



TSD 6208 B

# PLANT STANDARD BHOPAL

BP 069 00 84

Rev. No. 02

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SUPERSEDES

BP 069 00 84 Rev .01

## PROTECTION OF FERROUS COMPONENTS WITH TEMPORARY RUST PREVENTIVE SYSTEM

### 1. GENERAL:

1.1 The standard details the procedure to be followed in the temporary prevention from corrosion of ferrous components by the use of **removable** compositions. These compositions are termed as Temporary Rust Preventives, hence forth referred as "TRP". The major distinction between such a protective and a paint lies in ease of **removal** rather than • in the period of protection it provides. The effectiveness of TRP for corrosion protection has three **aspects:-**

- i) Selection of proper TRP
- ii) Proper preparation of the surface to be protected.
- iii) Application of TRP
- iv) **Unless** all these are carried out **properly**, TRP may not provide the desired protection.

1.2 Under normal atmospheric conditions, corrosion of ferrous components starts as soon as **freshly** machined surface has access to moisture, air etc. Therefore It is **essential** to apply rust preventives **immediately** after machining. Most of the rust preventives are designed to provide a thin protective impervious **film** on the metal surface in order to insulate it from its environment But certain TRPs have ingredients which provide rust **inhibitive** properties to TRP. These **should** invariably be Used where arduous duties are **involved**.

1.3 The rust preventives are **classified** according to the type of the **film** they produce **i.e.** hard dry, soft dry, **greasy** and **oily**. Harder **the** film, more durable **protection** it provides. But this **film** requires **little** more effort in removal. As far as possible, TRP providing harder **film** should be selected which would provide more durable and better protection.

1.4 It is **desirable** that whenever ferrous materials such as sheets, components **etc.**, are **received** at our **Stores**, **they** should **be** given protective treatment so that during storage these do not get rusted. This may involve some extra efforts and expenditure but at the same time it would reduce **machining/cleaning** operations, and eliminate wastage of **material** at the later stage because of **pittings** due to corrosion.

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## 2. MATERIALS:

### 2.1 Temporary Rust Preventives "TRP"

- i) Rust Inhibitive Oil (TRP) : AA 55153
- ii) TRP Non-Drying Type (Pigmented): BP 55191
- iii) Rust Preventive Solution (TRP) : AA 55152
- iv) Rust Preventive Drying Type (Pigmented) : AA 55155
- v) Rust Preventive Hard Film - Black (TRP) : AA 55154.

### 2.2 Xylole, Toluole to AA 56703 and AA 56702 respectively.

### 2.3 White Spirit Gr.145/205 : AA 56701.

### 2.4 Paint remover (organic thinner base)

Note: Items mentioned above, except at 2.2 and 2.3 are available in CIT Division.

## 3. CLASSIFICATION OF TRP:

### 3.1 Rust Inhibitive Oil (TRP) : AA 551 S3:

This can be applied with brush or cotton cloth, resulting in oily film. The film provides protection for short period not exceeding 15 days under normal shop conditions. This can be easily removed by wiping off the surface with clean cotton cloth. A little quantity of white spirit on the cloth may further ease its complete removal. This type of TRP is recommended for the freshly machined surfaces if there is likely hood of some gap between one operation to another machining operation.

### 3.2 TRP Non-Drying Type (Pigmented) - BP 55191:

This can be applied with brush resulting in soft nondrying film. This provides protection for a period not exceeding 4 to 6 months, under normal shop conditions. This can be removed with white spirit. The TRP is recommended for threaded portions and is good for indoor application. Because of non-drying nature of the film, It runs the risk of getting wiped off accidentally and exposing that area to corrosion, and hence more care is required during storage.

### 3.3 Rust Preventive Solution (TRP) - AA 551S2:

This can be applied with brush, resulting in thin dry film, which can be removed with white spirit, Xylole, Toluole. It would provide protection for a period not exceeding 4 months, inside the shop. It is specially recommended for the jobs which need protection for short period within the shop and liable for inspection without the removal of TRP.

### 3.4 Rust Preventive Drying Type (Pigmented) - AA 551S6:

This can be applied with brush resulting in thin dry film which can be removed with white spirit, Xylole or Toluole. It would provide protection for a period not exceeding six months.



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### 3.5 Rust Preventive Hard Rim - Black (TRP) - AA SS154:

This can be **applied** with brush resulting in a thin dry film which can be removed with white spirit. This would provide protection for a period of 6 months. It is very good for outdoor **applications**.

### 4. SURFACE CLEANING:

Before any TRP is applied on the metal surface, the surface should be free from old **paint**, rust, oil, **grease**, moisture, perspiration marks and cutting fluids etc. It is emphasized that the effectiveness of the TRP is reduced or even **nullified** if the surface is left **contaminated** with the above impurities. If the surface to be protected has developed rust, it **should** be removed completely using mechanical or chemical **means**.

#### 4.1 Mechanical Cleaning:

Rust should be removed using means such as emery **paper**, wire brush, pneumatic wire brush wheel, emery paste, shot blasting etc. keeping in view, the surface and extent of the finish required.

#### 4.2 Chemical Cleaning:

- (i) Degrease the surface with white **spirit**. In case old **paint** is on the surface, it should **also** be removed using paint remover (organic thinner base).
- (ii) Apply sufficient quantity of de rusting solution with brush or cotton cloth. Let the solution remain in contact with rusted surface for 5 to 10 minutes and then rub with cloth. Clean the surface with cloth. Clean the surface with **cloth** soaked in water in case the surface is hot still free from **rust**, repeat the process. Finally remove the residual acid from the surface with the help of wet cotton, otherwise it may cause further corrosion.
- (iii) Dry the surface possibly with hot air blow.
- (iv) Wipe off the surface with clean cloth having **small** quantity of uncontaminated white spirit or **acetone**. Allow the solvent to **evaporate**. The **surface** is now ready for TRP application.

### 5. TRP APPLICATION:

Classified into four categories, viz. A, B, C and D keeping in view the status of finish, and **extent of protection desired**. This classification will be **mentioned** for the jobs categorised as A and B, in the Engineering Drawings. The fasteners and threaded portions have been classified in C category. Other components not defined in the specification have been classified as D. For category C & D there will not be any specific **mention** in the Engineering Drawings, and they are to be provided with TRP system recommended for these categories.

**Generally** the composite TRP system, referred in the specification, would provide protection for period not exceeding one year, provided protective film **does not** get damaged.

#### 5.1 Category A:

Journal faces, highly finished surfaces, (Better than 0.8 microns) such as Thrust face etc. Bearing surfaces of Shafts, Trunions of **Guide Vane** and Valve etc. TRP system to be provided as **detailed in Annexure • I**.



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## 5.2 Category B:

Large fabricated items having machined surfaces such as Top and Bottom Brackets, Stator, Spider, Spring Plate Assembly, Guide Bearing Support Ring, Vapour Seal Assembly, Oil Retaining Sleeve, Matting Surfaces of Stay Ring, Top Cover, Shaft Flanges, Expansion Joints. TRP system to be provided as detailed in Annexure - I.

## 5.3 Category C:

Fasteners and threaded portions:-

TRP system as detailed in Annexure II should be applied, except in such cases where the job has already a protective film such as plating, galvanising, etc.

## 5.4 Category D:

Small machined components and other components not defined above: These are to be provided with TRP system detailed in Annexure - III.

## 6. PRECAUTIONS FOR APPLICATION:

6.1 TRP should be stirred well in the original container, so as to make a homogenous mixture of its constituents.

6.2 Container, brush, cloth to be used for application of TRP should be clean and after, the application of TRP, the container and the brush should be washed with white spirit, for next operation.

6.3 Any type of contamination either on the surface of TRP will reduce or even nullify the effect of TRP system. Hence all possible care should be taken.

6.4 For the critical surfaces, in case there is likely-hood of some gap between cleaning of surface and the application of TRP, as interim measure TRP OH type AA 55153 should be applied. This should be removed completely when drying type TRP is being applied.

6.5 During the drying period, the wet film should be protected from deposition of dust particles by providing an umbrella of polythene sheet.

## 7. PROTECTION OF SURFACE FROM PHYSICAL DAMAGE:

7.1 After the TRP system has been properly dried spread polythene sheet over it.

7.2 Interpose a sheet of tar felt BH-type 3 Grade-I, Hessian Base Self-finish to IS:1322-1993.

7.3 Apply a thin sheet of soft metal such as Aluminum, Zinc etc.

7.4 Fix the plywood as presently being done. The wooden surface coming in contact with the job should be given a liberal coat of TRP AA 55154. this would eliminate chances of moisture and organic acid from wood initiating the corrosion.



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### 8. GENERAL INSTRUCTIONS:

- 8.1 These instructions should also be passed on to our Site Engineers and the **customer** in **order** to acquaint them with the system of protection **being** provided.
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3.2 As soon as the components are received at site, they should be examined for rupture on TRP film, development of rust, if any. Patch work after rust removal wherever necessary should be given with **T.R.P.** System.
- 8.3 The components should be stored in such a way that TRP **film** does not get damaged. As far as possible these are to be stored indoors.
- 8.4 The surface of TRP coated jobs **shall** be examined for damage and corrosion spots, at regular intervals depending upon the type of TRP used. Repair of the damaged surface **should** be with the TRP System applied earlier.
- 8.5 For **lifting** of jobs at our shops and customer's **stores**, rubber sheet should be used along with wire rope as rope **alone** damages TRP film, and results in corrosion.



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## ANNEXURE - I

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### PROTECTION OF FERROUS COMPONENTS WITH TRP FOR DESPATCH TO CUSTOMERS/SITES

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For Jobs classified as Category 'A' and 'B'  
will have 3 coat system as detailed below:

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1. After the surface of the job has been cleaned as detailed in Clause 4.0, apply one coat of TRP AA 55155 and allow it to air dry at shop temperature for about 12 hours.
2. Clean the dust from the surface and give first coat of Black TRP AA 55154 Allow to air dry for about 12 hours at shop temperature.
3. Give second coat of TRP AA 55154 as in no.2.

Note: During the drying, the wet film should be protected from deposition of dust by providing umbrella of polythene sheet.



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### ANNEXURE - II

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#### PROTECTION OF FERROUS COMPONENTS BY TRP FOR DESPATCH TO CUSTOMERS/SITES

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For Jobs classified as Category 'C' will have  
two coat system as detailed below:

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1. For Fasteners of Bigger Size (More than M 20):
  - 1.1 After cleaning of surface as per clause 4 apply first coat of AA 55154 on non threaded portion and a liberal coat of BP 55191 on threaded portion. Allow it to dry for about 12 hours.
  - 1.2 Apply second coat of AA 55154 on non-threaded portion.
- 2.0 Fasteners of smaller size: (Having no other protective film such as plating, galvanising etc.).
  - 2.1 After surface cleaning is over, apply a liberal coat of BP 55191 TRP on threaded and non-threaded portion.



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ANNEXURE - III  
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**PROTECTION OF FERROUS COMPONENTS WITH  
TRP FOR DESPATCH TO CUSTOMERS/SITES**  
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For Jobs **classified** as Category '**D**' will have two  
coat system of TRP as **detailed** below:

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1. After surface cleaning as per Clause 4, apply one coat of TRP AA 55155 (**Pigmented**). Allow to air dry for about 12 hours at ambient temperature.
2. Clean the dust if any, from the surface and apply one **liberal** coat of AA 55154 TRP. **Allow** it to air dry for about 12 hours at shop temperature.