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Safety data sheet according to the REACH regulations as amended by EC Regulation 2015/0830

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Identifier	Blendex 70, Blendex 85, Blendex 100 (Note: The number after Blendex indicates the approximate percentage of emulsion matrix in the product).
1.2 Use of the Product:	Blendex explosives are mixed on-site and intended for immediate use as a general explosive column charge. The products are suitable for use in diameters greater than or equal to 85 mm, depending on primer/use conditions. Other products are available for use in small diameters. The explosives listed here are all pumpable products
1.3 Details of the Supplier of the MSDS:	
Name	EPC-UK EXPLOSIVES
Address:	ROUGH CLOSE WORKS CARNFIELD HILL SOUTH NORMANTON ALFRETON DERBYSHIRE, DE55 2BE
Telephone Number:	01773 832253
Contact e-mail	info@epc-groupe.co.uk
1.4 Emergency Telephone Number:	01773 832253

2. HAZARD IDENTIFICATION

2.1 Classification of Substance / Mixture

Explosive 1.1	H201 Explosive mass Explosion Hazard
Eye irrit. 2	H319 Causes serious eye irritation

2.2 Label elements



Hazard Pictogram
Signal Word


Danger

Hazard Statements H201 Explosive mass Explosion Hazard

2.2 Label elements (cont.)



For further information contact the Explosives Engineering Dept at
EPC-UK plc Venture Crescent Alfreton Derbyshire DE55 7RA
Tel 01773 832253 Fax 01773 837683

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Precautionary statements- P210 Keep away from heat/ sparks/open flames/hot surfaces. — No smoking.

Prevention P280: Wear protective gloves/protective clothing/eye protection

Precautionary statements- Intervention
 P370+372+380: Explosion risk in case of fire: Evacuate area.
 P373: DO NOT fight fire when fire reaches explosives
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
 P337+P313 If eye irritation persists: Get medical advice/attention.

2.3 Other Hazards

Excessive skin contact may cause dermatitis

3. COMPOSITION/INFORMATION ON THE INGREDIENTS

3.2 Mixtures

Dangerous substance	Concentration range	EC Number	CAS Number	CLP Classification
Ammonium Nitrate	75-85%	229-347-8	6484-52-2	Ox. Sol. 3; H272, Eye Irrit. 2; H319.
Hydrocarbons, C16-C20, n-alkanes, isoalkanes, cyclics, aromatics (2-30%)	4.0-7.0%	919-006-8	64742-80-9	Asp. Tox. 1 - H304 Aquatic Chronic 4 - H413
Sodium nitrite	<0.2%	231-555-9	7632-00-0	Ox Sol 3 H272 Acute Tox 3 H301 Eye irrit 2 H319 Acute Aquatic 1 H400
Acetic acid	<0.4%	200-580-7	64-19-7	Flam Liq 3 H226 Skin Corr 1A H314

4. FIRST AID MEASURES

4.1 Description of First Aid Measures

General

First Aid – Eyes: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists obtain medical advice/attention.


First Aid – Skin: Wash thoroughly with soap and water

First Aid – Ingestion: Immediately drink plenty of water and seek medical advice

4. FIRST AID MEASURES (cont)



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 Tel 01773 832253 Fax 01773 837683

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First Aid – Inhalation: Remove person to fresh air. If symptoms persist seek medical advice

A person suffering from inhalation of after detonation fumes must be removed to fresh air, receive medical attention and stay under medical observation for at least 48 hours. The person should lie down until the doctor arrives

4.2. **Most Important Symptoms and Effects, Both Acute and Delayed**

Eye contact: Irritation of the eye, redness

Skin contact After skin contact, a skin and mucous membranes' irritation may occur (irritating, redness). Long term effects may include dermatitis

Inhalation or ingestion Mild cases of methaemoglobinaemia will lead to cyanosis and in more severe cases may produce unconsciousness

4.3. **Indication of Any Immediate Medical Attention and Special Treatment Needed**

Eyes – Continue irrigation treatment as for chemical burns:
Ingestion - treat methaemoglobinaemia


5. **FIRE FIGHTING MEASURES**

- 5.1 Extinguishing Media:** Appropriate: Use water based extinguishers to prevent fire reaching the Blendex. Tyre fires / fires in the engine compartment of the Multiblend vehicle may be fought with the vehicle fire extinguishers, if it is safe to do so.
Inappropriate: Not determined
- 5.2 Special Hazards Arising from Product:** This material is explosive and may burn to detonation. If the fire looks likely to reach the Blendex retire to a safe distance of at least 300 m and cordon off the area. Toxic and irritating gasses may be produced in a fire. Evacuate the area
DO NOT fight fire if it reaches the product
- 5.3 Advice for Firefighters:** If the flames do not involve the product directly, extinguish them using the media recommended for the specific type of fire. Note: If the fire involves the Multiblend truck, the materials on board should be treated as explosive as well.
If the fire directly involves the product or materials on the truck, evacuate the area immediately to an upwind position to avoid breathing the fumes. There is an explosion risk in case of extended fire so DO NOT fight fire if it reaches the product.

6. **ACCIDENTAL RELEASE MEASURES**

- 6.1. Personal precautions, protective equipment and emergency procedures:** Wash your hands thoroughly after handling. Wear eye protection and protective gloves.
Eliminate all potential sources of ignition and avoid any action that could



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cause an impact, friction, sparking or a sudden rise in temperature.

In the event of an emergency, stop the production of Blendex

- 6.2 Environmental Precautions:** Avoid spilling on the ground other than pumping into approved shot holes. Do not allow to enter a water course.
- 6.3 Methods and material for containment and cleaning up** Spillages at the point of use should be scooped up, e.g. with a plastic shovel and included with the explosives in a borehole. Other disposal methods are referred to in section 13.
- 6.4 Reference to other sections** Refer to sections: 7 for safe handling, 8 for personal protective equipment, 13 for disposal.

7. HANDLING AND STORAGE


- 7.1 Precautions for Safe Handling:** Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
Do not subject to grinding, shock or friction.
Keep product clean and free from contamination
Avoid spills and keep away from drains
Do not to eat, drink or smoke in work areas;
Remove contaminated clothing and protective equipment before entering eating areas.
Wash hands thoroughly after handling.
- 7.2 Conditions for safe storage , including any incompatibilities:** Not intended to be stored. - bulk loaded at point of use. If loaded holes are left overnight, a sentry should be placed. Any storage of product samples in a container or package would need to comply with the Explosives Regulations 2014.
- 7.3 Specific end use(s)** Material is mixed on site and produced by trained operators using a Multiblend truck, to produce a product of the desired composition and density. The product is pumped directly into the shot holes for blasting according to the blast design

8. EXPOSURE CONTROL / PERSONAL PROTECTION

8.1 Control Parameter:
Ammonium Nitrate

DNEL/DMEL (Workers)
Long-term - systemic effects, dermal 21.3 mg/kg bodyweight/day
Long-term - systemic effects, inhalation 37.6 mg/m³
DNEL/DMEL (General population)
Long-term - systemic effects, oral 12.8 mg/kg bodyweight/day



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Long-term - systemic effects, inhalation 11.1 mg/m³
 Long-term - systemic effects, dermal 12.8 mg/kg bodyweight/day
 PNEC (Water)
 PNEC aqua (freshwater) 0.45 mg/l
 PNEC aqua (freshwater) intermittent 4.5 mg/l
 PNEC aqua (marine water) 0.045 mg/l
 PNEC Sewage Treatment Plant 18 mg/l

Sodium Nitrite

DNEL (Workers)
 Long-term - systemic effects, inhalation 2 mg/m³
 Short term systemic effects, inhalation 2 mg/m³
 PNEC (Water)
 PNEC aqua (freshwater) 0.0054 mg/l
 PNEC aqua (marine water) 0.000616 mg/l
 PNEC sediment (freshwater) 0.0195 mg/kg
 PNEC sediment (marine water) 0.0223 mg/kg
 PNEC Soil 0.000733 mg/kg
 PNEC Sewage Treatment Plant 21 mg/l

Oil

There were no effects at the maximum attainable vapour concentrations, limit doses, or at other limits imposed by safety considerations. As no effects were demonstrated, the data are not appropriate for DNEL derivation. As the substances are demonstrably not hazardous for effects which are quantifiable, human health exposure assessments have not been conducted.

Acetic acid

DNEL (Workers)
 Long-term - local effects, inhalation 25 mg/m³
 Acute local effects, inhalation 25 mg/m³
 DNEL/DMEL (General population)
 Acute - local effects, inhalation 25 mg/m³
 Long-term - local effects, inhalation 25 mg/m³
 PNEC (Water)
 PNEC aqua (freshwater) 3.058 mg/l
 PNEC aqua (marine water) 0.3058 mg/l
 PNEC Intermittent releases 30.58 mg/l
 PNEC sediment (freshwater) 11.36 mg/kg
 PNEC sediment (marine water) 1.136 mg/kg
 PNEC Soil 0.478 mg/kg
 PNEC Sewage Treatment Plant 85 mg/l


8.2 Exposure controls

8.2.1 Engineering measures

For normal use, operators are in open air providing adequate ventilation. Product is mainly enclosed in hose and shothole. Exposure is from outside of hose and sampling.

8.2.2 PPE

Safety glasses Impact resistance F or B, or goggles;
 Gloves to European standard EN374. They can include : Nitrile, Neoprene, Fluor-elastomer or PVC e.g. Ansell Alphatec;

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Overalls to EN 471 Class 2 or greater

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Basic physical and chemical properties

- (a) Appearance/ colour: Viscous fluid, containing varying amounts of suspended solids. (ammonium nitrate prills- none for Blendex 100). Light brown/white in colour.
- (b) Odour: Slightly oily/diesel smell. May also smell of vinegar
- (c) Odour threshold: Not available
- (d) pH: Not available
- (e) Melting point / Freezing Point: Not available
- (f) Initial Boiling point and boiling range: Not available
- (g) Flash point: Not available
- (h) Evaporation Rate: Not available
- (i) Flammability: None of the ingredients are classed as flammable
- (j) Upper / lower flammability or explosive limits: Not available
- (k) Vapour pressure,: Not available
- (l) Vapour density: Not available
- (m) Relative Density: Ca 1000-1200 when gassed in density pot. May compress to higher densities in the borehole.
- (n) Solubility(ies): Essentially insoluble in water, though water will leach ammonium nitrate out of the Blendex over time.
- (o) Partition coefficient (n-octanol / water): Not available
- (o) Auto-ignition temperature: Not available
- (p) Decomposition temperature: >150°C
- (r) Viscosity: The emulsion component has a viscosity in excess of 14,000 cP
- (s) Explosive properties: Blendex is a UN Class 1.1 explosive
- (t) Oxiding properties: Not applicable

9.2 Other information

10. STABILITY AND REACTIVITY

10.1 Reactivity: Explosive: may detonate if subjected to fire / naked flame, impact, friction and sparks.

10.2 Chemical Stability The product is stable under normal ambient conditions (-20 to +40°C). It is intended for immediate use on site when mixed. If stored for several days there may be some loss of gas which will reduce sensitivity. On

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storage for long period the ammonium nitrate in the emulsion may start to crystallise out.

- 10.3 Possibility of hazardous Reactions** Avoid strong acids and bases
- 10.4 Conditions to avoid** Avoid fire, impact, friction and static electricity
- 10.5 Incompatible materials** Strong acids and alkalis. Chromates, Copper. Copper alloys. Chlorates.
- 10.6 Hazardous Decomposition Products:** The after detonation fume may will include carbon dioxide and nitrogen and may include some quantities of Carbon monoxide and oxides of nitrogen

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

- (a) acute toxicity Product: Not acute toxic by calculation
Components
Sodium nitrite, oral, 180 mg/kg
Ammonium Nitrate LD50, Oral rat, >5,000 mg/kg
Ammonium Nitrate LD50, dermal rat, 2,980 mg/kg
Oil LD50, Oral, rat, 4,150 mg/kg
Oil LD50, Dermal, rat, 1,700 mg/kg
Oil LC50, Inhalation, rat, 5.28 mg/l
Acetic acid LD50 Oral rat, 3,310 mg/kg
Acetic acid LC50 Inhalation, rat, 4h, >40 mg/l
- (b) skin corrosion / irritation Product not classified as skin corrosive
Components
Oil: Well defined erythema, No oedema
Acetic acid: vey corrosive
- (c) Serious eye damage / irritation Product causes severe eye irritation
Components
20% Sodium nitrite solution irritating to eyes
Ammonium nitrate: Causes serious eye irritation
Acetic acid; very corrosive

11.1 Information on toxicological effects (cont.)

- (d) Respiratory or skin sensitisation Components do not cause sensitisation or not classified
- (e) Germ Cell Mutagenicity Oil: This substance has no evidence of mutagenic properties.
Acetic acid: In vivo tests did not show mutagenic effects
- (f) carcinogenicity Oil: NOAEL Oral, rat, 750 mg/kg. No evidence it can cause cancer
Acetic acid: Animal testing did not show any carcinogenic effects.
- (g) reproduction toxicity Fertility
Oil: NOAEL Oral, rat, >3,000 mg/kg. No evidence of toxicity to

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- reproduction
Development – Maternal toxicity
Oil: NOAEC Oral, rat, 500 mg/kg. No evidence of toxicity to reproduction
Acetic acid not toxic for foetal development nor teratogenic for the mother
anima;
- (h) STOT – single exposure
Ammonium Nitrate: NOAEL Oral, rat >1500 mg/kg
Acetic acid: not classified as specific target organ toxicant
- (i) STOT –repeated exposure
Ammonium Nitrate: NOAEL Oral, rat, 90 days, >256 mg/kg
Oil: NOAEL Oral, rat, >1056 mg/kg
Acetic acid: not classified as specific target organ toxicant, repeated exposure.
- (j) aspiration hazard
Product has too high a viscosity to be classed as an aspiration hazard

12. ECOLOGICAL INFORMATION

12.1 Toxicity:

Acute Toxicity

Component	Result	Species	Exposure
Ammonium Nitrate			
LC50	1 447 mg/l	fish	48h
LC50	1 490 mg/l	other aquatic organisms	
EC50	1700 mg/l	algae	72h
Sodium Nitrite			
LC50	0.54-26.3 mg/l	Fish (<i>Oncorhynchus mykiss</i>)	96h
LC50	4.93 mg/l	Crustaceans	96h
EC50	15.4 mg/l	Daphnia magna (Water flea);	48 h
EC50	> 100 mg/l	algae (<i>Scenedesmus subspicatus</i> ;))	72 h
EC10	210 mg/l	Bacteria - activated sludge	3 h
EC50	421 mg/l	Bacteria Protozoa	48 h

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12.1 Toxicity:

Acute Toxicity (cont.)

Oil			
LC0	> 1000 mg/l	Fish (<i>Oncorhynchus mykiss</i>)	96 hours
EC0	> 1000 mg/l	<i>Daphnia magna</i> (Water flea);	48 h
EC50	1000 mg/l	<i>Selenastrum capricornutum</i>	72 h
EC0	> 1000 mg/l	Bacteria - activated sludge	5 m
Acetic acid			
LC50	75 mg/l	Fish <i>Lepomis macrochirus</i>	96 h
LC50	88 mg/l	Fish <i>Pimephales promelas</i>	96 h
EC50	95 mg/l	<i>Daphnia magna</i> (Water flea);	24 h
EC10	1000 mg/l	Bacteria <i>Pseudomonas putida</i>	0.5 h
EC50	> 300.82 mg/l	Algae <i>Skeletonema costatum</i>	72 h

Chronic Toxicity

Component	Result	Species	Exposure
Oil			
	5,000 mg/l	Fish early life stage <i>Brachydanio rerio</i> (Zebra Fish)	21 days
EC50	5,000 mg/l	Invertebrates <i>Daphnia magna</i> (Water flea);	21 days

12.2 Persistence and Degradability:

Ammonium Nitrate: Determination methods not applicable
Sodium nitrite: Determination methods not applicable.
Inorganic product which is not removable from water by biological processes.

Oil: The product is readily biodegradable.
Acetic acid: Readily biodegradable

12.3 Bioaccumulation potential;

Ammonium Nitrate, sodium nitrite and Acetic acid: Bio-accumulation not expected
Oil is a hydrocarbon UVCB. Standard tests not applicable

12.4 Mobility in soil

Ammonium Nitrate, Sodium nitrite, acetic acid: Components are mobile in a water environment, but may need to be leached out of the emulsion.
Oil is a hydrocarbon UVCB. Standard tests not applicable

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12.5 Result of PBT and vPvB Assessment:

Ammonium nitrate: No further information available
Sodium nitrite: This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).
Oil: This substance is not classified as PBT or vPvB according to current EU criteria.
Acetic acid: This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other Adverse Effects

Sodium nitrite: Very toxic to aquatic organisms. Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. Note: sodium nitrite is destroyed in the gassing of the Blendex

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:

Product disposal

The product is an explosive and must be treated as such. Under the supervision of an expert, the product may be destroyed by detonation in a borehole or by burning at an approved site. For more guidance see the HSE/CBI Explosives Industry Group publication: "Guidance for the Safe Management of the Disposal of Explosives", January 2007.

Container Disposal:

Product is normally mixed on site and pumped into the shot hole for immediate use – no packaging

14. TRANSPORT INFORMATION

Note: The product is produced by mixing on site for immediate use, so it would not normally be transported, as such.

14.1 UN Number :

UN0241

14.2 UN Proper Shipping Name :

Explosive, Blasting, Type E

14.3 Transport Hazard Classes:

1.1D

14.4 Packing Group :

Not applied to explosives but generally taken to be PGII

14.5 Environmental Hazards

Not a marine pollutant

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14.6 Special Precautions for User If the product is to be transported, then it must be checked that the product in its packaging has been classified by the HSE, as the product is not normally transported.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code The product is not intended to be transported by sea in bulk/IBCs

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

UK Legislation: Carriage of Dangerous Goods Regulations 2009, as amended – implementing ADR
Classification (Hazard Information and Packaging for Supply) Regs 2009, as amended.
Control of Substances Hazardous to Health regs 2002, as amended
Control of Major Accident Hazard Regulations 2015 would not normally apply as the product is not stored
The Explosive Regulations 2014, as amended.

EC Regulations Registration Evaluation, Authorisation and Restriction of Chemicals Regulations 2006, as amended

15.2 Chemical Safety Assessment No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier. . Chemical safety assessments exist for Ammonium nitrate, sodium nitrite, the oil and acetic acid

16. OTHER INFORMATION

MSDS first issued: 03/96

(a) Changes

Issue	Issue Date	Changes
11		
12	24/11/2016	Completely re-written to comply with CLP requirements
12.1	16/02/2017	Correction to data sheet number
12.2	22/03/2018	Minor typographical corrections

(b) Abbreviations and acronyms

UVCB Substances of unknown or variable composition, complex reaction products or biological materials,

(c) References

(d) Evaluation method for mixtures

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(e) Relevant hazard Statements and Precautionary statements

- H201 Explosive mass Explosion Hazard
- H226 Flammable liquid and vapour.
- H272 May intensify fire; oxidizer
- H301 Toxic if swallowed
- H304 May be fatal if swallowed and enters airways
- H314 Causes severe skin burns and eye damage)
- H319 Causes serious eye irritation.
- H400 Very toxic to aquatic life
- H413 May cause long lasting harmful effects to aquatic life

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

P264: Wash hands thoroughly after handling

P280: Wear protective gloves/protective clothing/eye protection/face protection

P370+380: In case of fire: Evacuate area.

P372: Explosion risk in case of fire.

P373: DO NOT fight fire when fire reaches explosives.

P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.

P337+313: If eye irritation persists get medical advice/attention

(f) Advice on training

Notice:

**FOR FURTHER INFORMATION CONTACT
EPC-UK EXPLOSIVES EXPLOSIVE ENGINEERING DEPARTMENT**
