



JOTUN

A Guide to Ballast Tank Protection



*Ensuring IMO compliance, lifetime protection,
economy and much more*

A Guide to Ballast

The people, resources and pro you comply with the



IMO – International Maritime Organisation

The International Maritime Organisation is the United Nations specialised agency responsible for improving maritime safety and preventing pollution from ships. The IMO was founded in 1948 and is responsible for a number of treaties working towards improved safety including the SOLAS (Safety of Life at Sea) international convention. SOLAS was the first convention adopted by the IMO but was in fact originally adopted by maritime nations in 1914 as a consequence of the Titanic disaster in 1912. The IMO is recognised as the main governing body in the maritime industry.



The new IMO rules

The latest version of the Coating Performance Standard covers all ballast tanks for ships over 500 gross tonnes and double skin bulk carriers of length greater than 150 metres. The aim of these rules is to provide a 15 year life in 'good' condition according to the IACS (International Association of Classification Societies) definition. It will form part of the SOLAS regulations and is as such intended to reduce the risk of shipping disasters where failure is due to corrosion in the ballast tanks. The coating standard requirements will be recorded in a document called the technical coating file which will be a permanent and updated record kept on-board the vessel for the whole of its life.



Tank Protection

*ducts dedicated to ensuring
new IMO rules 2006*

Here's how we can help

At first glance these new rules may seem to be complicated and hard to understand and follow.

However we have focused on such issues related to our daily business and we are available to assist in all the ways we can.

Innovative Research and Development

Jotun's group Research & Development centre in Sandefjord, Norway heads up our R&D laboratories in United Arab Emirates, Malaysia, South Korea, Norway, USA and China. More than 200 experienced chemists strive to find improved solutions and innovations in the paint and coating industry. Thus we have a strong basis to support our customers – meeting their needs, whether in a general practical way or assisting to meet rules and regulations.

A wealth of ballast tank coating experience

From our very beginnings in 1926, Jotun has been focused on the needs of Marine customers and not least coating ballast tanks. The last five decades have seen rapid development in epoxy based technologies for which we have been one of the front runners, well known for our quality long life systems. This experience has enabled us to develop the latest cutting edge products designed to meet the exacting needs of our different customers whether it be for Newbuilding or life extension of existing vessels. Jotun has proven products conforming to the required standard, rules and regulations.

On-site Coating Advisors for technical support and supervision

Jotun Coating Advisors are a valuable resource when it comes to simply doing the job right. They are highly trained, most with formal related qualifications and are a team second to none. Special focus on the inspection demands of the coating performance standard has been given to our coating advisors to ensure that we together can comply.



IMO Performance Standard

*3 key areas of quality
must be achieved
for the life of*



Surface preparation

Surface preparation including cleanliness makes up a large proportion of this performance standard. It is well known in the coating industry that no matter how good the coating is, if the pre-work such as cleaning is not done correctly, the result will be short lived. The performance standard indicates specifics such as salt and dust levels acceptable and indicates how the general work will be done. The environment around blasting and pre-treatment of the shopprimer is detailed and the profile of the steel is indicated ensuring the best possible adhesion to the steel. All stages of Newbuilding are considered prior to and after erection.

rd – ballast tank coatings

*lity control which
and maintained –
the vessel!*

Coating inspection

Inspection requirements are extensive and it is here that the greatest consequences of this standard are apparent. Inspection will include cleanliness, surface preparation, application and film thickness control, carried out by qualified staff. It is the responsibility of all parties involved and the documentation shall form an integral part of the ship delivery within the coating technical file.



Coating quality

Once the surface preparation, application and inspection are 100% then the quality of the coating has the final significant factor in the life span of the protection. The performance standard has criteria for which the coatings must show the highest performance characteristics. This can be done both by real life experience and/or by intensive laboratory testing from an external body.



New IMO rules for b

For newbuildings: 500+ to



Coating Performance Standard

- The latest version of the Coating Performance Standard covers all ballast tanks for ships over 500 gross tonnes and double skin bulk carriers of length greater than 150 metres.
- The aim of the rules is to provide a 15 year life in ‘good’ condition according to the IACS (International Association of Classification Societies) definition.
- The rules will be mandatory and form part of the SOLAS regulations II-1/3-2 and XII/6. It will also apply to the ladders and platforms and other non-structural items within the ballast tanks.
- The standard also refers to ship design but cannot be specific as this is a very complex area with many related and consequential implications.
- The standard states that the coating performance can be improved by adopting measures at the ship design stage such as reducing scallops, using rolled profiles, avoiding complex geometric configurations and ensuring that the structural configuration permits easy access for tools and to facilitate cleaning, drainage and drying of the space to be coated.
- The intention for improving the structural integrity of the ship starts right from design stage and throughout the lifetime of the vessel.

allast tank coatings

nnnes, contracts from 2008



SOLAS regulations

- SOLAS (Safety of Life at Sea) regulations are in place to help prevent disasters that result in the loss of life.
- Coating standards are the first step towards ensuring that vessels built in the future are of a minimum high quality and are not limited to the requirements laid out in the standard.
- The need for further improvements and additions to this standard is recognised. However, it has been decided to implement the standard as it is with minor corrections and build on the standard in the course of time.
- Issues such as how to judge coating flexibility over 15 years exposure and maintenance requirements over a lifetime are furthered by the use of sub committees that will report back at a later stage and ultimately recommendations will be implemented in SOLAS.

When will all this happen?

Date	Event
1 July 2006	SOLAS XII/6.3 in force
December 2006	Draft resolution adopted
1 July 2008	Applied to all ships of not less than 500 GT
1 January 2009	Will apply to all keels laid after this date
1 July 2012	Will apply to all vessels delivered after this date

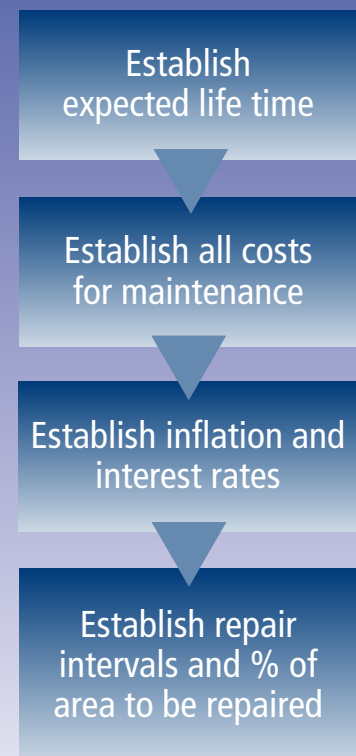
Earlier implementation by some flag states is allowed by IMO, however not anticipated

Life Cycle C

Conforming to IMO Rules

- An initial glance suggests the coating performance standard will increase the cost of a Newbuilding. That is certainly true. There will be increased costs, from inspection work, possible longer delivery times, washing and extra cleaning procedures, increasing considerably the cost of a newbuilding. So what does that mean for the ship owner? A higher initial outlay.
- In the long term the ballast tanks will remain in good condition. This means a better second hand value or simply longer life before major maintenance is required.
- Life cycle cost is a complicated issue and has many different facets depending upon the individual driving economic factors. For example, major maintenance after year 10 or 12 may not seem to be so expensive when compared to the extra cost – but what about the out of service time? If the life can be extended by 3 to 5 years, how does that compare to the initial outlay?
- The life cycle cost analysis example does not represent an exact cost under the new coating standards as in practice this will vary considerably from yard to yard. However it does include the use of sacrificial anodes.

Life cycle costs (LCC) Calculation for coating systems



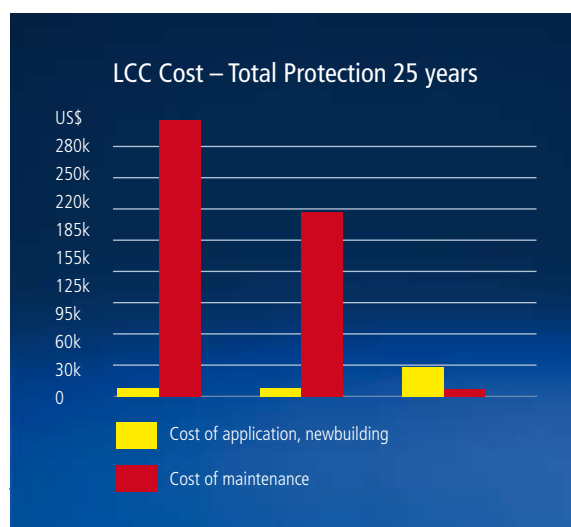
- Damage will occur in the operational life of a ballast tank and a sacrificial anode can be used as an indicator of damage having occurred whilst also protecting the bare steel. The standard does not require the use of sacrificial anodes but does require the coating to be compatible with them.

Cost analysis

is a long term investment

Elements in the m² cost

- 1 Rigging, material transport
- 2 Scaffolding
- 3 Covering/masking
- 4 Degreasing
- 5 Cleaning
- 6 Steel work
- 7 Surface preparation
- 8 Application
- 9 Inspection
- 10 Paint material
- 11 Abrasives
- 12 Degreaser
- 13 Other costs (hotel, travel etc)



System 1

- 1st application & maintenance: Coal tar epoxy
- After 15 years: Blast cleaning
- From year 5 to end of life: Anodes installed for protection

System 2

- 1st application & maintenance: Coal tar epoxy until 15 years
- After 15 years: Descaling and steel repair
- Further maintenance: Balloxy HB Light
- From year 5 to end of life: Anodes installed for protection

System 3

- 1st application at newbuild: Jotacote Universal
- thereafter maintenance with: Balloxy HB Light
- Anodes installed for protection at newbuilding stage

Conforming to the IMO rules

THE IMO RULES – SURFACE PREPARATION

PRIMARY SURFACE PREPARATION

When no shopprimer is used or it has deteriorated:

- Sa 2½ with profiles between 30–75 µm
- Blasting not to be carried out:
 - when relative humidity exceeds 85%
 - when the steel surface is less than 3°C above the dew point

Zinc containing silicate shopprimer shall be compatible with the main coating system:

- Coating manufacturer to confirm
- Shopprimer must be pre-qualified with an epoxy based system and can be used with any other epoxy based system that is approved

Soluble salts:

- 50 mg/m² of sodium chloride (NaCl)

Acceptable dust level:

- ISO 8502-3 tape test. Maximum dust level 1

SECONDARY SURFACE PREPARATION

Steel shall be prepared so that the coating can be applied and perform in accordance with the given specification:

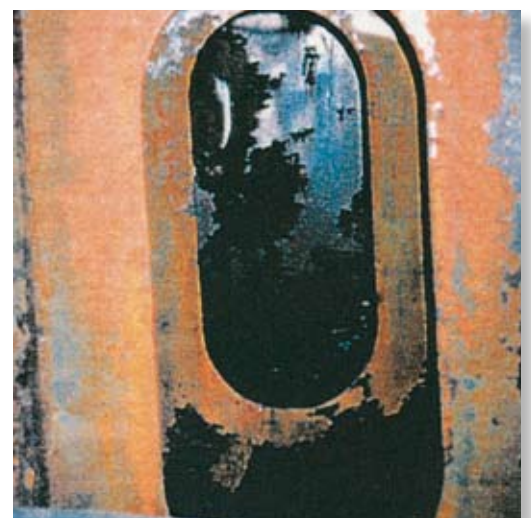
- Remove sharp edges, weld spatter and any other contamination in accordance with ISO 8501-3
- Edges to be rounded to a minimum 2 mm radius
- No oil contamination
- No abrasive inclusions
- Otherwise the same as Primary Surface Preparation

Surface treatment after erection:

- Small damages up to 2% of total area St 3
- Continuous damages over 25 m² or over 2% of the total area of the tank Sa 2½



Majority of blisters have been noted and broken with waterjetting – no evidence of pitting.



Prior to waterjetting, paint breakdown around access. Substrate exhibits minimum pitting.

– on surface preparation

Jotun's Ballast Tank Protection will ensure compliance with surface preparation and much more

- Surface preparation, quite correctly, has the highest level of attention in the performance standard. The lifetime of a good coating is directly related to the cleanliness and quality of the surface to which it is applied. This is a well known fact.
- More than 10 years ago DNV produced 'Corrosion Protection of Ships July 1996' Guidelines No. 8, which pointed out the benefits of cleanliness, stating at that time that this could add 5 years or more to the life expectancy, although that included an increase in dry film thickness.
- The level of cleanliness and surface preparation has been high for many years in some newbuilding yards these new standards take the Newbuilding industry into a whole new world. It is required that all aspects of the cleaning, such as dust levels, salt levels, oil contamination and abrasive inclusions shall be assessed and clear evidence given in the coating technical file. Just this inspection creates the need for extra manpower and cost, from all parties involved in the Newbuilding.
- Today we see a wide variation in the quality of preparation and vessels beginning major ballast tank maintenance can be from as young as 8 years and up to 15 years. This shows the need for a rationalisation of qualities in the industry. The standard may well be considered extreme from many points of view but with planning and support, by all involved, solutions are possible.



The circular effect of the waterjetting equipment leaves distinctive shapes which can be seen on the bulkhead.

Conforming to the IMO rules

THE IMO RULES – COATING INSPECTION

- The Coating Advisor to be NACE II or FROSIO red certified
- Inspection shall include but not be limited to:
 - surface preparation at all stages
 - DFT at all stages
 - cure of all coatings including the shopprimer
 - block assembly and erection:
 - visual inspection prior to and after surface preparation
 - all standard measurables, as detailed in the standard

THE IMO RULES – DFT CONTROL

Measurements to include but not limited to:

- At least one measurement per 5m² of flat surface area
- At least one measurement at 2–3 metre intervals and at 15 mm from the edges of tank boundaries
- Longitudinal and transverse stiffener members and main supporting members:
 - measurements according to drawings – in the standard at 2–3 metre intervals
 - not less than 3 sets between main supporting members, one set at each end, one at the mid-point
- Around openings, one set per side
- 5 measurements per m² but not less than 3 on complex areas such as large brackets of main members
- Additional measurements as seen fit by the coatings advisor



– *for coating inspection*



Jotun's Team No.1 will ensure inspections are to the standards demanded by IMO rules and much more



- Inspection is the core to the coating standard. In the same way that a full service history is important for a car, so it is with the ballast tank condition. With a complete coating technical file, this will be mandatory. The vessel will have higher value compared to those which do not.
- Inspection is a cost driving factor but this is the guarantee proof that the vessel has been coated correctly and will perform accordingly.
- The inspection of the surface prior to coating is equally important as the inspection after coating. The two aspects go hand in hand to ensure high quality. New methods for carrying out inspection are required to enable speed and quality of inspection meeting the standards.
- The use of Ultra Violet lamps is becoming much more normal for the inspection of dust, oil contamination and even pin-hole detection, which speeds up normally slow impractical test procedures.
- Destructive testing shall be avoided whenever possible and where and when to control coating film thickness is specified in detail. All this must be included in the coating technical file, so testing must be logged in such a way that the test area is detailed and can be re-traced. Defects found during these inspections shall be documented, repaired and the repair subsequently documented.

Conforming to the IMO rules

THE IMO RULES – COATINGS

JOTUN BALLAST TANK COATINGS

COATING TYPE	Jotacote Universal	Balloxy HB light
<ul style="list-style-type: none"> To be an Epoxy based system including Epoxy Mastics 	Pure epoxy	Epoxy mastic
<ul style="list-style-type: none"> Other systems with performance that meets the test procedures – for example the products of new technology 	N/A	N/A
<ul style="list-style-type: none"> To be a multi-coat system with contrasting colours 	Conforms	Conforms
<ul style="list-style-type: none"> The final coat to be a light colour to ease inspection 	Conforms	Conforms
PRE-QUALIFICATION		
<ul style="list-style-type: none"> To have B1 approval 	Conforms	Conforms
<ul style="list-style-type: none"> To provide a 5 year in-service history with class notation of 'Good' after a 5 year inspection 	Conforms	Conforms
SPECIFICATION		
Film thickness. Nominal DFT requirement: <ul style="list-style-type: none"> 320 µm and 90/10 rule 	Conforms	Conforms
Number of coats:		
<ul style="list-style-type: none"> 2 full coats and 2 stripe coats with epoxy coatings 	Conforms	Conforms
<ul style="list-style-type: none"> First stripe coat to be extensive, second coat according to the need for thickness or not 	Conforms	Conforms
<ul style="list-style-type: none"> Can be evaluated with new technologies in line with specified testing 	N/A	N/A
<ul style="list-style-type: none"> Brush for stripe coats (roller accepted for scallops and rat holes) 	Conforms	Conforms

es – *on coating quality*

- Coatings will have to conform to a minimum quality. The coating standard is very specific in this case with pre-qualification based on three criteria.
- Existing products that have been in use for more than 5 years on a Newbuilding should demonstrate that they have provided sufficient protection. At the 5 year class survey the ballast tanks should have been rated as ‘Good’ according to the IACS definition are pre-qualified.
- For existing (pre Coating Performance Standard coming into force) coatings that have been tested according to the DNV (Marintek) test procedure and been awarded classification B1, these coatings are pre-qualified.
- For new coatings after the Coating Performance Standard comes into force, they are required to pass the Ballast Tank test procedure laid out in the standard. This is a further development of the earlier Marintek simulated ballast tank test. The testing includes a simulated Ballast Tank Test and a condensation chamber test where adhesion, rust and blister levels are the criteria for pass or fail.
- Other basic requirements are also mandatory in the coating standard. The coating shall be applied in two full coats where the final colour shall be light in colour. It is also required that stripe coating shall be applied by brush or roller, meaning the coating shall be useable with a brush or roller as well as spray equipment (roller is accepted for scallops and rat holes only).



*Jotun's Ballast Tank Protection –
world proven coating quality –
ensuring compliance and much more*

Recommended Ballast Tank Coating

Newbuilding and Renovation

Meeting your requirements



Jotacote Universal
specially designed
for new buildings

Water ballast tanks are known to be susceptible to coating degradation and corrosion attack. In these areas corrosion can quickly result in rapid deterioration of the steel and eventually lead to structural failures. The right choice of anti-corrosive primer for these areas is of the utmost importance if the vessel is to achieve a long life.

JOTACOTE UNIVERSAL SOLUTION

Jotacote Universal offers the highest level of corrosion protection of water ballast tanks. It has achieved B1 in the DNV certification for ballast tanks. The light buff colour provides two primary advantages – easier application and improved conditions for inspection.

last Tank Products

*d Maintenance
exact needs*



Balloxy HB Light
formulated specially
for ballast tanks

The harsh environments experienced in service, the complexity of tank structure and the difficulties of access combine to make ballast tanks one of the most costly areas to protect. They are dark, humid and dirty, repairs are not easy.

Good pre-treatment and consistency in application of the coating at the correct film thickness are often difficult to achieve because of poor light, inaccessibility and the very humid conditions.

BALLOXY HB LIGHT SOLUTION

Balloxy HB Light has been specially designed to combat the problems presented by the ballast tank environment and has proven to be a leader in ballast tank protection.

Compliant Ballast **Jotacote Universal**

Jotacote Universal is a two-pack, abrasion resistant, high solids, pure epoxy based coating.

Anti-corrosion

- Specially designed as an anti-corrosive primer for newbuildings.
- A special selection of pure epoxy and curing agent ensures optimum corrosion protection at newbuilding.
- Tested against cathodic disbondment, Jotacote Universal is proven to give excellent resistance and is therefore perfect for use in combination with cathodic protection.
- During ballast tank simulation tests Jotacote Universal achieved the rating Class B1 when tested by DNV (B1 is the best rating, B6 is the worst).



Abrasion resistance

- Designed to withstand strong mechanical impact and offers a truly high level of resistance to any kind of abrasion.
- Compared with the leading competitor primer in two separate tests, the results showed Jotacote Universal to be best in class.

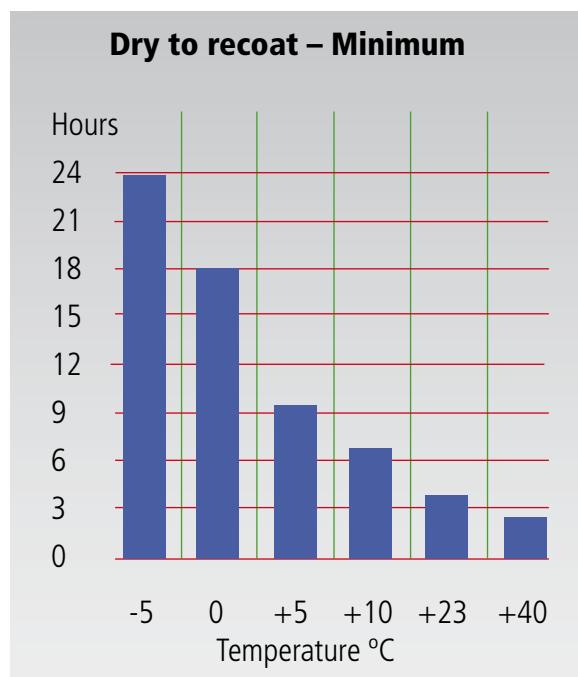
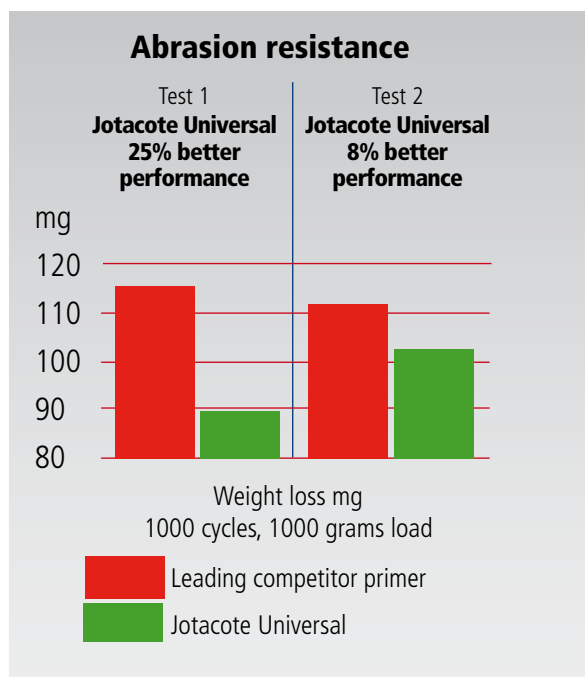
Both tests showed significant differences, including up to 25% better performance by Jotacote Universal. Clearly this identifies a benefit for a vessel in operation.

st Tank Product for Newbuildings



Drying time

Using cutting edge technology, Jotacote Universal has a high level of cross linking which allows curing to take place over a large temperature range. This permits fast overcoating and early handling without damaging the coating.



Compliant Balla **Balloxy HB Light**

*Exceeds the requirements
of IMO, SOLAS and
IACS regulations and
recommendations*

*Protects in excess of 70
million square metres of
ballast tanks worldwide*

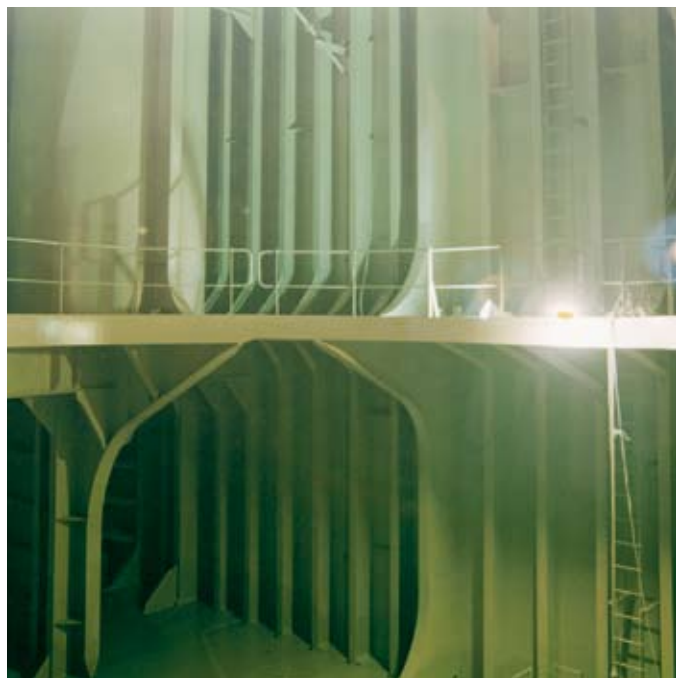
*An unrivalled
track record of success*

*Undoubtedly
the world's best known
ballast tank coating*



- The harsh environments experienced in service, the complexity of tank structure and the difficulties of access combine to make ballast tanks one of the most costly areas to protect at both newbuilding and maintenance. They are dark, humid and dirty, repairs are not easy.
- Good pre-treatment and consistency in application of the coating at the correct film thickness are often difficult to achieve because of poor light, inaccessibility and the very humid conditions.
- Corrosion starts at recognised weak spots, particularly sharp edges and welding seams and areas subject to intermittent wet and dry cycles of aerated water.
- The combination of confined space, poor light and difficult to reach places can mean vital areas are left with insufficient protection.
- Specially designed to combat the problems presented by the ballast tank environment and has proven to be a leader in ballast tank protection.

st Tank Product for Maintenance



Save on preparation

Apply directly to:

- Blast cleaned prepared surfaces
- Hand tool prepared surfaces
- Disc prepared surfaces
- Water jetting prepared surfaces

Light colours improve painting conditions

- Alternate coats of different colours help the applicator to see better.
- Better vision helps make the coats easier to apply.
- Alternate colours for stripe coats on difficult areas ensures better protection – the previous coat is easier to see.
- Alternate colours overcome poor paint coverage, reducing the risk of missed or insufficient coverage.
- Alternate colours simplify inspections and help identify weak spots.

Mixing control helps from the start

- Dark conditions in a ballast tank make it difficult to see.
- Insufficiently mixed paint will affect protective performance.
- Balloxy HB Light – two components, different colours.
- Until sufficiently mixed a 'zebra' pattern appears.

Save on application

- Correctly mixed colour is constant and ready to use.
- High solids by volume allows 300 µm in one coat without sagging.
- Thicker coats mean fewer coats.
- Two 150–200 µm coats provide optimum protection.
- Moisture tolerance enables application in moist conditions – work can start earlier, downtime reduced.
- Apply by airless spray, roller or brush.

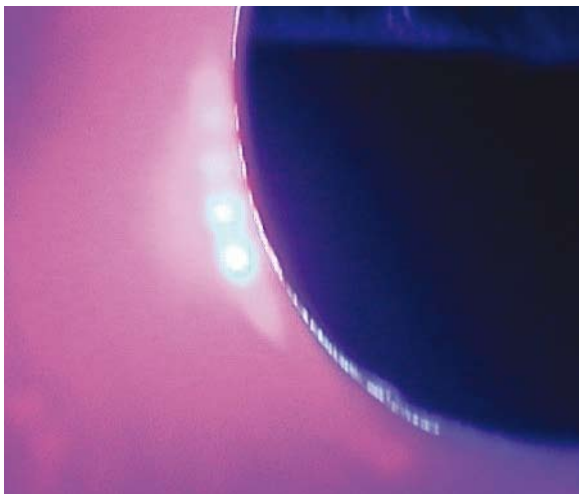
Compliant Ballast Tank Prod

Saving up to 50%

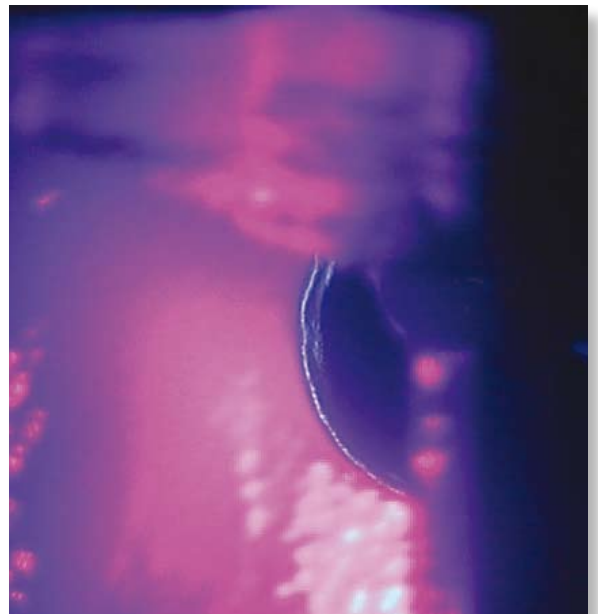
Pin hole/holiday detection

- Balloxy HB Light and Jotacote Universal provide the benefit of being available in a luminous version.
- Optically active pigment is added to the coating which reacts to a specific frequency of ultra violet light.
- The first coat applied in a two coat system contains the luminous pigment. When the UV light is shone on the surface it glows a green colour. Where the colour is patchy or where there are black spots there is low film thickness or pin holes/holidays.
- The second coat does not contain the luminous pigment. Therefore under the UV light, should there be any patch glowing or 'stars' shining through, low film thickness or pin holes/holidays in the second coat are present.
- The effect can be photographed at any stage and used as documentation both to show the defects and that the repair has been done satisfactorily. This is a requirement in the coating standard.
- Other methods for pin-hole detection such as sponge/spark testing require contact with the surface and is very time consuming.

The visual method allows a quicker survey and speeds up the inspection and eventual repairing by up to 50% compared to other methods. (See photos of examples below and left).



Second coat of Balloxy HB Light under UV light: Shows low dry film thickness on the edge as a bright line, proving the need for a stripe coat.



Final inspection after second coat: Under the UV lamp defective areas show as bright spots.

ucts – simplifying inspection **in inspection time**

DFT control

- Balloxy HB Light and Jotacote Universal are available with hiding control benefits.
- The light colour is designed to not cover the previous coat until more than 100 μm DFT (dry equivalent) has been achieved.
- If there are difficult painting conditions in a ballast tank or a ballast tank in block

form, the Luminous version can be used to exaggerate this effect, by lighting up the surface with the UV lamp. If any of the underlying coating 'shines' through there is less than 100 μm DFT.

- One more pass will provide the 160 μm DFT specified by the coating standards.



Uncoated black and white substrate.



*Not reached opacity:
140 μm wet film (100 DFT).
Jotacote Universal Buff example.*



*Reached opacity:
225 μm wet film (160 DFT).
Jotacote Universal Buff example.*

A Guide to Ballast

30 important Ques

Q1 What are the changes (from present situation) regarding preparation?

A There will not be significant changes to the methods used but salt and dust levels are strict and the requirement for checking quality is greater.

Q2 When do the changes take effect?

A Contracts signed on or after 1st July 2008.

Q3 Are Epoxy Mastics or Pure Epoxies or alternatives to be used?

A All Epoxies having a B1 pre-qualification, or 5 years 'good' experience in existing ballast tanks can be used. New technology will have to pass pre-qualification testing.

Q4 What about stripe coating?

A Two stripe coats shall be applied by brush on all sharp edges, welds etc..., roller is allowed for scallops and rat holes. The second stripe coat shall only be applied if required to reach the specified DFT.

Q5 Salt contamination after blasting: what is the location in ballast tank for tests required?

A The standard does not specify. Jotun coating advisors are given training of typical areas that should be tested.

Q6 Who is supposed to be in charge for the recording and filling in of all operation steps (RH, DP, salt tests, profile, DFT, etc...)?

A The projects Coating Inspector is responsible, who this is, is not specified. However it is expected to be a yard representative.

Q7 Do Jotun systems have a B1 certificate?

A Yes.

Q8 Are Jotun systems in compliance with the latest IMO rules?

A Yes.

Q9 What is the expected lifetime for the system?

A As per the standard we expect that the coating system in accordance with the standards procedure will have an expected lifetime in excess of 15 years assuming normal operation, prior to major maintenance.

Q10 What about surface preparation – do we require blasting?

A Blasting the shopprimer (Sa2 70% of intact shopprimer) is required only if the shopprimer is not pre-qualified or not compatible with the ballast tank coating.

Q11 Benefits of pure epoxy over epoxy mastic and the reverse of same question?

A In general epoxy mastics are more surface tolerant than pure epoxies and are better for maintenance. Pure epoxies tend to be faster drying and more suitable in the high speed environment of Newbuilding shipyards. Both can provide good ballast tank protection.

Q12 What quality of prep is needed to get a 15 to 20 years life in the ballast tank?

A Life extension from 15 to 20 years will require maintenance throughout the service life of the vessel. Not allowing damages to become a problem. Cathodic protection and regular inspections will aid this process.

Q13 Can we apply over damp substrates?

A Definition of damp is important as no coatings should be applied on water by spray. Some coatings are moisture tolerant but each case should be discussed with your local Jotun contact.

Q14 What level of inspection is required for new IMO rules?

A Considerable inspection requirements are needed with a high focus on reporting. Specified, in detail, in the coating standard.

Q15 If shopprimer is from one supplier, does this mean we have to use the same supplier for the rest of the system?

A No, if the shopprimer is pre-qualified with one system it can be used with any other system that is pre-qualified. Provided that the paint supplier confirms compatibility.

Q16 How do we ensure new DFTs are achieved without over application in welds etc which causes cracking?

A With the use of the thickness control technique, the painters can limit the thickness to the lowest possible level without being too low either.

Tank Protection Questions and Answers

Q17 What does it mean ‘adequate’ technical assistance provided by the paint manufactures?

A This is a matter of discussion between all the relevant parties prior to the contracts being signed.

Q18 The second stripe coat on the seams may be omitted if proven that NDFT may be achieved. How easy is it to prove thickness over welding seams?

A Not easy to measure but if immediate surrounding area is OK then it is reasonable to accept the weld itself. This should be done by an experienced inspector as this may not be the case and needs a visual assessment in addition.

Q19 During the primary surface preparation (carried out in shop priming plants) and preheated steel why is humidity and temperature relevant? How feasible is the measurement of the profile in automatic shop priming plants after blasting and before painting? Why is there no limit in the standards about soluble salts in the grit which is usually recycled?

A The standard allows for steel, not shopprimed in a shoppriming plant, therefore humidity and temperature is important. The profile is measured in most shoppriming plant on a spot basis, as should be the salt level of the steel prior to shopprimer being applied. If the salt content of the grit is too high this is shown up by the salt test on the steel. Therefore many shoppriming plants do test the grit themselves for salt content.

Q20 In the secondary surface preparation blasting Sa 2½ is addressed for the damaged shopprimer. There is a need to specifically define damage of the shopprimer as the builders usually consider only mechanical damages. What about white rust?

A This is where the qualified coating advisors and coating inspector come in. Not all tasks are possible to write down in a standard and only experience and knowledge is good enough.

Q21 Who is going to play the role of the ‘independent’ third party for the approval of painting system since classification societies do not accept such role?

A There is no specification for a third party for inspection, rather a Coating Inspector. See Q6.

Q22 What about maximum DFT?

A The standard states that the maximum DFT should be set by the coating manufacturer.

Q23 After applying ballast tank coating to my ship once, when will the next survey be? Which society will be the responsible for the survey (class society, port state control, certified inspectors etc.)?

A There is no change in the inspection rules. So at Newbuilding the first inspection other than by owners is class at 5 years.

Q24 Should I support my ballast tank coating with cathodic protection? Who shall decide the paint and cathodic system in my ballast tank?

A It is always recommended to use sacrificial anodes, whenever safe and practical. Design at Newbuilding stage should be by the supplier of the SACP system based on minimum current requirement.

Q25 What will be the minimum surface preparation for the existing ships to apply ballast tank coatings?

A This is not covered by the standard.

Q26 My ballast tanks have coal tar epoxy coatings. What should I do with the new regulations – re-coat?

A The standard does not cover existing vessels.

Q27 With the new regulations, should I have the approval of the paint plan from my class society belonging to my Newbuilding project before applying?

A Yes, after the dates set in the standard.

Q28 During the survey of ballast tanks after a certain time, what will be the points of the class societies to inspect? What will be the rate of acceptable failure in the tanks?

A No change from today. If condition deteriorates below the IACS defined ‘good’ condition, work is required to bring the tanks to standard.

Q29 How shall the maintenance operations, handled by the crew, be evaluated? Will the inspection of the crew be approved or another society will be asked for inspection?

A The standard class inspections will determine condition. Maintenance is not covered within the coating standard.

Q30 Do you have more questions?

A Contact your local Jotun office, they will be pleased to help.

A Guide to Ballast

*Experience gained in
more than 70m sq m of*



Offices in 67 countries



39 production facilities globally

Jotun is a leader in marine coatings, protective coatings and decorative paints with a world class reputation for teamwork, quality, reliability and friendliness. It provides its customers with responsible and effective global technical advice and back-up service combined with a commitment to stretch forward to reach the boundaries of people and product performance.

In the marine sector Jotun Paints has 5 decades of unrivalled experience in protecting more than 15,000 vessels. Its products are proven in every sea in the world, on every part of any vessel and in any trade. FROSIO, NACE or similar accredited coatings inspectors are readily available wherever a vessel is built or drydocked.

Tank Protection

the protection of ballast tanks worldwide



5,000 employees



Worldwide service and support

From offices in 67 countries and 39 production facilities, Jotun assists and advises customers on the most effective solutions to the prevention of corrosion in ballast tanks – and this worldwide team is on-hand to ensure compliance with pretreatment procedures and application standards.

Jotun has a special expertise in the science and technology of corrosion prevention. It is built on investment, innovation and the practical knowledge earned in the protection of more than 70 million square metres of ballast tanks throughout the world.



*Jotun's Ballast Tank Protection –
world proven coating quality –
ensuring compliance and much more*

Jotun worldwide

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