



AGRITOPIC
July 2017

CUSTOM BLENDS SAFETY DATA SHEETS

1. INTRODUCTION

A Safety Data Sheet (SDS) must be made available when a product that is classified as being a Dangerous Good (DG) and/or as Hazardous is supplied for the first time, whenever the SDS is updated, and on request.

Incitec Pivot Fertilisers has prepared Safety Data Sheets (SDS) Masters for all fertiliser products on its Product Range, irrespective of whether they are classified as being a Dangerous Good and/or as Hazardous, or not.

Like products are grouped together. The individual products, and their 5 Digit Product Codes, are listed as Synonyms on the applicable Master SDS.

These SDS can be found on the Incitec Pivot Fertilisers website (www.incitecpivotfertilisers.com.au) under "Products & Services".

www.incitecpivotfertilisers.com.au/Products%20%20Services/Product%20Search

Custom Blends are not listed on the Master SDS. It is impractical to do so, given the number of Custom Blends involved. Custom Blends are being generated on a daily basis and the SDS would need constant updating and re-issuing, to all customers. Custom Blends are formulated to individual customer needs, and the SDS do not need to be made available to others.

Custom Blends often contain Trace Elements, most of which are Hazardous, in different combinations and at higher concentrations than are typically used in Range Blends. Specific Master or Parent SDS have not been prepared for all such product combinations.

To fill this void, a separate SDS has been prepared for Hazardous Custom Blends, listing all the Hazardous ingredients that may be used.

This Agritopic has been prepared for use in conjunction with that SDS.

It provides information on the Hazardous nature of blend constituents, the allocation off Custom Blends against an appropriate Blends SDS Master, and where no Master SDS is available, how to make use of the "Custom Blends (Hazardous)" SDS.

2. NON-HAZARDOUS INGREDIENTS

Most nitrogen (N), phosphorus (P) and potassium (K) fertilisers are not Hazardous.

These include:

- Urea
- Gran-am (Granulated Ammonium Sulfate)
- DAP
- MAP
- Granulock SS
- SuPerfect (Single Superphosphate)
- Muriate of Potash
- Sulfate of Potash

These products typically make up the bulk of most Blends. The hazardous constituents are typically in the minority.

Note. The “Custom Blends (Hazardous)” SDS only lists Hazardous ingredients. It does not list non-hazardous ingredients which typically make up the bulk of most blends.

If information is required on the base blend, please refer to the generic Parent SDS Master, e.g. NPK Blends, Pasture Blends.

3. HAZARDOUS INGREDIENTS

Most Trace Element fertilisers are Hazardous.

Depending on the concentration, blends in which they are used may also be classified as Hazardous.

Products containing more than 10% ammonium nitrate or elemental sulfur are also classified as Hazardous, e.g. Cal-Am, Nitrophoska Special, Sulfur Bentonite.

Hazardous fertilisers sold by Incitec Pivot and/or used as blend ingredients include:

- Cal-Am (Calcium Ammonium Nitrate)
- Nitrophoska Special
- Granulock Z
- Sulfur Bentonite
- Granubor
- Ulexite
- Copper Oxysulfate Granules
- SuPerfect Cu 4% Concentrate
- Iron Oxysulfate Granules
- Manganese Sulfate
- Zinc Sulfate Monohydrate
- Granulock Big Z

Table 1 provides details on the hazardous classification of these products.

In addition, there are some spray additives, e.g. copper oxide, sodium molybdate, and fungicides, which while Hazardous neat (in their undiluted form), are not used at concentrations deemed Hazardous on the end product.

4. DANGEROUS GOODS

None of the solid fertilisers marketed by Incitec Pivot Fertilisers are classified as being a Dangerous Good for transport by Road or Rail.

5. MARINE POLLUTANTS

For administrative purposes, Incitec Pivot Fertilisers treats products that contain more than 1% of a copper, manganese or zinc salt as an Environmentally Hazardous Substance (UN Number 3077) when transported by Sea.

This equates to:

<u>Micronutrient</u>	<u>Trace Element Additive</u>
> 0.5% Copper (Cu) – in Total (as Oxide and Sulfate)	> 2% Copper Granules - this product is comprised of 50% copper salts and 50% gypsum.
> 0.8% Cu as Oxide (and in Total)	> 20% SuPerfect Cu 4%
> 0.3% Manganese (Mn)	> 1% Manganese Sulfate
> 0.3% Zinc (Zn) as Sulfate	> 1% Zinc Sulfate Monohydrate > 35% Granulock Z
> 0.8% Zinc (Zn) as Oxide	> 8% Granulock Big Z



Such products are “toxic to aquatic life, with long lasting effects”.

Australian Special Provision (AU01) in the ADG Code exempts Environmentally Hazardous Substances meeting the description of UN 3077 from the provisions of the ADG Code when transported by Road or Rail in:

- Small packs, e.g. 25 kg,
- IBCs, e.g. Bulk/Tonne Bags.

6. SCHEDULED POISONS

Fertiliser Blends containing more than the following amounts of boron, copper and zinc are classified as Poisons, based on the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

<u>Micronutrient</u>	<u>Ingredient</u>	<u>Poison Schedule</u>
> 1% Boron (B) as Sodium Borate	> 7% Granubor	S5
> 2.5% Copper (Cu)	> 10% Copper Granules	S5
> 1.65% Zinc (Zn) as Sulfate	> 5% Zinc Sulfate Monohydrate	S6

7. SDS MASTERS

Parent SDS Masters have been prepared for various Range Blends, as listed in Table 2.

These SDS cannot be used if Trace Elements are added at concentrations above:

<u>Micronutrient</u>	<u>Trace Element Additive</u>
> 0.04% Boron (B)	> 0.3% Granubor > 0.3% Ulexite
> 0.5% Copper (Cu) – in Total (as Oxide and Sulfate)	> 2% Copper Granules (Copper Oxysulfate)
> 0.8% Cu as Oxide (and in Total)	> 20% SuPerfect Cu 4%
> 0.3% Manganese (Mn)	> 1% Manganese Sulfate
> 0.3% Zinc (Zn) as Sulfate	> 1% Zinc Sulfate Monohydrate
> 0.8% Zinc (Zn) as Oxide	> 8% Granulock Big Z

Derivatives of the Parent SDS have been prepared for use where these concentrations are exceeded in Range Blends. These derivatives are listed in Table 3, along with information on the micronutrient concentrations.

Custom Blends are often requested with micronutrient (Trace Element) combinations outside those used in Range Blends and for which no SDS Derivative is available.

The “Custom Blends (Hazardous)” SDS should be used in these circumstances, i.e. where no Derivative is available.

8. THE “CUSTOM BLENDS (HAZARDOUS)” SDS

This Safety Data Sheet is intended for use with those Custom Blends that are classified as Hazardous Chemicals, and for which an existing Master (Parent or Derivative) is not available.

The “Custom Blends (Hazardous)” SDS contains information on all the ingredients that may be used in Hazardous amounts in Custom Blends. As such, it contains information on ingredients that will not be present in specific Custom Blends.

Should there be a need to ascertain the specific advice relevant to an individual Custom Blend, this can be determined by referring to the Product Label, and comparing the nutrient concentrations with the data in Table 4.

Information is not included in the “Custom Blends (Hazardous)” SDS on non-hazardous ingredients, which typically make up the greater part of the blend’s composition.

Non-hazardous ingredients include urea, ammonium sulfate (Gran-am), diammonium phosphate (DAP), monoammonium phosphate (MAP), superphosphate (SuPerfect), potassium chloride (Muriate of Potash) and potassium sulfate (Sulfate of Potash).

There are other Hazardous ingredients, such as SATS – Copper, Iron Granules and Fungicides, which are only used in non-hazardous amounts, and therefore are not listed on the “Custom Blends (Hazardous)” SDS.

9. PERSONAL PROTECTIVE EQUIPMENT

Eye / Face Where eye contact may occur, wear safety glasses with side shields.

Hands Cotton gloves, which can be washed or disposed of if heavily soiled, will suffice under most circumstances. Use impervious PVC or rubber gloves in high risk situations.

Body Where skin contact may occur and for individuals with sensitive skin, wear ankle length and long sleeved clothing or overalls.

Respiratory Wear a dust mask where exposure to dust is light. Where the dust nuisance is high and ventilation is inadequate, use a properly fitted particulate filter respirator, either full face-piece or half mask plus goggles, that meets Australian Standards AS/NZS 1715 and AS/NZS 1716 "Selection, use and maintenance of respiratory protective devices". Wash dust from hands and exposed skin. In risk situations, locate an eyewash station nearby. Wash contaminated clothing and other protective equipment before storage or reuse. Ensure all PPE conforms to the relevant Australian Standards. Read the labels on the PPE. The selection of Personal Protective Equipment (PPE) should be based on a Risk Assessment of the amount of dust likely to be generated, including the quantity of product being handled, the presence and amount of fines and dust; the task being performed, the work environment in which it is being undertaken, and the level of exposure. Normal work clothing may suffice during transfer operations in the field, e.g. when filling fertiliser boxes, and in bulk storage facilities where contact with the product is limited under well ventilated conditions and occupational exposure limits are not exceeded.



10. FUNGICIDES

Fungicides, e.g. Flutriafol, are added to some Custom Blends on request.

Fertilisers treated with fungicide must only be used in crops in which the fungicide is registered. Observe withholding periods before grazing.

Do not handle fertiliser treated with fungicide with bare hands. Observe good personal hygiene, including washing hands before eating.

Bins and equipment used to transport, store and handle fertiliser should be thoroughly cleaned before being used for other purposes, by sweeping or using compressed air followed by washing. The addition of a detergent to the water may assist with the removal of residues. Sweeping with a broom or compressed air by itself is unlikely to adequately remove fertilizer dust and chemical residues to the extent that thorough wash-down with water achieves. The use of compressed air by itself is an absolute minimum. Rinsate/dust should be disposed of to agricultural land. They should not be allowed to enter drains and waterways.

It is recommended that augers and silos that have been used to handle and store fertiliser treated with fungicide not be used for grain. Fungicide residues, if detected in farm produce, may affect its marketability on domestic and international markets.

11. FIRST AID MEASURES

Eye: If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation: If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin: If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion: For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once).

12. FIRE

12.1 Hazards

Most fertiliser blend ingredients are non-flammable.

An exception is Sulfur Bentonite, which is combustible.

Granular Sulfur Bentonite is not classified as being a Dangerous Good (SP No 242).

Sulfur dust, however, may be generated during its handling. Sulfur dust is flammable, and may form explosive mixtures in air. Dust clouds are readily ignited by weak frictional sparks.

Ammonium nitrate is a constituent of Cal-Am (80%) and Nitrophoska Special (35%).

Ammonium nitrate is not flammable, but is an oxidising agent. If involved in a fire, it will support combustion.

Cal-Am, Nitrophoska Special and Sulfur Bentonite are not mixed together in Blends.

12.2 Advice for firefighters

Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard.

With the exception of blends containing ammonium nitrate or sulfur, no fire or explosion hazard exists.

13. ECOLOGICAL INFORMATION

Toxicity

Copper, manganese and zinc are very toxic to aquatic organisms, and may cause long-term adverse effects in the aquatic environment.

Mobility in soil

Nitrogen fertilisers undergo transformation in the soil, e.g. from urea to ammonium (NH_4^+), and then to nitrate (NO_3^-).

Ammonium is adsorbed strongly onto soil colloids (clay particles and humus).

Nitrate is mobile in the soil and is subject to leaching.

Phosphorus is strongly sorbed onto clay and organic colloids in the soil. The main way in which phosphorus is lost from agricultural soils is through soil erosion, attached to eroded soil particles.

Of the micronutrients, the metallic trace elements, e.g. copper and manganese are immobile, while boron (as borate) is mobile.

Other adverse effects

This product can stimulate weed and algal growth if lost to static surface waterways. Algae affect water quality and taste.

14. SUMMARY

When choosing a SDS for a Custom Blend, refer to the Product Label.

If the blend does not contain boron, copper, manganese or zinc (other than as Granulock Z), choose one of the parent SDS in table 2.

If it contains Trace Elements at the concentrations detailed in Table 3, choose the appropriate SDS Derivative.

If a SDS Master (Parent or Derivative) is not available, use the Custom Blends (Hazardous) SDS.

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Table 1. Hazardous Blend Ingredients

Blend Ingredient	Hazardous Constituent	CAS Number	Environmentally Hazardous Substance	Hazardous to Health	Scheduled Poison	GHS Pictogram(s)
Cal-Am	80% Ammonium Nitrate	6484-52-2		Yes		
Nitrophoska Special	35% Ammonium Nitrate	6484-52-2		Yes		
Sulfur Bentonite	90% Elemental Sulfur	7704-34-9		Yes		
Granubor	Disodium tetraborate pentahydrate	12179-04-3		Yes	S5	
Ulexite	Sodium Calcium Borate	1319-33-1		Yes		
Copper Granules (Copper Oxysulfate)	25 - 30% Copper (II) Sulfate Pentahydrate, plus 20 - 25% Copper (II) Oxide	7758-99-8 1317-38-0	UN No 3077	Yes	S6	
SuPerfect Cu 4%	5% Copper (II) Oxide	1317-38-0	UN No 3077		S5	
Iron Granules (Iron Oxysulfate)	40% Iron (II) Sulfate Heptahydrate	7782-63-0		Yes	S5	
Manganese Sulfate	Manganese Sulfate	7785-87-7	UN No 3077	Yes		
Zinc Sulfate Monohydrate	Zinc Sulfate Monohydrate	7446-19-7	UN No 3077	Yes	S6	
Granulock Big Z	13.5% Zinc Oxide	1314-13-2	UN No 3077			
Granulock Z	3% Zinc Sulfate Monohydrate	7446-19-7	UN No 3077	Yes		

Table 2. Parent SDS

SDS Master	Description	Examples
NPK Blends	Contain nitrogen (N) as Urea and/or in the ammonium form, usually in combination with phosphorus (P) and/or potassium (K).	Urea + MAP; Urea + DAP + Muriate of Potash; Gran-am + DAP + Potash (Muriate or Sulfate).
Green Urea Blends	Contain Green Urea NV, i.e. Urea treated with a Urease Inhibitor.	Green Urea NV + DAP.
DMP Blends	Contain ingredients treated with DMP/Entec (Nitrification Inhibitor).	DMP Urea + Muriate of Potash
Nitrate Blends	Contain ammonium nitrate at concentrations up to 10%.	Blends containing up to 35% Nitrophoska Special.
Nitrate Blends (Hazardous)	Contain ammonium nitrate at concentrations between 10 and 45%.	Blends containing 12.5 – 55% Cal-Am or > 35 % Nitrophoska Special
Granulock Z Blends (Marine Pollutant, Irritant)	Contain Granulock Z at concentrations above 35%	Granulock Z (> 35%) + Urea; Granulock Z (> 35%) + Gran-am.
Pasture Blends	Nil nitrogen.	SuPerfect + Muriate of Potash.
Sulfur Blends	Contain Sulfur Bentonite at concentrations up to 11%. (10% elemental sulfur)	SuPerfect + Sulfur Bentonite; MAP + Sulfur Bentonite
Sulfur Blends (Hazardous)	Contain Sulfur Bentonite at concentrations between 11 – 20%. 20% is the maximum amount of Sulfur Bentonite used in Blends.	
NP Blends with Flutriafol Fungicide	Planting fertilisers for winter grain crops, which have been treated with Flutriafol Fungicide.	Urea + MAP + Flutriafol; Gran-am + MAP + Flutriafol.
NP Blends with Uniform Fungicide	Planting fertilisers for winter grain crops, which have been treated with Flutriafol Fungicide.	Urea + MAP + Uniform; Gran-am + MAP + Uniform.

Table 3. SDS Derivatives, i.e. with added Trace Elements

SDS Master	Nutrients	Trace Element Guide
NPK Blends		
+ B (Hazardous)	0.04 – 1% Boron (B)	0.3 - 7% Granubor
+ Cu (Marine Pollutant)	0.5 – 2.5% Copper (Cu)	2 – 10 % Copper Granules (Copper Oxysulfate) (1 – 5% Copper Compounds)
+ Mn (Marine Pollutant)	0.3 – 3% Manganese (Mn)	1 – 10% Manganese Sulfate
+ Zn (Marine Pollutant, Irritant)	0.3 – 1.0% Zinc (Zn)	1 – 3% Zinc Sulfate Monohydrate
+ Zn (Marine Pollutant, Hazardous)	1.0 – 1.65 % Zinc (Zn)	3 – 5% Zinc Sulfate Monohydrate
+ Zn (Marine Pollutant, Hazardous, S6)	1.65 – 6.6% Zinc (Zn)	5 – 20 % Zinc Sulfate Monohydrate
+ B + Zn (Marine Pollutant, Hazardous)	0.04 – 1% Boron (B) 0.3 – 1.0% Zinc (Zn)	0.3 - 7% Granubor 1 – 3% Zinc Sulfate Monohydrate
+ Cu + Zn (Marine Pollutant, Irritant)	0.5 – 2.5% Copper (Cu) 0.3 – 1.0% Zinc (Zn)	2 – 10 % Copper Granules (Copper Oxysulfate) 1 – 3% Zinc Sulfate Monohydrate
+ Cu + Zn (Marine Pollutant, Hazardous, S6)	0.5 – 5.0% Copper (Cu) 1.65 – 6.6% Zinc (Zn)	2 – 20 % Copper Granules (Copper Oxysulfate) 5 – 20 % Zinc Sulfate Monohydrate
Nitrate Blends		
+ B + Zn (Marine Pollutant, Hazardous)	0.04 – 1.0% Boron (B) 0.3 – 1.0 Zinc (Zn)	0.3 - 7% Granubor 1 – 3% Zinc Sulfate Monohydrate
Pasture Blends		
+ Zn (Marine Pollutant)	> 0.8% Zinc (Zn), as Oxide	> 8% Granulock Big Z
+ Cu + Zn (Marine Pollutant)	> 0.8% Copper (Cu), as Oxide > 0.8% Zinc (Zn), as Oxide	> 20% SuPerfect Cu 4% > 8% Granulock Big Z
NP Blends Plus Flutriafol Fungicide		
+ Zn (Marine Pollutant)	> 0.8% Zinc (Zn), as Oxide	> 8% Granulock Big Z
+ Zn (Marine Pollutant, Irritant)	0.3 – 1.0% Zinc (Zn) as Sulfate	> 35% Granulock Z or 1 – 3% Zinc Sulfate Monohydrate
+ Zn (Marine Pollutant, Hazardous)	1.0 – 1.65 % Zinc (Zn)	3 – 5% Zinc Sulfate Monohydrate
+ Zn (Marine Pollutant, Hazardous, S6)	1.65 – 6.6% Zinc (Zn)	5 – 20 % Zinc Sulfate Monohydrate
NP Blends Plus Uniform Fungicide		
+ Zn (Marine Pollutant)	> 0.8% Zinc (Zn), as Oxide	> 8% Granulock Big Z
+ Zn (Marine Pollutant, Irritant)	0.3 – 1.0% Zinc (Zn) as Sulfate	> 35% Granulock Z or 1 – 3% Zinc Sulfate Monohydrate
+ Zn (Marine Pollutant, Hazardous)	1.0 – 1.65 % Zinc (Zn)	3 – 5% Zinc Sulfate Monohydrate
+ Zn (Marine Pollutant, Hazardous, S6)	1.65 – 6.6% Zinc (Zn)	5 – 20 % Zinc Sulfate Monohydrate

Table 4: Signal Words and Hazard Statements

Nutrient - Form	Concentration	Ingredient	Hazardous	Poison Schedule	Signal Word	Statements
Nitrogen (N) – as Nitrate	> 1.7%	> 10% Ammonium Nitrate > 12.5 % Cal-Am > 35% Nitrophoska Special	Yes	-	WARNING	Causes serious eye irritation
Sulfur (S) - Elemental	> 10%	> 11% Sulfur Bentonite	Yes	-	WARNING	Causes skin irritation
Boron (B)	0.04 - 1%	0.3 – 7% Granubor > 0.3% Ulexite	Yes	-	DANGER	May damage fertility and the unborn child.
	> 1%	> 7% Granubor		S5		
Copper (Cu) – combined total when present as Oxide and Sulfate	> 2.5%	> 5% Copper Compounds > 10% Copper Granules	-	S5	WARNING	Harmful if swallowed. Causes skin irritation. Causes serious eye irritation
Manganese (Mn)	> 3%	> 10% Manganese Sulfate	Yes		WARNING	May cause damage to organs through prolonged or repeated exposure.
Zinc (Zn) – As Sulfate	0.3 – 1.0%	1 – 3% Zinc Sulfate Monohydrate	Yes	-	WARNING	Causes serious eye irritation
	1.0 – 1.65%	3 – 5% Zinc Sulfate Monohydrate		DANGER	Causes serious eye damage	
	> 1.65%	5 – 20 % Zinc Sulfate Monohydrate		S6		

The maximum concentration at which Granubor, Ulexite, Copper Granules, Manganese Sulfate and Zinc Sulfate Monohydrate can be requested in a Custom Blend is 20%.

Where more than one of these Trace Elements is requested, the combined total must not exceed 25%.

The minimum concentration at which a trace element fertiliser is used in blends is usually 1%.

Note. The maximum concentration at which Iron Oxysulfate Granules is used in a Blend is 16%, the concentration above which the blend is classified as a S5 Poison.