BETALIGHT
Information and product index

BETALIGHT
when reliability really counts

BETALIGHT

The history of Betalux™ Safety

In the 1940's, the English aerospace company Saunders-Roe manufactured flying boats and helicopters; later, it also produced jet aeroplanes. The company was located on the Isle of Wight. At the time, it was difficult - if not impossible - to supply uninterrupted power to aircraft instrumentation. This problem was solved by Saunders-Roe by putting an ionising gas (tritium; 3H) in small tubes. Tritium was discovered in 1934 by Lord Rutherford.

When Saunders-Roe was acquired by Westland Helicopters (now part of AgustaWestland, producer of the well-known WAH-64 Apache helicopter), the Betalight production was made independent under the name SRBT (Saunders-Roe Betalight Technology).

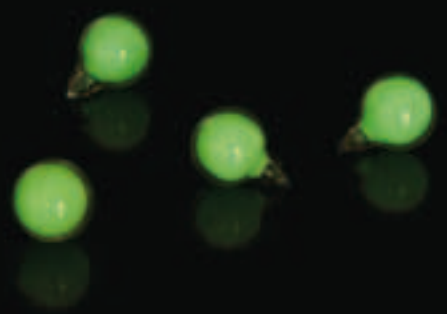
Today Betalights are used in self-luminous escape-route signs, under the product name Betalux™, initially in Britain and America, eventually expanding into global markets. Betalights are also used to illuminate corridors and escape lights of a wide range of commercial and military aircrafts.

In the form of a torch, Betalights were part of the personal belongings of all Apollo astronauts. NASA judged the quality of these torches to be so high that no spares were supplied. In December 2002, the Netherlands saw the implementation of Euratom 96/29, the regulation justifying the use of ionising radiation, of the Netherlands Ministry of VROM (Public Housing, Regional Planning and the Environment). This regulation allows the use of tritium gas (3H) for escape-route signs in buildings, aeroplanes and ships.

The Dutch ministry of economics decided on 1/1 - 2005 to give a tax deduction when purchasing Betalux™ escape signs in their energy savings program. Since then, Betalight B.V. has taken over marketing of the Betalux™ brand in Europe.

The Betalux™ exit signs produce enough light to be recognisable at a distance of 40 metres for 15 years. This form of escape-route signage is applied especially where uninterrupted power supplies are problematic, for instance in monuments, churches and castles (where you do not want to or cannot drill holes in the walls) and in explosion-sensitive spaces in refineries and such like.

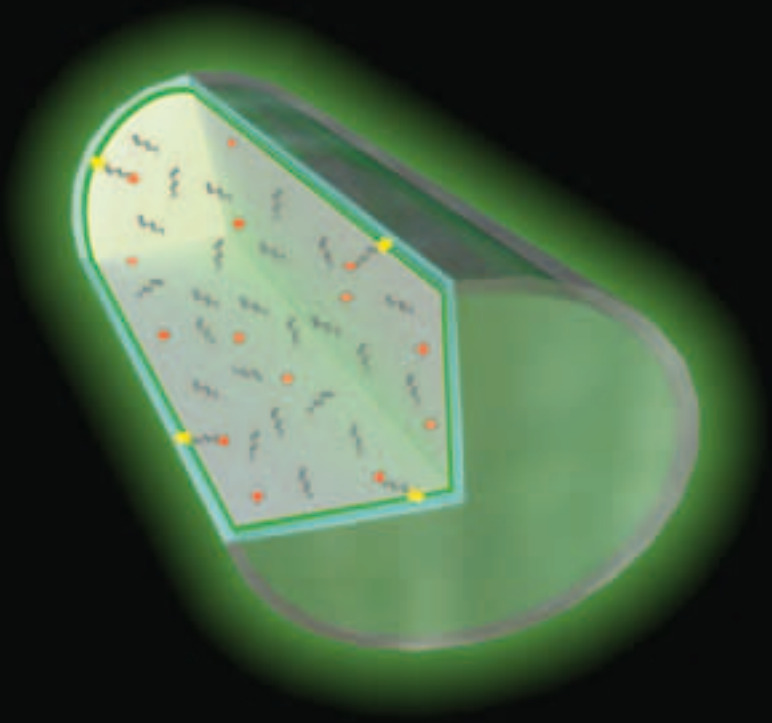
Betalight b.v. defence division is active in the supply of Betalight lights for military purposes, for example, spot markers for minefields (showing safe lanes in the dark), illuminated rifle scopes, illuminated magnifying glasses (so that maps can be read in the dark), etc.



WHAT IS TRITIUM?

Tritium gas (chemical symbol 3H) is an isotope of hydrogen gas, and is colourless, odourless, and lighter than air. Most physical characteristics are the same as hydrogen, but the atoms in tritium are slightly different, causing them to emit low energy in the form of ionising radiation, or electrons. Tritium is considered "user friendly" because it has the lowest energy rating of any radioisotope. The energy of tritium electrons is much less than those generated in electrical lamps, which is why you cannot see tritium tubes glow except in dim light or darkness.

Betalux™ signs are lit by means of tubes of borosilicate glass filled with tritium gas. On the inside the tubes are coated with a fluorescent powder, which continuously emits light due to the ionising radiation of the tritium gas, for up to 131,000 hours. The entire tube is comparable to a fluorescent lamp, for which the current going through the lamp is replaced by tritium gas, therefore, no electrical connection is needed. This form of escape route marking has already been applied in aeroplanes, where reliability comes first, for over 50 years.



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Exit Signs

Betalux b.v. presents an innovative choice for exit signage: self-luminous signs and markers. The most energy efficient emergency exit signs currently on the market, these versatile, rugged and durable products are redefining the emergency signage sector.

IT'S EASY BEING "GREEN"

Betalight's self-luminous line of products is powered by a tritium light source that remains continuously illuminated. Betalight takes the waste product from the production of electricity used in homes and communities and turns it into an important life safety device.

Maintenance-free and 100% self-luminous, this line contains products with a useful lifespan up to 15 years. At the end of its life, the materials contained within these products can be recycled. Betalight self-luminous products meet all applicable fire and building codes, and are available in a variety of finishes that complement any location. Ideally suited for applications where a reliable emergency exit sign is required, the durable construction of Betalight's self-luminous products ensures constant, dependable operation for years to come.

HOW TO DETERMINE THE LIFE OF TRITIUM SIGNS

Tritium gas, like other radioisotopes, decays at a known rate. This rate is usually specified by the "half-life," which is the time taken to decay to half the initial energy. For tritium, this is 12.3 years. In addition, the minimum brightness required to meet national and local codes for exit signs is well known. With these two figures, the exact amount of tritium required to produce light above the minimum brightness specification can be calculated. Betalight B.V. offers signs with up to 20 years of guaranteed useful life before replacement is needed.

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Betalux™ Sign Features

DO NOT NEED AN ELECTRICAL OUTLET
Easy to install without the need for expensive cabling, the unit eliminates the need for damage to existing infrastructure. Ideal for monuments and heritage sites, continuous light is provided for up to 15 years.

DO NOT USE ELECTRICAL ENERGY
Used in the aerospace industry for decades, there is no more energy efficient technology. The bottom line is a considerable reduction of electricity bills.

ARE MAINTENANCE FREE
No regular replacement of lamps and batteries.
No possibility of defective electronics. No complicated self-test systems.

ARE EXPLOSION SAFE
No electrical components, no ignition circuits. Ideal for applying in explosive environments, such as drilling platforms, refineries and petrol stations.

ARE WATERPROOF
Due to the lack of electrical components Betalux™ signs can be applied in humid areas such as tunnels, along motorways - even under water if necessary!

ARE TEMPERATURE RESISTANT
The function is not affected by temperature variations. The temperature range is between -60 °C and +80 °C, therefore very suitable for application in e.g. refrigeration cells.

ARE VIBRATION RESISTANT
For this reason very suitable for application in ships, engine rooms, and aeroplanes.

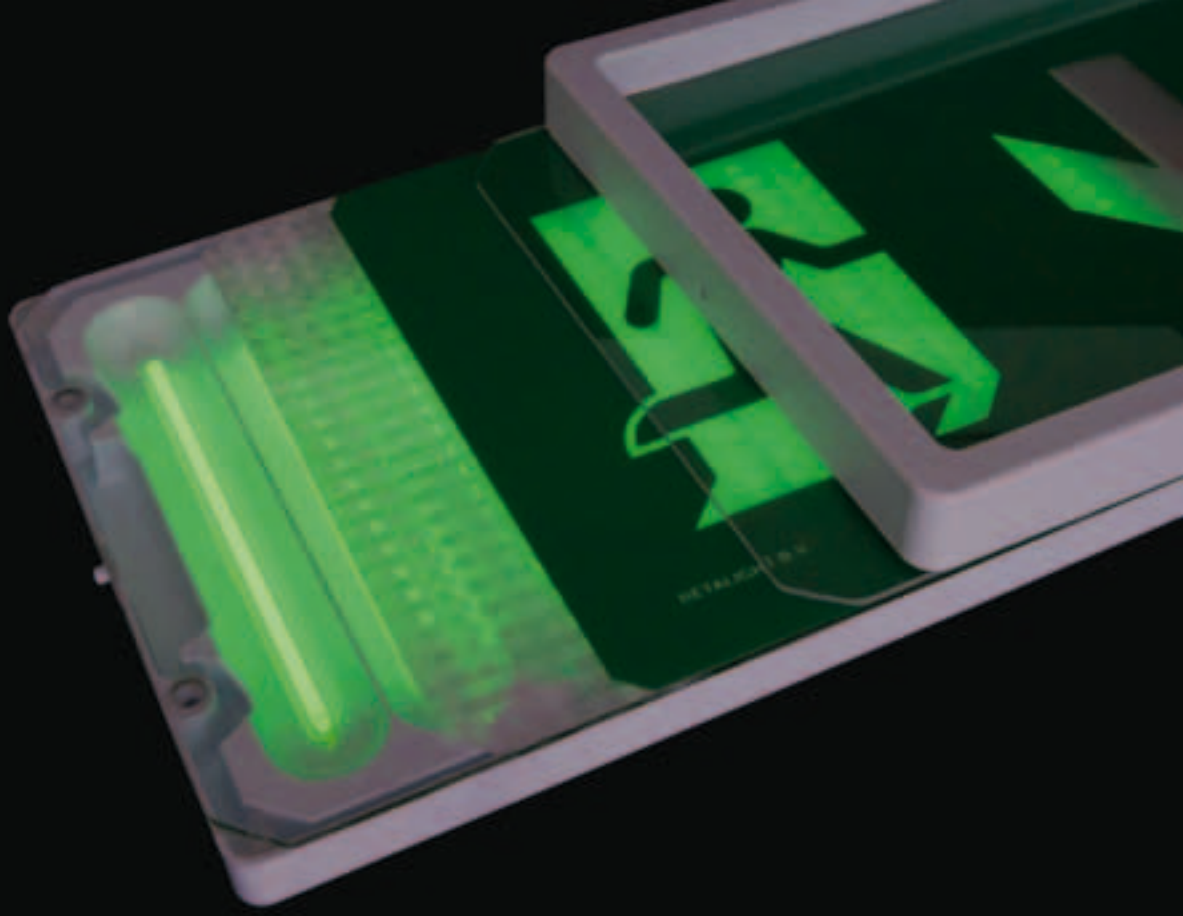
ARE EMC-INSENSITIVE
Causes no EMC interference (think of pacemakers and hearing aids). Not sensitive to EMC interferences from outside. Highly suitable for hospitals and aeroplanes.

ARE MULTIFUNCTIONAL
Betalux™ signs can be delivered with various legends and in different colours and sizes, also according to the client's wishes.

ARE TOUGH AND IMPACT-RESISTANT
Betalux™ signs are encased in tough, lightweight, corrosion and fire resistant ABS and sealed ultrasonically.

CERTIFICATES AND APPROVALS
Betalux™ signs are manufactured under ISO 9001 and comply with many regulations including:
NEN 6088; NEN-EN 7010; NEN-EN 1838; BS-5499 part 2; ANS N540; NFPA Life Safety Code 101 and Directive 92/58 EEG, are UL-listed and permitted by US-NRC and the Ministry of VROM reg. SAS/2001144917 nr. I.A.9.

Betalux™ signs are approved or tested by Underwriters Laboratories inc. (UL), Lloyds, Det Norske Veritas, TNO, Canadian & US Coast Guard and British Standard. Reports available on request.



BETALIGHT

Betalux™ Self-Luminous Exit Signs

KEY FEATURES

- Completely independent
- Maintenance free
- No external power, no additional light source, no batteries required
- Operate in temperatures from -60 °C to +80 °C
- Absolutely reliable light for up to 15 years
- Operation completely unaffected by immersion in water
- No heat is generated
- All products are suitable for use in hazardous atmospheres
- Legend can be changed in situ

PERFORMANCE

Sign text and legend are clearly legible in light, dark and twilight conditions. Standard products are available to meet a range of international regulations. A tough polycarbonate enclosure provides a high level of damage resistance.
In extreme conditions, accessories are available to increase the level of physical protection.

NICHE MARKETS

- Existing and new buildings
- Parking garages
- Heritage and Cultural buildings
- Remote and non-electrified locations
- Offshore and underground construction projects
- Hazardous atmospheres

PHYSICAL CHARACTERISTICS

Height	: 210 mm
Wide	: 325 mm
Depth	: 25 mm
Material	: Tough, fire resistant ABS
Weight	: 800 g

BETALIGHT

Self-Luminous Offshore Fire & Safety Signs

KEY FEATURES

- Absolute reliability in all environmental conditions
- Safe for use in hazardous atmospheres
- Unaffected by humidity, condensation and temperature
- Maintenance-free operation
- No electrical supply or wiring
- No batteries, bulbs or switches

PERFORMANCE

Legend can comprise text (in any language) and/or symbols. Sign legend is clearly legible in light, dark and twilight conditions. Standard products are available to meet a range of international regulations. A tough polycarbonate enclosure provides a high level of damage resistance.

TYPICAL APPLICATIONS

- Offshore platforms and structures
- Workboats and leisure craft
- Petrochemical production and process facilities
- Explosive atmospheres
- Inaccessible, remote or saturated environments
- Temporary signage on construction sites

ENERGY CONSERVATION

Betalight self-luminous signs make a significant contribution to energy conservation programmes.

PRODUCT APPROVAL

Signs are available in two standard sizes:
Regular (420 x 190 x 20 mm) and Compact (220 x 180 x 20 mm).
Product approvals include LRS, DnV, CCG and and USCG.
SRB Technologies (Canada) Inc. is ISO 9001 Certified.

BETALIGHT

Aircraft Signs

Innovative, self-powered and permanently illuminated signs and labels for use in passenger transport systems and vehicles.

KEY FEATURES

- Absolute reliability - operate even in catastrophic power failures
- Independent of electrical power and ambient lighting
- Lightweight, do not require wires, batteries, bulbs, or transformers
- Simple and quick installation procedure even in retrofits
- Maintenance-free operation

PERFORMANCE

Sign text and legend have excellent legibility in light, dark and twilight ambient lighting conditions. In the dark, signs can be viewed from distances of up to 50 metres. Sign brightness can be varied according to application and is not affected by temperature, humidity, altitude or fixing plane.

TYPICAL APPLICATIONS

- Escape route signs for passenger transport systems eg: aircraft, road and rail vehicles
- Instruction signs for emergency equipment eg: BG hammers, fire extinguisher pull and open signs

INSTALLATION

Signs are suitable for mounting directly to supporting surfaces. Conduit boxes and other interfacing devices are not required.

MATERIALS

Signs are encased in tough, lightweight, corrosion and fire resistant acrylic plastic (fabricated to provide maximum strength at minimum weight) and are ultrasonically sealed to prevent ingress of dust and moisture. A variety of colours and finishes are available to meet customers' specific needs.

COMPARATOR

Betalights do not emit photons the same way as other light sources. This is why the comparator methodology is still the only way to test tritium illuminated safety signs.
A comparison between the brightness of the lighted portion through the viewing slot and the calibrated light source will confirm whether the test sign is above or below the required brightness.

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BETALIGHT

Self-Luminous Door Handle

Self-Luminous door handle, indicating exits in low visibility and blackout conditions.

KEY FEATURES

- Unique design
- Visible up to 15 metres
- No batteries or bulbs required
- Maintenance-free, operational life of 15 years
- Guaranteed reliability in all environments and conditions
- Unaffected by humidity and temperature
- Fully waterproof
- Tough, impact resistant yet lightweight and integrated
- Range of colours, shapes, sizes available for multiple solutions

PERFORMANCE

Betalight b.v. provides a door handle with a continuous and secured light source that enables immediate identification in partial and complete darkness. The tritium illuminated door handle is visible at a distance of up to 15 metres, depending on the size and the colour of the Betalights. The door handles are available in different brightness levels and colours.

TYPICAL APPLICATIONS

- Marking/ illuminating fire / emergency exits
- Visualisation of door handle in a nursery
- Route safety in all conditions

BETALIGHT

Self-Luminous Multi-Purpose Markers

THEY GUIDE YOUR PATH WHEN THE LIGHTS GO OUT

- The perfect solution for hospitals, auditoriums, stairways, corridors, and theatres
- Always on - require no electricity or maintenance
- Rugged polycarbonate housing
- Available in different sizes

KEY FEATURES

- Absolute reliability in all environmental conditions
- Available in different sizes, shapes and colours
- Continue to operate under water
- No Batteries or bulbs required
- Maintenance-free, operational life of 10 to 15 years
- Tough, impact-resistant yet lightweight enclosures
- They are rated for operation in temperatures of -60 °C to +80 °C

PERFORMANCE

Route markers are available with a range of brightness levels, from 80 µL to 900 µL and in different colour options.

TYPICAL APPLICATIONS

- Survival scenarios: marking of vital portable equipment, torch, radio, keys, tents etc.
- Visualisation of important equipment in low light and no light conditions
- Fixed equipment: marking of switches, doors and alarm buttons
- Route safety: marking of ropes, paths, steps, hazards and obstacles
- Remote or un-serviced installations: reliable, long-term illumination and marking

PHYSICAL CHARACTERISTICS STANDARD MARKERS:

LINE (SURFACE) MP 166

Width : 12.7 mm
Height : 14.2 mm
Length : 95.3 mm

DOME (SURFACE) MP 152

Diameter : 66.8 mm
Height : 33.3 mm

LINE (SURFACE) MP 145

Wide : 12.7 mm
Height : 3.1 mm

FLAT TOP (SURFACE) MP 107

Diameter : 28.6 mm
Hight : 25.4 mm

Customised markers on request.

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BETALIGHT

Self-Luminous Route Markers

KEY FEATURES

- Absolute reliability in all environmental conditions
- Betalight luminance maintains night vision
- Limited viewing angle of 140° enhances security
- Colour options enable functional differentiation
- No batteries, bulbs or maintenance required
- Rugged, lightweight, portable and easy to deploy
- NATO stock number: Defile 6210-99-209-4968
- Service life of 10 years

PERFORMANCE

Standard Markers produce 400 µL-enabling visibility in starlight conditions with the naked eye at ranges of 100 metres and more. Recessed mounting of light sources limits the viewing angle to 140° (2500 mrads). Brightness is not affected by temperature, humidity, altitude, operational plane or vehicle vibration.

TYPICAL APPLICATIONS

- Minefield marking: to define the perimeter and safe lanes through a minefield
- Bridge marking: to indicate bridge width and length
- Elevation onto support poles enables clear visibility on low profile bridges
- Route marking: clear route indication by attachment of markers to poles, trees, wires or other supports
- Route designation: assignment of colours and configurations for specific route functions and designations

COLOUR OPTIONS

The Route marker is a standard unit comprising a black body, a white arrow and two green Betalights forming a chevron in the arrowhead. Route Markers are available in a range of body and arrow colours. In addition to two green Betalights in the arrowhead, a third is fitted in the arrow tail. The third Betalight colour is optional but routinely reflects the body colour. A choice of blue, red, orange, green, yellow and white colours are available.

MATERIALS

The Marker body, arrow and cover are manufactured in tough polycarbonate. The fixing bracket is zinc-plated steel coated with Crodalux polyester powder.

PHYSICAL CHARACTERISTICS

Length	: 130 mm
Width	: 72 mm
Depth	: 27 mm
Weight	: 170 g

BETALIGHT

Self-Luminous Equipment Markers

The Self-powered luminous markers are for locating portable and fixed equipment in low light and blackout conditions.

KEY FEATURES

- Absolute reliability in all environmental conditions
- Secure, low brightness option available
- Continue to operate under water
- No Batteries or bulbs required
- Maintenance-free, operational life of 15 years
- Tough, impact-resistant yet lightweight construction
- Range of colours and fixing solutions

PERFORMANCE

Standard markers are available with a range of brightness levels, from 80 µL to 550 µL. Markers can be supplied in a nine-colour option.

TYPICAL APPLICATIONS

- Kit location and identification in darkness
- For in-outdoor and general use
- Use as night-time bite indicator or for other finishing applications
- Zip, or exit marking
- Survival scenarios: clear yet secure marking of equipment, stores and positions
- Personal marking to enable visual contact during night patrols
- Safety marking of ropes, paths, hazards and obstacles
- Thousands of possibilities

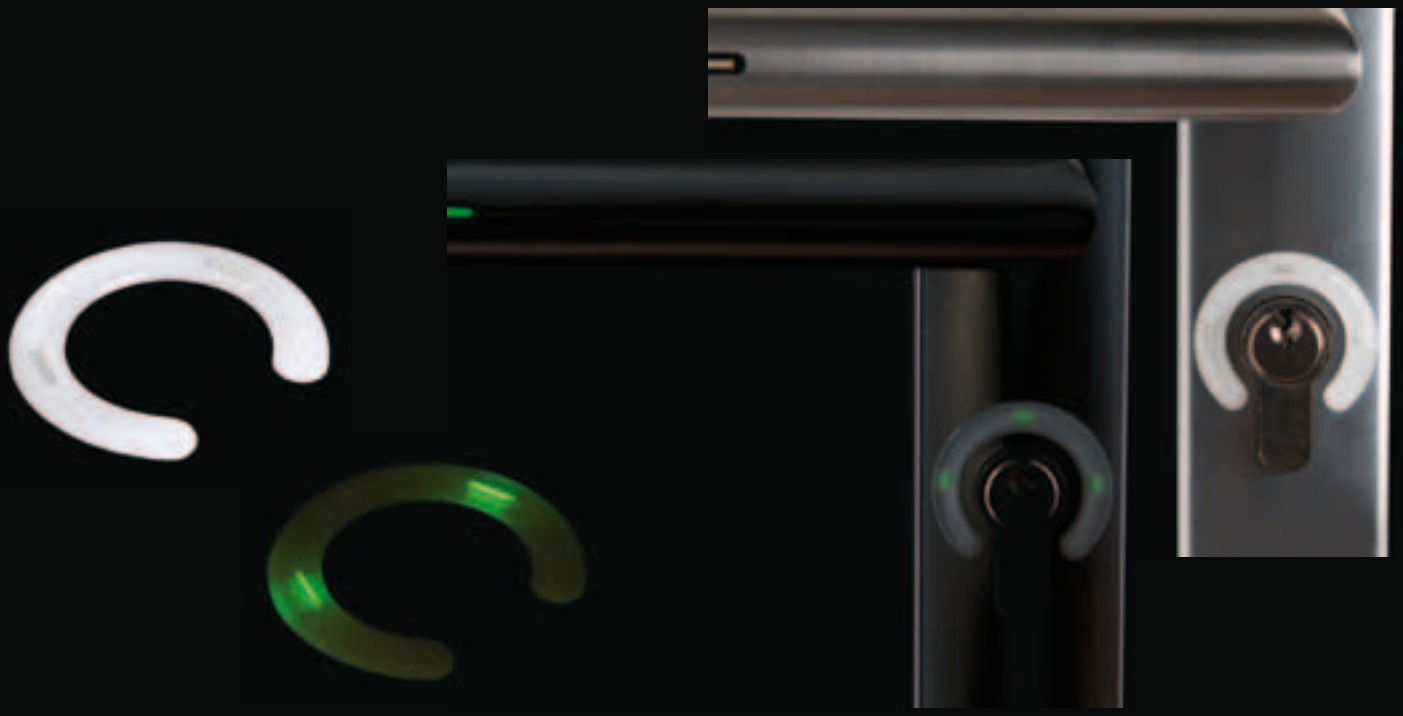
VARIOUS MARKERS

Self-Luminous Kit-markers are available in different sizes and colours for multiple applications.

TYPE	LENGTH	DIAMETER	WEIGHT
Zipmarker	20 mm	10 mm	2 g
Kitmarker	30 mm	10 mm	3 g
Superkitmarker	40 mm	10 mm	6 g

BETALIGHT

Self-Luminous Spot Indicators



Indicating important spots in low visibility and blackout conditions.

KEY FEATURES

- Range of colours, shapes, sizes available for multiple solutions
- Visible up to 30 metres
- No batteries or bulbs required
- Maintenance-free, operational life of 10 years
- Unaffected by humidity and temperature
- Fully waterproof
- Tough, impact resistant yet lightweight and integrated
- Viewing angle 180°

PERFORMANCE

Betalight b.v. provides illuminated spot indicators with a continuous and secured light source that enables immediate identification in partial and complete darkness. The lens on top of the Betalight enhances visibility. Spot indicators can be placed on switches, around keyholes, or wherever preferred.

TYPICAL APPLICATIONS

- Illuminated essential equipment
- Illuminated door handles
- Illuminated Key holes
- Illuminated button
- Wherever reliable illumination is required

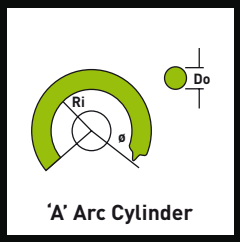
BETALIGHT

Light Sources

Betalight offer you total design flexibility. They can be produced in straight tubes, disk and spheres to suit all individual applications. Sizes vary from the smallest tube, with a diameter of 0,65 mm and 2,5 mm length, up to disks of 90mm diameter and tubes up to 200 mm in length. The brightness of a newly manufactured Betalight depends on the thickness of the coating, the geometric shape, the purity of gas used, and the filling pressure from the source.

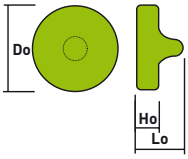
Through the paint on a reflective layer of the light can be further intensified. One of the main points; the colour of the light. A green Betalight with identical properties is always brighter than one colour in red or blue.

Green colour is normally recommended due to its efficient and visual brightness, Betalights can be produced in any colour within the visible spectrum.



'A' Arc Cylinder

	MIN.	MAX.
Do	3.0	7.0
Ri	5.0	99.5
Angle of Arc dependent upon radius	10°	350°



'F' Disc (axial pip)

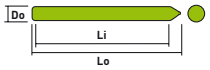
	MIN.	MAX.
Do	6.5	22.0
Ho	2.0	8.0
Lo	8.0	12.5

'BH' Square

	MIN.	MAX.
Ho	1.0	2.5
Lo	4.0	50.0

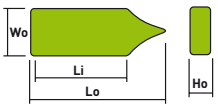
'MH' Miniature Cylinder

	MIN.	MAX.
Do	0.65	3.5
Lo	2.7	50.0



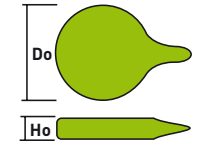
'C' Cylinder

	MIN.	MAX.
Do	3.0	7.0
Lo	15.0	200.0
Li	10.0	195.0



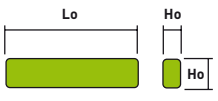
'R' Rectangular

	MIN.	MAX.
Wo	3.0	15.5
Ho	1.5	5.0
Lo	15.0	99.5
Li	10.0	93.0



'D' Disc (radial pip)

	MIN.	MAX.
Do	5.0	22.0
Ho	2.0	6.0



'RH' Miniature Rectangular

	MIN.	MAX.
Wo	1.7	4.0
Ho	0.6	2.0
Lo	6.0	50.0

Do : Overall diameter
Ho : Overall height
WD : Window diameter

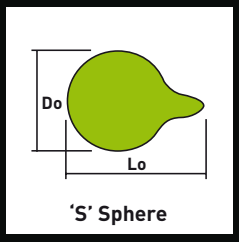
Ri : Inside radius
Li : Lit length

P : Pip height
Lo : Overall length

Wo : Overall width
Ø : Angle of arc

BETALIGHT

Light Sources

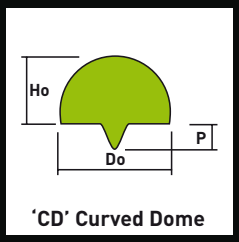


'S' Sphere

	MIN.	MAX.
Do	4.0	15.0
Lo	8.0	21.0

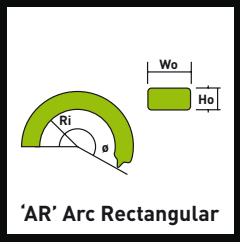
'SW' Sphere Painted (Window)

	MIN.	MAX.
Do	4.6	15.0
Lo	8.7	21.0
WD	1.5	6.5



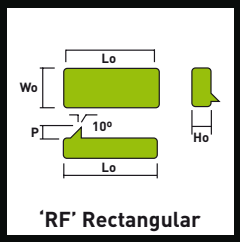
'CD' Curved Dome

	MIN.	MAX.
Do	12.5	21.5
Ho	6.2	12.8
P	4.0	8.5



'AR' Arc Rectangular

	MIN.	MAX.
Wo	3.0	5.5
Ho	1.5	3.0
Ri	5.0	99.5
Angle of Arc dependent upon radius	10°	350°



'RF' Rectangular

	MIN.	MAX.
Wo	5.0	15.5
Ho	2.5	8.0
Lo	10.0	99.5
P	nominal	7.0

Do : Overall diameter
Ho : Overall height
WD : Window diameter

Ri : Inside radius
Li : Lit length

P : Pip height
Lo : Overall length

Wo : Overall width
Ø : Angle of arc

NOTES

1. DIMENSIONS

All dimensions are in mm and refer to glasswork only. Paint should be allowed for separately and is normally 0.25 mm thick.

2. BRIGHTNESS

Betalight brightness is measured photopically in microlamberts. (1 microlambert = 9.29 x 10^4 foot lamberts and 3.18 x 10^3 candelas per square metre.

Details and Illustrations represent the Betalight basic range only. Betalights can be manufactured to suit individual requirements in any colour in the spectrum and to virtually any size or shape. Contact us with your lighting problems.

Tritium Recycling Or Disposal

Our goal is to make the process of Recycling or Disposal of Tritium light sources or light devices fast and easy.

WE ACCOMPLISH THIS BY PROVIDING

1. Our staff are well versed in the regulatory requirements related to Self-Luminous tritium disposal.
2. Step by step assistance. From completing the initial paperwork until the shipment of tritium products leaves your facility, we're here to help.
3. The most competitive prices in the tritium disposal industry.
4. Quick turnaround. Betalight will process your request for tritium disposal and have you ready to ship within days rather than weeks.
5. A fully licensed shipping destination. Whether you need to process just one sign, or thousands of raw light sources, let the knowledgeable staff of Betalight b.v. help you perform your tritium disposal quickly, easily and affordably.

We are specialised in recycling, supplying and refurbishment of gaseous tritium light sources and light devices.

NATO Maintenance & Supply Agency
NATO CAGE Code H1U51
NAMSA registration code 4000049917
D.U.N.S.no.416901775

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BETALIGHT B.V.
T 0031 341 360111
F 0031 341 361238
E info@betalight.nl
I www.betalight.nl

WWW.BETALIGHT.NL