.N. number. Ec0star is listed as an Appendix C cargo in terms of the BC code.



15. Regulatory Information

Not regulated



16. Other Information

Risk phrases R36 R37, R38

Safety phrases S24, S25, S26, S36, S37, S39 · R36 Irritating to eyes.

- R37 Irritating to respiratory system.
- R38 Irritating to skin.
- S24 Avoid contact with skin.
- S25 Avoid contact with eyes.
- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S36 Wear suitable protective clothing.
- S37 Wear suitable gloves.
- S39 Wear eye/face protection.



CONTACT DETAILS

CONTACT NUMBER(S)

Cyril Attwell (0784563833) / Hassim Osman (0827864003)

ADDRESS

82 Bonnyvale road, Norton Home Estates Benoni, 1501

WEBSITE

<https://www.arcinnovations.co.za>