



Knowledge grows

From Factory to Field

Properties and Handling of
YaraVita Products





Introduction

The YaraVita range are “premium” products that require special attention throughout the distribution chain to ensure that they arrive at the consumer in exactly the same condition as they left the production site.

The quality of a YaraVita product can be affected during transport and storage and it is important that the correct handling procedures are followed. This document sets out these procedures as well as providing additional information on the YaraVita range.

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The YaraVita commitment to quality

ISO Accreditation

Yara Pocklington has been accredited to ISO9001 (Quality Management System) since 1994 and its continuous commitment is reflected in achieving the latest standard ISO9001:2015. The site is also accredited to ISO14001 (Environmental Management System), ISO45001 (Occupational Health & Safety Management System) and ISO50001 (Energy Management System)

Systems include:

- Selection of suppliers and raw materials
- Product formulation
- Product trials
- Product labels
- Product manufacture
- Quality Control
- Sales order processing and logistics
- Product support
- Staff competence



These systems ensure all YaraVita products meet consumer's needs, are safe and effective in application and comply with relevant Health and Safety and fertiliser regulations. They underpin the values of the YaraVita brand.



YaraVita product types

Liquids

Solutions

- Clear, free flowing liquids that mix easily with water to give clear solutions.
- All nutrients are present in a fully soluble form.

Suspensions

- Opaque, pourable liquids that can be readily dispersed into water to form cloudy or milky suspensions.
- Contain most of their nutrients in the form of tiny micronised particles, only partially soluble in water.
- Formulated so that the nutrient particles resist the effect of gravity which tries to make them settle out.

Procotes

- These products are a form of suspension formulated specifically to be applied directly as fertiliser coatings and as such they are not designed to be dispersed in water prior to application.



Powders

Soluble

- Contain all their nutrients in a fully water soluble form.
- Will dissolve completely when stirred into water to give a clear solution

Wettable

- Disperse in water to form cloudy or milky suspensions.
- Contain most of their nutrients in the form of tiny micronised particles, only partially soluble in water.



Effect of external factors on product quality

Product Type	External Factor			
	Storage time	Storage temperature	Atmospheric humidity	Compaction during storage
Solutions	<p>Low importance Can cause a small amount of discolouration on long term storage but no adverse effect on efficacy or analysis.</p>	<p>Low importance Can cause a small amount of discolouration on long term storage but no adverse effect on efficacy or analysis.</p>	Not relevant	Not relevant
Suspensions & Procotes	<p>Critical factor Gravity constantly acts to try and make the small particles of nutrient settle to the base of the container.</p> <p>Whilst YaraVita suspensions are formulated to resist the effect of gravity after prolonged storage some settling is almost inevitable.</p> <p>Avoid long term storage and rotate warehouse stocks on a First In First Out basis</p>	<p>Critical factor As storage temperatures increase the effect of the formulation technology used to prevent settling of the nutrient particles is greatly reduced.</p> <p>Temperatures above 30°C will affect the storage life of the product.</p> <p>Store at temperatures between 5 and 30°C and rotate warehouse stocks on a First In First Out basis</p>	Not relevant	Not relevant

For Liquid products always shake or agitate the pack before use

Product Type	External Factor			
	Storage time	Storage temperature	Atmospheric humidity	Compaction during storage
Powders	<p>Relevant factor Time can be a contributory factor in caking or agglomeration particularly when other factors such as high storage temperature or compaction are present.</p> <p>Avoid long term storage and rotate warehouse stocks on a First In First Out basis.</p>	<p>Relevant factor Storage at high ambient temperatures (above 30°C) can lead to caking particularly when compaction or prolonged time in the warehouse is an issue. Several mechanisms exist: - moisture present in the product moving between the particles causing crystal bridges to form - adhesive and capillary forces between particles increasing at higher temperatures</p> <p>Store at temperatures between 5 and 30°C and rotate warehouse stocks on a First In First Out basis.</p>	<p>Not relevant for products in unopened packs Moisture from the atmosphere cannot affect products when they are stored in their original packaging.</p> <p>Relevant factor for certain products after the pack has been opened or damaged. Products that contain a high proportion of water soluble nutrients can show a degree of hygroscopicity. Increasing the moisture content of the product can often lead to caking.</p> <p>Avoid using part packs and if this is unavoidable ensure that they are well sealed.</p>	<p>Not relevant for products supplied in cardboard cartons The cardboard outer carton prevents compaction from above.</p> <p>Relevant factor for products supplied in sacks Compaction occurs when the small individual powder particles are forced together during storage due to pressure from material above on the same stack.</p> <p>Store pallets in racking. Follow pallet stacking guidelines where no racking is available.</p>

Storage best practice

Firstly, always remember that efficient stock rotation on a First In, First Out (FIFO) basis is fundamental in ensuring that end users receive YaraVita products in the best possible condition. Storage advice differs depending on the formulation, but in general the following guidelines apply:

Product Type	Storage Best Practice*
Liquid	Five (5) years
Powder	Five (5) years
Suspension concentrates and Procotes**	Two (2) years
Zintrac (SC)**	Three (3) years

* Product stored longer can still be used effectively but please contact your local Yara representative for advice.

** Where possible always store below 30°C and ensure product is well shaken before use.

Packaging and its recycling

Liquids

Pack size	Pack type	Cap type	Outer packaging	Number of packs/cartons	UN specification packaging
1 litre	White HDPE screw type	White HDPE screw type	Cardboard carton	10	N/A
5 litre	White HDPE screw type	White HDPE screw type	Cardboard carton	2	Yes
10 litre	White HDPE screw type	White HDPE screw type	Cardboard carton	2	Yes
20 litre	White HDPE self stacking jerry can	White HDPE screw type	N/A	N/A	Yes
210 litre	Green HDPE bung type drum	PP screw type bung with EPDM/PE gasket	N/A	N/A	Yes
1000 litre	White HDPE IBC	Red PE screw type	Tubular steel cage	N/A	Yes

Powders

Pack size	Pack Type	UN specification packaging
1 to 25 kgs	LLDPE plastic sack	Yes
Leffingwell products	Multi-ply paper valve sack	Yes



Special note regarding YaraVita suspensions

It is important to understand that a small amount of clear liquid will often form at the surface of a suspension.

This is known as syneresis and is a natural process; it does not mean that the product has been spoiled or has settled out excessively.

Shaking or agitating the pack before use as recommended on the label will ensure that this layer of liquid mixes back in.



← Syneresis at the surface of a suspension



YaraVita packaging is developed with recycling in mind and has the following special features.

Our 1, 5 and 10 litre packs have a tamper evident seal.



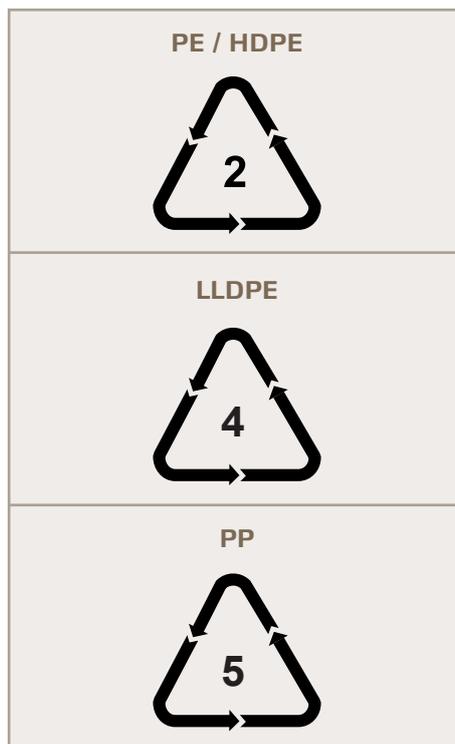
Our 5 and 10 litre packs have a divorced handle for easy rinsing.



Recycling of packaging

End users of YaraVita products should follow established national guidelines regarding recycling of packaging. Typical examples of which are :

- 1) Endeavour to minimise the amount of waste packaging by using a pack size appropriate to the quantity of product required.
- 2) Consider reuse options.
- 3) Empty, triple rinse and drain all liquid product containers; dispose of rinse water safely, preferably into the spray tank at the time of use.
- 4) Fully empty out powder packaging.
- 5) Segregate the waste according to its type.
- 6) Look for the appropriate symbols when recycling.



Our 1000 litre IBC's can be recycled using the "Schutz Ticket Service" scheme. This scheme is free, operates worldwide and allows our customers to ensure that empty IBC's are reconditioned or recycled. All the customer needs to do is follow the link below and then select their location.

http://www.schuetz.de/schuetz/en/industrial_packaging/ticket_service/index.phtml



Labelling

All YaraVita products are labelled in accordance with the national laws that are in force in the destination country and also in line with international regulations.

An example of a product label is shown on the right. It should be noted that not all products carry these symbols as they are specific to the hazards of the material concerned.

The image shows a product label for Yara Zintrac 700. Callouts identify the following areas:

- Branding and pack size area:** Points to the Yara logo and 'Zintrac® 700' text.
- Product name and regulatory text area:** Points to 'Zinc oxide fertiliser suspension'.
- GHS Area:** Points to the GHS hazard symbol (H410: Very toxic to aquatic life with long lasting effects).

Other visible text on the label includes: 'NOTICE: Before using this product, read the entire label. Safety data sheet available for professional user on request.', 'EC FERTILISER', 'To be used only where there is a recognised need. Do not exceed the appropriate application rates.', 'Guaranteed analysis: 40% w/w = 700 g/l zinc (Zn) total', 'Manufactured by: Yara UK Ltd., Rockingham, York, YO42 1DN, UK. Tel: 01759 302545 Fax: 01759 303650. Distributed by: Yara UK Ltd., Harvest House, European, Grimsby, N. E Lincolnshire DN37 9TZ, UK. Tel: 01472 889260 Fax: 01472 889261', and '5 litres Net weight 8.67 kg'.

GHS symbols

- Health hazard
- Corrosive
- Dangerous for the environment
- Irritant

ADR symbols

- Miscellaneous dangerous substances
- Corrosive substance
- Solid and Liquid Limited Quantities (less than 6kg and 5L)
- Environmentally Damaging

Agreement on Dangerous goods by Road (ADR) area. Regulations providing information regarding the transport of hazardous goods.

The image shows two ADR symbols for UN 3082. The first is a diamond-shaped symbol with a tree and a dead fish, representing 'Environmentally Hazardous Substance, Liquid, N.O.S.'. The second is a diamond-shaped symbol with vertical bars, representing 'Miscellaneous dangerous substances' (Class 9). The text 'UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.' and the number '9' are also present.

Storage, handling and transport

Storage

YaraVita products must be stored safely in a secure environment.

Safe storage should have two levels of containment.

a) Primary containment.

- An enclosed building capable of protecting the products from the weather and direct sunlight.
- An impermeable (waterproof) floor, such as concrete, should eliminate any product seepage into the ground should a spill occur
- Putting a curb (stone barrier) or bund wall around the floor perimeter will prevent spillages from spreading to other areas.
- The storage area should be clean and well organised. Good housekeeping helps to reduce the risk of spills.
- Have "spill kits" at several accessible locations in the building.
- Ideally the temperature in the storage building is maintained between 5 and 30C.
- Equipped with pallet racking to avoid the need for stacking pallets
- Good stock management e.g. carried out on a First In First Out basis.

b) Secondary containment.

- An impermeable surface, with a curb or bund walls on the site perimeter, in which the storage building is located, will minimize the amount of product seeping into the ground, if the primary containment is breached in an emergency e.g. if a fire occurs and excessive firewater is used.
- The secondary containment space should be large enough to hold 125 percent of the contents of the primary containment.

You can reduce damages by anticipating emergencies.

Have an emergency-response plan for the site.

- Know how to handle your products and whom to call for help
- Have "spill kits" readily available. If a container is accidentally damaged confine the spill to the immediate area and clean it up promptly.

Fires in a storage area present a special hazard to people and the environment. If containers are damaged, the stored products may be carried away by firewater and spread over a large area.

- Label access doors, with the hazard labels of the products stored in the building, to alert firefighters of potential hazards.
- Keep a list of the products and their volume stored. A copy of this list should be maintained away from the storage area. Provide a copy to local fire protection authority and the local emergency- response coordinator.

- If a fire occurs, consider where the surface runoff water would go and where it might collect.
- Contaminated surface water should drain to a properly designed storage facility and should be disposed of in a no-discharge manner.
- The site must be accessible for emergency services and good routes of evacuation must be maintained.

Receipt of goods

a) Always check goods on arrival and before unloading.

b) Take photos of any damaged goods and send them to yarapocklingtonfeedback@yara.com at Yara UK Limited (Pocklington).

c) If damage has resulted in product being spilled then this should be dealt with in accordance with the directions given on the product Safety Data Sheet (SDS).

Special note for some YaraVita Procote products.

Some YaraVita Procote products must not be stored near oxidising substances.

Check the product Safety Data Sheet section 7.2 "Conditions for safe storage, including any incompatibilities" for the phrase "**Separate from oxidising materials**".

Unloading

- a) Use a fork-lift truck or pallet truck when unloading.
- b) Make sure that the equipment can handle the heaviest pallet on the load.
- c) Avoid breaking down pallets by hand to unload incoming deliveries
- d) Make sure that the protective shrink wrapping is not damaged during unloading.
- e) Do not leave pallets outside after unloading.



Warehousing

- a) Best practice calls for all pallets to be stored in suitable pallet racking.
- b) Where pallet racking is available always check that the racking is rated to carry the weight of the pallets being stored.

N.B. YaraVita liquid products have high densities e.g. a 1000 litre IBC can weigh between 1200 and 1900 kgs!

- c) If racking is not available then certain combinations can be double stacked..... see the table below. The table shows combinations which would be expected to minimise the risk of damage to packaging during storage.

Under no circumstances should products be stacked more than 2 pallets high.

Onward supply

- a) Ship full pallets wherever possible.
- b) Always cover part pallets with a protective sheet and store them back in the warehouse.
- c) Make sure that YaraVita products are protected from damage or dirt during transport.



Allowable double stacking configurations

		Top Pallet									
		1 litre (360 packs)	1 litre (480 packs)	5 litre (80 packs)	5 litre (120 packs)	10 litre (52 packs)	10 litre (72 or 78 packs)	20 litre	210 litre	1000 litre	Powder (sacks)
Bottom pallet	1 litre (360 packs)	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗
	1 litre (480 packs)	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗
	5 litre (80 packs)	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗
	5 litre (120 packs)	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗
	10 litre (52 packs)	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗
	10 litre (72 or 78 packs)	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗
	20 litre	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓
	210 litre	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓
	1000 litre	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Powder (sacks)	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓

Batch coding and stock rotation

Batch Coding

All YaraVita products carry a six figure batch code which provides useful information to warehouse staff. This code is printed on the external packaging of the product as well as on the individual bottles for liquid products.

Stock Rotation

Efficient stock rotation on a First In First Out basis is fundamental in ensuring that end users receive YaraVita product in the best possible condition

To assist with stock management, YaraVita suspensions also carry a phrase printed in the local language on the outer carton.

ABCDEF

Character	Range of values	Meaning
A	0 to 9	Year of manufacture indicator
BCD	001 to 365	Day number in year of manufacture
EF	01 upwards	Sequential batch number on day

For example:



Emergency Procedures

Emergency Procedures

- All sites must have their own Emergency Plan and this document is not intended as a substitute. However there are a number of fundamental points that should be borne in mind :
- Clearly identify roles and responsibilities in the event of an emergency.
- Know how and when to alert the emergency services and local authorities.
- Be aware of the Yara emergency hotline number and know when to use it.
- Make certain that you have an up to date Safety Data Sheet (SDS) for every YaraVita product that is being stored. These can be obtained via www.yara.com.
- In the event of an emergency involving YaraVita products follow your Emergency Plan taking into account the information provided in the SDS as well as local regulations.

Key contacts

In case of emergency contact
National Chemical Emergency
Centre +44 (0) 1865 407333



Glossary

ADR	International regulations governing the labelling of hazardous goods for road transport.
Agglomeration	Individual particles sticking together to form a solid mass or lump
Atmospheric humidity	The amount of water present in the atmosphere.
CLP	Classification, Labelling and Packaging
Compaction	Agglomeration of particles caused by pressure.
EPDM	Ethylene propylene diene M class rubber
GHS	Globally Harmonized System
Handling	Production, supply and delivery of goods.
HDPE	High density polyethylene
Hygroscopicity	The tendency of a material to absorb moisture from the atmosphere.
IBC	Intermediate bulk container (usually 1000 litre capacity).
IMDG	International Maritime Dangerous Goods
LLDPE	Linear Low Density Polyethylene
Nutrient	A substance beneficial to the growth and development of a crop.
PP	Polypropylene
Solution	A liquid containing dissolved substances.
Suspension	A viscous liquid containing solid particles.
Syneresis	The clear layer of liquid that can form at the surface of a suspension.
UN specification packaging	Packaging which has been tested and proved to comply with the United Nations specification for the transport of hazardous materials.
Viscosity	A measure of the structure or resistance to flow of a liquid.
Wettable	An insoluble powder which has the ability to disperse in water.

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