



Maritec Tanker Management Pvt Ltd

604, Vakratunda Corporate Park, Off Aarey Road, Goregaon East,
Mumbai – 400063, India. Tel: +91 22 6742 1075,
Email: operations@maritec.be, crewing@maritec.be

MAINTENANCE BULLETIN: 18/001

Date: 06th December 2018

TO: FLEET

SUBJECT: Care, Maintenance, Inspection & Replacement of Mooring Ropes.

CARE AND REPLACEMENT OF MOORING ROPES:

Records should be maintained to indicate the inspection and replacement dates of ropes. Certificates for ropes should be marked with dates and the specific winches to which they are fitted and/or end for ended. Spares levels should reflect the trading area, since intensive trading patterns may require more frequent change-out of tails than that prescribed in OCIMF guidelines. All mooring ropes should be tagged.

Every time a mooring rope/wire is used for mooring operations, it should be examined visually both before and after use, by the Officer in charge of mooring operations, for wear/distortion, and any defects found are to be reported to the C/O. If a defect is severe, consideration should be given to replacing the mooring rope. All inspection details are to be recorded in the PMS.

- As the major cause of premature rope failure is surface abrasion, certain visual inspections should be carried out at regular intervals by the C/O during the rope's service life.
- Inspect the outer cover of the rope for abrasion damage. Should the damage appear excessive, trace the cause and attempt to overcome the problem by modification of the equipment or method of use by fitting a rope protection sleeve at the critical point.
- Test the rope flexibility to see if there are any areas of firmness or stiffening. This may be caused by extreme overload. If limited to one section, the damaged area may be cut out and respliced or the rope should be rejected.
- Look for evidence of surface fusion or melting of the ropes outer braid, i.e. yarns welded together. This indicates excessive surging probably under high loads.



Maritec Tanker Management Pvt Ltd

604, Vakratunda Corporate Park, Off Aarey Road, Goregaon East,

Mumbai – 400063, India. Tel: +91 22 6742 1075,

Email: operations@maritec.be, crewing@maritec.be

- If 8 or more adjacent strands have been cut or braided to less than 30% of their original size, the rope should be replaced.
- If the core of the rope becomes visible through damage to the outer sheath, the rope should be replaced.
- Check the condition of the eye splices. Ensure the cover is in good condition and that there has been no significant splice movement. If in doubt, cut off and replace.
- If damage or wear is localized, it can be cut out and the rope spliced.
- A rope must not be used if there are more than two splices between the eyes.
- All mooring fittings (bollards, chocks) must be marked by weld bead with their SWL to prevent excessive loading. In case of damage to such fittings, their use should be avoided until permanent repair is affected.
- The condition of the synthetic mooring ropes should be inspected by the C/O at least once a month. The inspector must run through the length of the rope, checking external condition, as well as internal by slightly opening the strands. Particulars to be checked are as follows:
 - i. Abrasion internal, external, and extensive cuts, caused by rough drum surfaces and improper handling.
 - ii. Presence of dirt and grit, which will lead to cuts and abrasion.
 - iii. Impregnation of liquid chemicals which leads to material decomposition.
 - iv. Formation of loop on the ropes due to twisting.
 - v. Ultraviolet damage, observed as a discoloration and/or brittle character of the rope yarns.
 - vi. Fusion of rope material caused by heat.

In order to avoid prolonged exposure to the weather elements and sunlight, ropes must always be stowed below deck when the ship is at sea. They should be coiled on wooden gratings to permit air circulation and drainage. They must not be stowed in the vicinity of boilers or heaters or against bulkheads or on decks which might reach high temperatures.

To protect the mooring ropes against these defects the following precautions should be taken:

- ✓ Ropes should be stored on drums and protected by dirt, oil, chemicals and their vapours, heat and sunlight.
- ✓ Excessive build up or loss of turns should be avoided.



Maritec Tanker Management Pvt Ltd

604, Vakratunda Corporate Park, Off Aarey Road, Goregaon East,
Mumbai – 400063, India. Tel: +91 22 6742 1075,
Email: operations@maritec.be, crewing@maritec.be

- ✓ Anti-chafing leather jackets should be used where chafing is expected.
- ✓ Winch drums, chocks and fairleads must be smooth and free of rust and paint when using fibre ropes to avoid abrasion. Roller leads should be kept lubricated and freely moving.
- ✓ Avoid dragging ropes over ground and rough surfaces.

- **SUMMARY OF COMPANY SPECIFIC MOORING LINE MAINTANANCE AND RETIREMENT CRITERIA**

	MOORING ROPES
INSPECTION BEFORE USE	YES
MONTHLY ROUTINE INSPECTION	YES
6 MONTHLY DETAILED INSPECTION	YES
END TO END	2 Years
RETIREMENT CRITERIA	5 years

Inspection Before use – During deployment the working length of the line must be inspected. The records maintained in the pre Arrival Port checklist. Inspection can be done by any member of the Mooring Team, except Trainees.

Monthly Routine Inspection – Length of the line in service section, inspection of the Line, externally and internally as far as feasible. The records maintained in the PMS of the vessel. Inspection done by Chief Officer. Kindly comply with company ISM Form CCR 12.01 MOORING EQUIPMENT INSPECTION REPORT



Maritec Tanker Management Pvt Ltd

604, Vakratunda Corporate Park, Off Aarey Road, Goregaon East,

Mumbai – 400063, India. Tel: +91 22 6742 1075,

Email: operations@maritec.be, crewing@maritec.be

6 Monthly Detailed Inspection – Full Length of the Line in detail and a close up inspection. The records maintained in the PMS of the vessel. Inspection done by Chief Officer.

REPLACEMENT OF MOORING ROPE:

Determining when a mooring line should be replaced is vital for safe mooring operations. Requirements for when mooring lines should be removed from service should be based on recommendations from the mooring line manufacturer and applicable industry such as OCIMF MEG 4.

The mooring lines are to be retired from services on the basis of the following criteria

- Fiber deterioration. The rope should be retired if the fiber is breaking up or if powdered fiber is present.
- Damage due to external wear. For this purpose, an unused rope sample may be helpful for comparison. If strand crowns are worn down considerably, the rope should be retired. If a significant number of outer yarns are also severed, the rope should no longer be used as mooring line.
- Local abrasion. Heavy chafing or fusions of surface fibers are indications of severe abrasion. If these sections are localized, they can be removed and the rope spliced in accordance with the manufacturer's recommendations.
- Formation of loop due to twisting of fiber ropes indicates a severe reduction in rope breaking strength. This should be cut out, if possible, or the rope removed from mooring service.
- - The nature and number of broken strands
 - Broken strands at the termination
 - Localized grouping of strand breaks
 - The rate of increase of strand breaks
 - The fracture of strands
 - Reduction of rope diameter, including that resulting from core deterioration
 - Decreased elasticity
 - External and internal wear
 - External and internal corrosion
 - Deformation
 - Damage due to heat or electric arcing
 - Rate of increase of permanent elongation.



Maritec Tanker Management Pvt Ltd

604, Vakratunda Corporate Park, Off Aarey Road, Goregaon East,

Mumbai – 400063, India. Tel: +91 22 6742 1075,

Email: operations@maritec.be, crewing@maritec.be

It is recommended that all mooring lines are retired when their residual strength has reached 75% of ship design MBL

Residual strength testing can be used as a tool for supporting the line condition based monitoring. Gathering this information assists with evaluating service life expectations and post-incident analysis. When conducting testing and analysis, usage history for each line should be supplied to the manufacturer or test facility. This typically includes mooring hours, line service location, end-for-end, rotation history and any other information related to the line, such as damage or repairs. If available, mooring line load history data is helpful in determining the residual strength of mooring lines. As a minimum, the following information should be documented and provided to the manufacturer or testing facility in any such testing or analysis:

- Mooring line product name/material.
- Mooring line position/winch number.
- Mooring line usage history (mooring hours)

Mooring ropes should be renewed at intervals not exceeding 5 years from the date entering into service, unless their inspection ascertains that they are still fit for further use. Intensive trading patterns as well as multi-buoy mooring may expedite deterioration of mooring ropes and tails and these factors should be considered for the perspective retirement planning, as well as for the spare levels available onboard. The date that each mooring rope is first used should be recorded on the test Certificate and in the form.

Winch mounted synthetic lines should be end-for ended after about 2 years to distribute wear and tear, unless inspection dictates a shorter schedule.

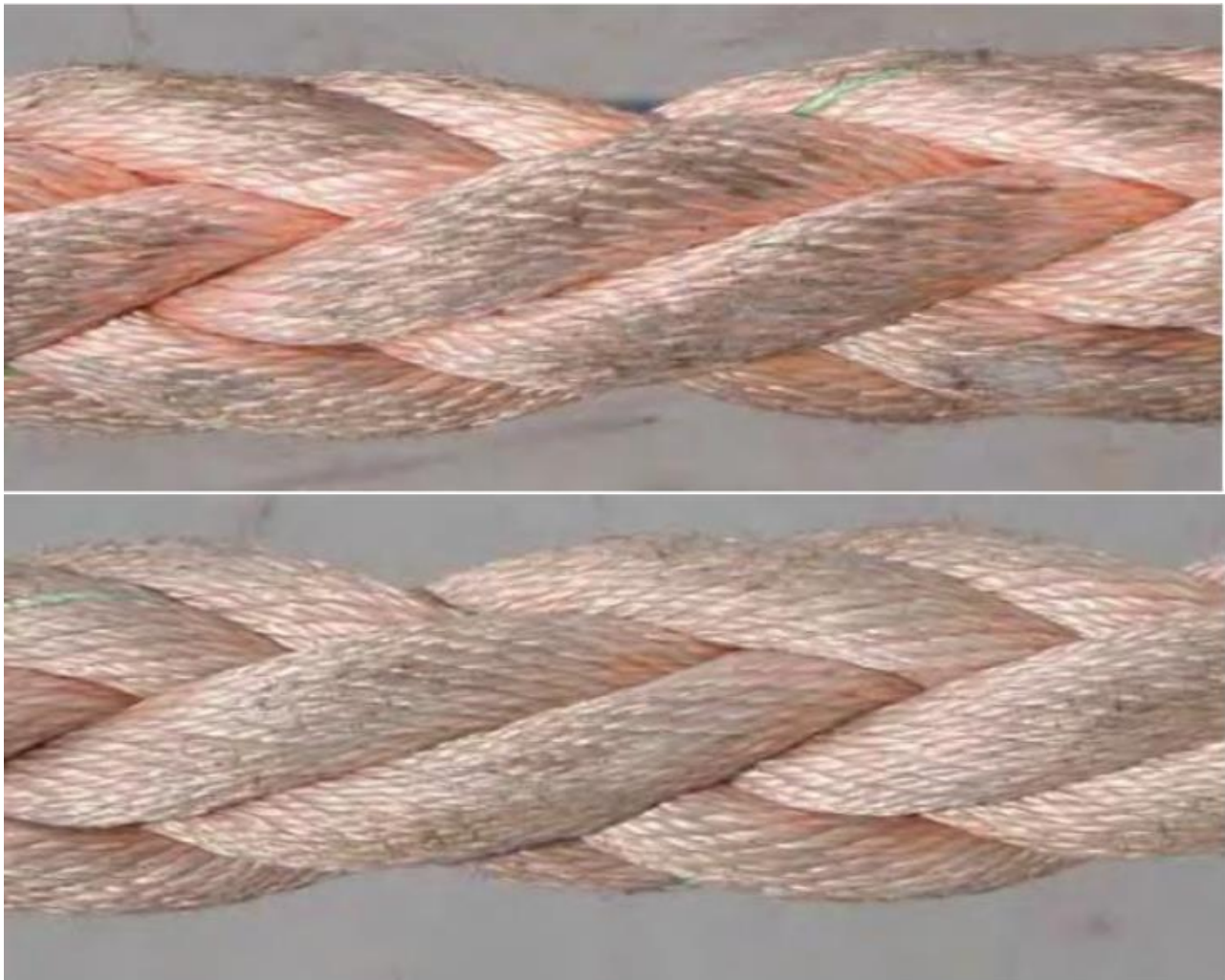
Please find below few illustrations, which have been categorized as A to D depending upon the extent of chaffing. The residual strength can be estimated visually by examining the general condition of the rope.



Maritec Tanker Management Pvt Ltd

604, Vakratunda Corporate Park, Off Aarey Road, Goregaon East,
Mumbai – 400063, India. Tel: +91 22 6742 1075,
Email: operations@maritec.be, crewing@maritec.be

Category A - Residual Strength > 95%. The rope is relatively new with minor abrasion on the external surface. Minor fuzz is apparent in some places on the surface.





Maritec Tanker Management Pvt Ltd

604, Vakratunda Corporate Park, Off Aarey Road, Goregaon East,
Mumbai – 400063, India. Tel: +91 22 6742 1075,
Email: operations@maritec.be, crewing@maritec.be

Category B - Residual Strength 85% - 88%. Noticeable abrasion all around. Slight fuzz on external surfaces. The rope is still strong and useable.





Maritec Tanker Management Pvt Ltd

604, Vakratunda Corporate Park, Off Aarey Road, Goregaon East,
Mumbai – 400063, India. Tel: +91 22 6742 1075,
Email: operations@maritec.be, crewing@maritec.be

Category C - Residual Strength 75% - 80%. Fuzz all around internal and external surfaces. Up to 1/4th yarns on a strand are damaged due to chaffing. Consider changing end to end and monitor the condition closely.





Maritec Tanker Management Pvt Ltd

604, Vakratunda Corporate Park, Off Aarey Road, Goregaon East,

Mumbai – 400063, India. Tel: +91 22 6742 1075,

Email: operations@maritec.be, crewing@maritec.be

Category D - Residual Strength <75%. Significant abrasion and yarn damage along the length of the rope. 1/2 or more yarns are broken on a strand. The rope is likely to break at the area where the damage is maximum. This requires immediate replacement.





Maritec Tanker Management Pvt Ltd

604, Vakratunda Corporate Park, Off Aarey Road, Goregaon East,

Mumbai – 400063, India. Tel: +91 22 6742 1075,

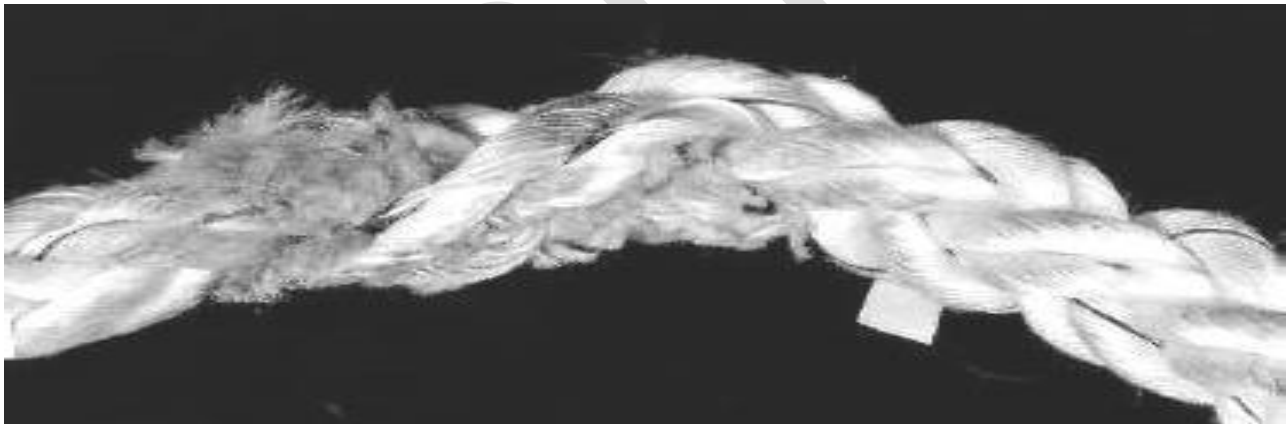
Email: operations@maritec.be, crewing@maritec.be

Few more illustrations for reference where the ropes to be considered for replacement.

1. Pulled – out strand



2. Cut Strand



3. Glazed - Overheated

