

UNRESTRICTED

INDEX NO. S-40

# SHIP AND RELATED TARGETS

JAPANESE SHIPS, MISCELLANEOUS ITEMS

U.S. NAVAL TECHNICAL MISSION TO JAPAN

TMJ  
SRT  
S-40

U. S. NAVAL TECHNICAL MISSION TO JAPAN  
CARE OF FLEET POST OFFICE  
SAN FRANCISCO, CALIFORNIA

NS/so

7 January 1946

RESTRICTED

From: Chief, Naval Technical Mission to Japan.  
To : Chief of Naval Operations.  
Subject: Target Report - Japanese Ships, Miscellaneous Items.  
Reference: (a) "Intelligence Targets Japan" (DNI) of 4 Sept. 1945.

1. Subject report, covering Target S-40 of Fascicle S-1 of reference (a), is submitted herewith.
2. The investigation of the target and the target report were accomplished by Comdr. V.R. Hayes, USN.



C. G. GRIMES  
Captain, USN

30676

**RESTRICTED**

**S-40**

**JAPANESE SHIPS, MISCELLANEOUS ITEMS**

**"INTELLIGENCE TARGETS JAPAN" (DNI) OF 4 SEPT. 1945**

**FASCICLE S-1, TARGET S-40**

**JANUARY 1946**

**U.S. NAVAL TECHNICAL MISSION TO JAPAN**

# SUMMARY

## SHIP AND RELATED TARGETS JAPANESE SHIPS, MISCELLANEOUS ITEMS

The ten miscellaneous items listed under this target are either covered by this report or reference is made to reports of similar subject prepared by this or other intelligence agencies. Such references are included in the text of this report.

# TABLE OF CONTENTS

Summary .....	Page 1
References .....	Page 3
Introduction .....	Page 5
The Report	
1. Treatment of Japanese Equipment Against Fungus Infection ...	Page 7
2. Japanese Specifications on Equipment as to Conditions of Use .....	Page 7
3. Comparison of Japanese Batteries and Le Clanche Cells With Those of the U.S. in Capacity and Shelf Life .....	Page 7
4. Insulation of Japanese Hook-Up Wire (Rubber or Plastic Covering) .....	Page 7
5. Paper Condensers .....	Page 7
6. Protection Against Vibration and Shock in Equipment Assemblies.....	Page 7
7. Use of Preventative Treatments Such as Parkerizing, Special Paints, and Platings	
a. Parkerizing and Similar Methods .....	Page 7
b. Platings .....	Page 8
c. Paints .....	Page 8
d. Other Methods .....	Page 8
e. Other Reports Pertaining Thereto .....	Page 8
8. Use of Rubber Mountings .....	Page 8
9. Gasket Seals Against Sea Water and Countermining .....	Page 8
10. Sensitivity of Relays .....	Page 8

## REFERENCES

### Reports of Other Intelligence Agencies:

"Technical Aspects of Tropicalization and Protective Coatings as applied by the Japanese to Military Equipment", dated 17 December, 1945, by Capt. A. J. PASSONNO, Corps of Engineers, Technical Intelligence Section, Office of Chief Engineer, GHQ, AFPAC Advanced.

### Japanese Personnel Interrogated:

Prof. Yoichi YAMAMOTO - Has had many years of experience in the field of corrosion prevention. He studied at the Institute of Physical and Chemical Research and worked in this field for the Mitsubishi Chemical Co. and later at the Military Laboratory.

# INTRODUCTION

Due to the nature of this target and its late assignment to an investigator, the information requested has to a large extent been covered in reports of this and other intelligence agencies. The remainder of the information is largely of a negative nature.

Documents seized in connection with this investigation and referred to in the text have been forwarded to the Washington Document Center via the Allied Translator and Interpreter Service.

# THE REPORT

## 1. Treatment of Japanese Equipment against Fungus Infection

The Japanese realized their deficiencies in this line, but had made no effort to correct them other than a slight amount of moisture-proofing. See also the report listed in "References".

## 2. Japanese Specifications on Equipment as to Conditions of Use

The Japanese had nothing to correspond to the Navy Department Specifications or Joint Army - Navy Specifications. As a general rule, the Japanese Navy bought commercial quality materials. In this respect, Japanese Engineering Standards were used. The following documents are specifications issued by the Japanese Navy Department, but these, in general, give merely compositions and such tests as tensile tests:

### NAVTECHJAP DOCUMENT NO.

✓ ND25-0002  
 ✓ ND25-0022  
 ND50-1216

### ATIS DOCUMENT NO.

3026 ✓  
 3001 ✓  
 3282

## 3. Comparison of Japanese Batteries and Le Clanche Type Cells with those of U.S. in Capacity and Shell Life

A complete report on Japanese storage batteries is contained in NavTechJap Report "Lead-Acid Storage Batteries Used By the Japanese Navy", Index No. S-92(N). Le Clanche type cells were not used by the Japanese Navy.

## 4. Insulation of Japanese Hook-Up Wire (Rubber or Plastic Covering)

Japanese hook-up wire is rubber-covered. A complete report of Japanese electrical wiring can be found in NavTechJap report "Quality of Japanese Electric Wires and Cables", Index No. X-14.

## 5. Paper Condensers

Paper Condensers not hermetically sealed or potted were used by the Japanese. A large quantity of complete electronic equipment is being returned to the U.S. for study.

## 6. Protection against Vibration and Shock in Equipment Assemblies

See "Characteristics of Japanese Naval Vessels, Article 5 - Shipboard Electrical Equipment," NavTechJap Report, Index No. S-01-5.

## 7. Use of Rust Preventative Treatments such as Parkerizing, Special Paints, and Platings

### a. Parkerizing and Similiar Methods

Although some parkerizing was done by the Japanese, research was being conducted to find substitutes for this method rather than improvements, due to the shortage of phosphate. Mr. YAMAMOTO had developed a method using arsenates, of which the Japanese had a plentiful supply. This method was to be used for deep drawing such as the extrusion of iron cartridges. While less effective as a rust preventative than parkerizing, it is claimed that the lubricating properties are very good. The material to



be coated is immersed for five to ten minutes in a hot (90°C) mixture of a 10% solution of  $H_3AsO_4$  in water and a 1.4% solution of nitric acid. This forms a black coating which Mr. YAMAMOTO considers about half as good for rust prevention as that formed by parkerizing. Mr. YAMAMOTO is preparing a paper on this subject, which will appear in the March or April (1946) issue of Seisan Kikai (Production Machinery) published by Kagakusha (Science Company).

Other coatings used were oxalic coatings (said to be made by Courtin Howe Corp. of the United States under the trade name of Eloxal), and an oxide coating made by dipping the material into a 140°C solution of 30 to 40% caustic soda with some sodium nitrate added. The latter method was not much used due to a lack of caustic soda.

#### b. Platings

Tin and chromium plating was done by the electrolytic method. Due to the large amount of tin available, tin plating was much used. Attempts were made to develop a malleable chromium plating but were unsuccessful. A recent patent on a method to improve the hardness of chromium plating can be found in NavTechJap Document No. ND25-0037, ATIS No. 3018.

#### c. Paints

Japanese paints have not reached a high state of development. Equipment was painted with commercial paints. Prior to the war an undercoat of 40% red lead and 60% iron oxide as pigment was used for ships. During the war the percentage of red lead was reduced to 30%. A still further reduction in the amount of lead was made in paint using 10 to 12% of lead chromate and the remainder of the pigment iron oxide.

#### d. Other Methods

Due to the lack of non-ferrous metals, the Japanese were forced to use iron for many sea water applications. One method used to reduce galvanic action was the addition of zinc powder to grease for such applications as submarine guns. Studies were also undertaken of the protection of iron propellers by the application of a direct current. The propeller was to be one electrode and an iron master plate the other.

#### e. Other Reports Pertaining Thereto

See also NavTechJap Report, "Japanese Ordnance - Maintenance and Protective Coatings", Index No. O-51(N), and NavTechJap Report, "Japanese Navy Paints," Index No. S-59.

#### 8. Use of Rubber Mountings

See NavTechJap Report, Index No. S-01-5, and NavTechJap Report, "Japanese Naval Vessels - Own Ship's Noise," Index No. S-43.

#### 9. Gasket Seals against Sea Water and Countermine

See "Japanese Mines," NavTechJap Report, Index No. O-04.

#### 10. Sensitivity of Relays

See NavTechJap Report, Index No. S-01-5.