# SALTUS<sup>TM</sup>AGRI COMPOSITE

OLES

# FOR THE AGRICULTURAL INDUSTRY

**Developing and** testing a durabl and robust product took time and currently SALTUS<sup>™</sup> poles are well proven for various applications in the Agricultural Industry, such as Vineyards, Shade netting & Fencing with or without electrification

# **The SALTUS™ Composite Poles** for the Agricultural Industry

was developed in co-operation with the industry since 2012. The internationally patented design manufacturer of WORLD guarantees the **CLASS QUALITY** carbon fibre **BEST VALUE** and glass fibre poles, introduces composite pole in the **REVOLUTIONARY** and worldwide the world. patented **COMPOSITE SUPPORT POLE** 

> Light composite mine roof support (6 kg/m)

> > Heavy timber mine roof support (20 kg/m)

SALTUS<sup>™</sup> Poles was the FIRST SUCCESSFULLY underground tested composite mine roof support pole. The mine roof support pole carry loads up to 40 TONS and ONLY WEIGH 6KG per meter (compared to Timber at 20kg per meter). The composite mine roof support poles are **REVOLUTIONISING** the mine roof support industry by enabling more **EFFICIENT** installation of the poles.

NVIRONMIENTAL SUSTAINABILITY



CARBON

FIBRE DESIGN,

# The SALTUS<sup>™</sup> Composite Vineyard Pole Impact Resistance

YES, the SALTUS<sup>TM</sup> Composite Vineyard Support Pole has been tested for impact strength and will survive a mechanical harvest machine.

"Will **SALTUS™** Composite Vineyard Support Poles survive mechanical harvesting?"

> BEFORE dynamite blast (1.5m from blast face)

HIGH BENDING STRENGTH

AFTER dynamite blast (survived rocks of 3kg travelling at 13 m/s)

The fibreglass layer itself can survive impacts and have been tested underground in mining to survive a dynamite blast impact with 11mm wall thickness.

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# Why consider SALTUS<sup>™</sup> Composite Poles?

The internationally patented design aims at low cost to compete with the price of wood and addresses the following problems of wood and concrete poles:



#### BENEFITS of the SALTUS<sup>™</sup> Composite Pole:

#### LOWEST LOGISTICS COST

**SALTUS<sup>™</sup>** Poles nests for transport and is **LIGHT WEIGHT**, therefore the transport is usually volume limited and not weight limited as with concrete or timber

#### FLAME RESISTANT

#### SALTUS<sup>™</sup> Poles has SUPERIOR FLAME

**RESISTANCE** due to its unique advanced flame resistant composite properties. The special flame resistant resin is well known for its flame resistant properties and are often used for this reason in the aerospace composite industry

#### HARDWARE COMPATIBILITY

Smooth surfaced hardware without sharp edges should be used with **SALTUS<sup>™</sup>** Poles. Hardware for round cross-sectioned steel and concrete poles are commonly available and can be used with **SALTUS<sup>™</sup>** Poles

#### SUPERIOR TEMPERATURE PERFORMANCE

SALTUS<sup>™</sup> Poles performs well in hot and cold environments. The established temperature range is -60°C to +75°C





#### LONGEST LIFE

With a 60 years **ENGINEERED** service life, integrated UV protection requiring no scheduled maintenance resulting in lowest lifecycle cost and immunity to rot, corrosion, woodpeckers and termites

#### FAST INSTALLATION

SALTUS<sup>™</sup> Poles is LIGHT WEIGHT and therefore installation requires LESS LABOUR and will typically be installed at twice the speed compared to concrete or timber poles. This contributes to its competitive initial installation cost compared against alternatives

#### LOWEST LIABILITY

With a limited 30 year warranty, high dielectric strength providing IMPROVED SAFETY for workers and the public, better storm and higher wind reliability and minimum environmental impact



# SALTUS<sup>™</sup> Composite Pole Flame Resistance

*"Will SALTUS™ Composite Support Poles survive a fire?"* 

> The flame resistant composite layer on the outside can survive a gas flame burning for 1 minute without any smoke. The composite layer on the outside also protects the inner plastic layer and conducts heat away from the plastic layer.

After flame test of one minute at **1500°C** – no mechanical degradation to fiberglass layer or inner plastic pipe

www.saltuspoles.co.za

Flame test

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# **LOWER OVERALL INSTALLATION** COST

No crane needed - three people installing a 9m pole easily

LOWER TRANSPORT COSTS

For those difficult to reach places

> LABOUR SAVING

**FASTER** INSTALLATION

**Easy Installation** 

LIGHT WEIGHT

SALTUS

#### "Fibreglass poles whip around in the wind"

Each vineyard support pole is engineered to withstand a wind load of 365 Pascal which is an internationally accepted design standard for fibreglass luminaires and road signs. This allows for deflection of the tip of the pole up to 5% of its length in stormy winds.

#### "Fibreglass poles cannot support big headloads"

Each SALTUS<sup>™</sup> pole is individually engineered by factoring in wind load and exposed area and support load. Also refer to 40 ton support for mining industry.

#### "Fibreglass poles are made out of plastic"

Only the inner shell is made of plastic and is used for its elastic properties to extend the lifetime of the pole. The support is mainly provided by the fibreglass outer shell which consists of 70% fibreglass and 30% resin.

#### TYPICAL MYTHS RELATED TO FIBREGLASS SUPPORT POLES:

#### ✓ "Fibreglass poles leach chemicals into the ground over time" Each SALTUS<sup>™</sup> pole is

engineered for a service life of 60 years (with a limited warranty of 30 years) and the resin which holds the fibres together will not degrade or leach into the ground

# "Fibreglass poles are deteriorated by sunlight"

The UV rays of sunlight will only damage unprotected fibreglass. The SALTUS<sup>™</sup> support pole is protected by an imbedded layer of UV protection which cannot be scratched or flaked off. No maintenance is required



#### The SALTUS™ **Composite Poles**

	Lengths	Timber equivalent Diameter (mm)	Saltus™ Pole Outside Diameter (mm)	Height above ground for cable pull test (m)	Max force applied (kg) at height of 4.8m above ground (to compare with timber data)		
/	2.5m to 3.9m	75-100	66	NA	NA		
	4m to 4.9m	100-125	78	NA	NA		
-	5m to 5.9m	125-150	113	4.8	800		
	6m to 8m	150-175	128 LD 130 MD	4.8	1200 1500		
	8.1m to 10m	175-200	168	4.8	2000		
	10.1m to 11m	175-200	183	NA	NA		
l	11.1m to 13m	175-200	208	NA	NA		
	Relevant pole data is based on a						

shape factor of 0.7 and a calculated wind pressure of 365-500 Pa depending on application

## **Truckload Quantity** Comparison

# of poles by 12m truck

78mm

Poles

6m length



4.2m length

66mm	100mm	
SALTUS™	Timber	
2570	820	
Poles	Poles	

2.1m length

43mm		
	75mm	
SALTUS™	Timber	
15136	2970	
Poles	Poles	

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# SALTUS<sup>™</sup> Poles Applications

Cost of pole

The poles can be recycled and used in other applications after its service life of 60 years

> 20% saving

SALTUS<sup>™</sup> Poles Cost vs Volume (Economy of Scale)

10% saving

Increasing order volume

*"Inner plastic tube recycle"* 

The plastic inner layer can be recycled via the standard plastic recycle route. This is a closed loop cycle and no plastic is wasted.

#### "Chopped fibre filler for green plastic wood products"

Each **SALTUS<sup>™</sup>** pole has a fibreglass outer layer. This layer can be chopped into short fibres and the fibres can be mixed into green plastic wood products. It has been shown that extruded plastic profiles can be strengthened using up to 50% (by volume) chopped fibre.

# "Chopped fibre filler for geopolymers or concrete"

Each **SALTUS<sup>™</sup>** pole has a fibreglass outer layer. This layer can be chopped into short fibres and the fibres can be mixed into geopolymer or concrete. It has been shown that geopolymer and concrete can be strengthened using up to 40% (by volume) chopped fibre.

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# SALTUS™ Composite Support Pole for Vineyards

#### **DESIGN STORY**

The pole is overdesigned in vertical load, but design limited for AFFORDABILITY to be just STRONG enough for hurricane winds from the side when fully loaded



#### Standard vineyard trellis design:

60	ton/hectare (maximum possible yield		
500	poles per hectare		
120	kg per pole (for grape yield)		
240	kg total for vine plant and grape yield		
3000	kg design yield load		
13	safety factor for wind and cable weight forces		

#### "Stok by Paal" design:

60	ton/hectare (maximum possible yield			
3600	poles per hectare			
17	kg per pole (for grape yield)			
33 kg total for vine plant and grape yield				
2500	kg design yield load			
75	safety factor for wind and cable weight forces			

#### Note:

A wooden pole with OD=50mm will load test up to 5 tons depending on moisture content and sun degradation. In engineering practice wood will be downrated with 50% due to variability to 2.5 tons



### Installed Vineyard Pole Price Comparison\*

#### **Treated PINE TIMBER Poles vs SALTUS<sup>™</sup> Poles** (Comparing high volume order pricing)



Deflection at top of pole as calculated for a wind load force of 112 km/h (365 Pa). As can be seen from the table, all designs are within the specification of 15% deflection of total length above ground when carrying full grape load

# SALTUS™ Composite Support Pole for Vineyards

#### WIND DESIGN

Outside	Height	Vineyard	Deflection at	Deflection at	Max allowed	
Diameter	above	effective	tip (mm).	tip (mm). Wind	deflection	
(mm)	ground	nd area (m²) Wind effec		effect on pole	(15% of	
	(m)		pole alone	and vineyard	length)	
32	2	4×1×0.025	43	101	300	
43	2	4×1×0.025	20	48	300	
78	2	4×1×0.025	7	11	300	

After yield load test

#### **INNER LAYER: PLASTIC TUBING**

Plastic tubing is used for increasing wall thickness and also adds elasticity to protect fibreglass shell. Plastic tubing is typically used as water irrigation pipe and has very little load bearing compressive strength.

#### MIDDLE LAYER: FIBREGLASS WITH RESIN Fibreglass acts as main load bearing material with its excellent compressive and tensile strength properties. Fibreglass to resin ratio is 70:30.

Application	Wood equivalent Diameter (mm)	Saltus <sup>™</sup> Outside Diameter (mm)	Total weight (kg/m)	Max vertical load per pole (ton)
"Stok by paal"	25-50	32	0.4	2.5
Standard vineyard trellice	50-75	43	0.6	3.5
Table grape support pole	75-100	66	1.1	6
Shade net canopy inner pole	100-125	78	1.3	7.5
Shade net canopy anchor pole	125-150	113	2.2	12
SALTUS <sup>™</sup>				

# Attachments to SALTUS™ Composite Vineyard Support Poles

ALL types of hooks can screw into the SALTUS™ Poles

Standard hook recommended for vineyard support cables – cable can clip in from top or below

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COMPATIBILITY

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32mm diameter design of 2.1m total length (1.5m above ground)

Stok-by-**Paaltjie or Posted Vine** 



In well prepared and/or sandy soils Saltus posts can be plant by hand without the need for hammering the pole into the ground. Planting easily by ha has a 20% saving on labour co compared to wood and other alternatives. In well prepared and/or sandy soils Saltus posts can be planted by hand without the need for ground. Planting easily by hand has a 20% saving on labour costs compared to wood and other alternatives.

#### **BENEFITS**

Low weight & labour saving installation as well as long term cost savings.





43mm diameter design on 1.8m, 2.1m and 2.4m total length (1.2m, 1.5m or 1.8m above ground)

Designed for high yields per hectare

Smart-Dyson

**Ballerina or** 

# **INSTALLATION**

In well prepared damp soils, planting posts are quick & easy. This results in much faster installation compared to other alternatives. In tougher soils holes can be drilled or stamped for planting. Save 10%-20% on installation costs compared to heavier wood & other alternatives

#### **BENEFITS**

Low weight & labour installation savings. A competitive alternative with long term benefits.

SALTUS<sup>™</sup>

Cable fi

Geneva Double Curtain

Designed for high yields per hectare

66mm diameter vertical support posts with either 66mm diameter Y-arms or 43mm diameter Y-arms depending on row lengths, planting width and yield. If the ends of two neighboring rows are connected, 43mm diameter will provide ample strength and support.

Cable fixing options

Vertical posts can be ordered in 2.4m and 3.6m lengths (for supporting net or plastic film). Alternatively 2.4m lengths can be planted and later extended to 3.6m with a spigot joint.

3m

#### **MODULAR BENEFITS**

Low weight, quick installation and labour saving. Posts are pre-assembled in our factory with collapsible Y-arms giving transport and quick re-assemble benefits.

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(Double Slanting Trellis)

**Gable Trellis** 

Designed for high yields per hectare

Also, support poles for net or plastic file in existing infrastructure

Vertical posts can be ordered in 2.4m and 3.6m lengths (for supporting net or plastic film). Alternatively 2.4m lengths can be planted and later extended to 3.6m with a spigot joint.

#### BENEFIT

Single light weight support posts can easily be installed on existing infrastructures as net or plastic film supports.

66mm diameter vertical support posts with either 66mm diameter Y-arms or 43mm diameter Y-arms depending on row lengths, planting width and yield. If the ends of two neighboring rows are connected, 43mm diameter will provide ample strength and support.

# SALTUS<sup>™</sup>

## SALTUS<sup>™</sup> Composite Poles for Fruit Shade Net Structures

OVERALL COST PER INSTALLED BLOCK Comparison between SALTUS<sup>™</sup> poles and Pine Timber poles

1.03 \* cost of Pine for overall cost of combined block 1.2 × cost of Pine: to ensure strong and rigid anchor structure

0.95 × cost of Pine

1.2 × cost of Pine: to ensure strong and rigid anchor structure

Application	Timber equivalent Diameter (mm)	Saltus™ Pole Outside Diameter (mm)	Height above ground for cable pull test (m)	(kg) at height of 4.8m above ground (to compare with timber data)
Shade net inner pole (lower than 4m above ground)	75-100	66	NA	NA
Shade net inner pole (lower than 6m above ground)	100-125	78	NA	NA
Shade net perimeter pole (lower than 4m above ground)	125-150	113	4.8	800
Shade net perimeter pole (lower than 6m above ground)	150-175	128 LD 130 MD	4.8	1200 1500
Shade net corner pole (lower than 6m above ground)	175-200	168	4.8	2000

Please note: The recommendation left is only valid for a shade net structure area of 300m by 300m (or 9 hectares) and maximum roof height of 6m

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# The SALTUS™ Composite Poles for Fencing

TURNKEY DESIGNS AVAILABLE FOR FENCING, GAME FENCES OR ELECTRIC FENCES

QUICK & EASY Installation

N-CONDUCTIVE &

FIREPRO(O)

UV RESISTANT (60 years service life with 30 years limited warranty)

66mm diameter poles every 100m of 2.6m length (2m above ground); a 32mm pole every 5th pole of 2.6m (2m above ground); four 10mm solid Fibreglass droppers spaced every 2m and 2m in length (not fixed in the ground)



# Satisfied SALTUS<sup>™</sup> Composite Poles Agricultural Clients:

Supported by an international patent and a dedicated engineering team

Vredehof Rawsonville South Africa

L'Ormarins Franschoek South Africa

> "**BEST VALUE** composite pole in the world"

Strates and an extended of

Doornkraal Wines Ebenhaeser South Africa Phil Reed Quiedan New Zealand

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