



PLANT STANDARD HYDERABAD

HY0490563

REV. NO: 04

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TRP APPLICATION ON FERROUS COMPONENTS OF DIFFERENT PRODUCTS

1. SCOPE:

- 1.1 The standard covers the selection and applications of Temporary Rust Preventives (TRP) for different products & their components during production, before despatch and at site.
- 1.2 This standard supersedes the old company standard and other Product Standards/ documents made on the subject.

2. GENERAL:

The effectiveness of TRP depends on the following aspects:

- 2.1 Selection of proper TRP.
- 2.2 Proper preparation of the surface to be protected. Refer plant standard HY 067 41 66.
- 2.3 Application of TRP – Under normal atmospheric conditions, corrosion of machined surfaces starts as soon as they are accessible to moisture, air etc. Hence it is necessary to apply rust preventive immediately after the machining of surfaces.
- 2.4 TRP – Reference on manufacturing & erection instructions/drgs. wherever necessary by Engg.

3. SELECTION OF TRPs:

The list of rationalized TRPs, is given in Annexure - I. This covers various types, method of application, durability of protection, equivalent brands etc.

4. SURFACE PREPARATION: (For details refer plant std HY0674166)

Before application of TRPs, it is necessary to ensure that the surfaces are free from rust, dust, dirt, grease, oil etc. The effectiveness of TRP depends on the cleanliness of the surface.

Revisions: Cl. Nos. 1.2, 2.2 modified.
Cl. No. 2.4 added. Cl. Nos. 4.1 to 4.4 deleted.
Annexures I, II, & III modified.

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5. TRP APPLICATION:

- 5.1 The application of TRPs is classified in Annexure II keeping in view the finish and the extent of protection required.
- 5.2 The details of components against each category of application are given productwise in the Annexure III.

6. PRECAUTIONS FOR APPLICATION:

- 6.1 The TRP shall be stirred well in the original container so as to make a homogenous mixture of its constituents.
- 6.2 The container, brush, cloth to be used for application of TRP shall be clean. The container and the brush shall be washed with white spirit, for the next operation.
- 6.3 Preservative shall be applied in closed premises not later than 3-5 hours after cleaning and degreasing. Application shall not be done in humid atmosphere and during sharp changes in temperature, which may cause sweating.
- 6.4 Care shall be taken to see that the preservative coating is uniform and without overflow or gaps, bald spots, and flows in. Each subsequent layer shall be coated after the preceding one dries up completely.
- 6.5 The quality of preservative layer shall be checked by visual inspection for uniform coat. Any defect observed shall be immediately rectified.

7. DURABILITY OF PRESERVATION:

The durability of preservation varies from 6 months to 1 year depending on the category of TRP application refer Annexure-I. After this period, it is necessary to inspect the preserved parts and if necessary carry out re-preservation after cleaning and making the surfaces free from corrosion, if any.

8. DETAILS OF REPRESERVATION TECHNIQUES:

- 8.1 The earlier coating shall be removed by using white spirit.
- 8.2 Rust if any shall be removed with fine emery paper. Care shall be taken to see that precision machined surfaces like Journal surfaces shall not be damaged during this operation.
- 8.3 Surfaces prepared for re-preservation shall not be touched by hand.
- 8.4 The duration of re-preservation shall be as per the durability of protection specified in Annexure I. After drying, re-preservation shall be carried out in accordance with clause 6



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9. DEPRESERVATION BEFORE ASSEMBLY / ERECTION:

- 9.1 Depreservation of the various parts shall be done during Assembly/erection period as and when necessary.
- 9.2 Depreservation of parts consists of removal of TRP coatings from all the machined surfaces with white spirit.
- 9.3 Degreasing or cleaning of any forged components like rotors, blades, shafts etc., shall not be done with Chlorinated Solvents like Carbon Tetrachloride.

Preservative Instruction to Site:

1. This standard on preservation of different products and components shall be followed.
2. As soon as the components are received at site, they should be examined for rupture of TRP film, VCI paper and development of rust, if any. Patch work wherever necessary should be done with the TRP system.
3. The components should be stored in such a way that TRP film does not get damaged.
4. The surface of TRP coated components shall be examined for damage and corrosion spots regularly.
5. Represervation shall be followed as per the Tag attached to the component.
6. Inspect coated and wrapped surfaces. If coating or wrapping appears to have been removed during shipping clean and re-wrap or coat as applicable.
7. Inspect shafts for adequate preservative and add a heavy film of valvoline TECTYL 894 or Equivalent as necessary.
8. Rotate the Rotors a few revolutions every month and ensure that the bearings are packed with grease.

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RECOMMENDED TYPES OF TRPs

(Clause – 3)

ANNEXURE-I

Type of TRP	Description of TRP/SPEC. No.	Method of Application	Durability of Protection	Equivalent Brands
Hard Film Solvent deposited	Rust Preventive Hard Film Black AA55154	Dipping, Spraying, Brushing	6 months	HE 1710 (Bhopal)
	Rust Preventive Hard Film Yellow AA55155	Dipping, Spraying, Brushing	1 year	HE 1706 (Bhopal)
Soft Film deposited	Rust preventive solution, clear (TRP) AA55152	-Do-	6 months	HE 1709 (Bhopal)
	Rust solution, Steam washable (TRP) AA55151		3 months	HE 1712 (Bhopal)
Grease	Temporary Corrosion Preservative Grease IS:958	Smearing Brushing	6 months	IOC Multi-Purpose Grease No.2
Oil	Rust inhibitive oil (TRP) AA55153	Dipping, Rinsing, Spraying,	3 weeks	HE 1711 (Bhopal)
	Temporary corrosion Preventive Fluid IS:1153		6 months	ESSO: RUST BAN 394
Powder/ Tablet	Volatile Corrosive inhibitor (VCI) powder/tablet IS:5730	Sprinklin	3 months	
Paper	VCI paper IS:6263	Wrapping	3 months	
Gas	Nitrogen Blanketing	Filling	3 months	
Crystal	Silica-jel	Inserting	3 months	

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TRP APPLICATION CATEGORIES

(Clause – 5)

ANNEXURE-II

TRP Application Category	Application Details	Guide Lines for Selection
A	Apply 1 Coat of Rust Preventive Hard Film yellow (HE 1706) / AA55155 and 1 Coat of Rust Preventive Hard Film Black (AA55154)/HE1710. Wrap the surfaces with Volatile Corrosive inhibitive (VCI) paper with its active side facing the surfaces. Fix the ends with adhesive tape. Wrap the surfaces with rubber sheet and then with aluminium foil of thickness 0.05 to 0.1 mm. Fix the adhesive tape.	Longer duration of protection before despatch to site. Suitable for precision machined surfaces with simple profiles, eg. Rotor Journal Surfaces
B	Apply 1 Coat of Rust Preventive Hard Film yellow (HE 1706) /AA55155 and 1 Coat of Rust Preventive Hard Film Black (AA55154)/ HE1710.	Longer duration of protection before despatch to site. Suitable for precision machined surfaces like parting plane surfaces, covers, couplings, base plates, machined cross around pipes etc.
C	Apply 2 Coats of Anti Rust solution, steam washable (TRP) (AA55151) / HE1712	Steam Turbine components of complicated profiles where steam washing facility is available eg. Steam Turbine rotor components.
D	Apply 2 Coats of Rust Preventive solution, Clear (TRP) (AA55152) / HE1709	Steam Turbine components of complicated profiles where there is no facility for steam washing.
E	Apply 2 Coats of TRP fluid (IS:1153)	Steam Turbine components of complicated profiles. The TRP is with brown Pigment.
F	Apply 1 Coat of Rust inhibitive oil (TRP) (AA55153) / HE1711	Machined components during the process, Storage on shop floor over 1 month upto 3 months.
G	Apply Temporary Corrosion Preventive Grease IS:958 liberally and wrap in polythene sheet/bag and tie it with a thread	Suitable for Fasteners, chains, Gear Wheels etc.
H	Wrap with 2 layers of VCI paper IS:6263 and one layer of Polythene Sheet.	Suitable for commutator of Armature, Bushings.
I	Sprinkle VCI powder/tablets IS:5730 inside pipe. Close the ends by plastic caps and adhesive tape.	Inside oil pipes.

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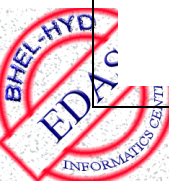
ANNEXURE – II

TRP Appli- cation Category	Application Details	Guide Lines for Selection
J	Draining after Hydro Test drying with hot air, evacuation of the vessel and Nitrogen blanketing.	Suitable for the water chamber and the shell side of Heat Exchanger
K	Keep silica-jel bag inside suction and discharge branches, close all opening close all tapped holes with red plastic caps (HY7242375 for G threads, HY7242579 for NPT threads). Close all flanged openings with suitable metal covers (HY7790963).	Suitable for all exposed tapped holes and flanged openings on the pumps and Tubings.

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**PRODUCT COMPONENTS – TRP CATEGORIES
(CLAUSE –5.2)**

ANNEXURE –III

DETAILS OF COMPONENTS	TRP APPLICATION CATEGORY
STEAM TURBINE AND COMPRESSORS HP,LP and other rotors. Rotor Journals, Thrust Collars	A
Base plate machined.	B
Crossed around pipes, machined	B
Bearing pedestals with assembled parts and bearing housings	B
Outer machined surfaces	B
HP turbine outer casings	B
Outer machined	B
HP, LP and other rotors.	B
Rotor coupling flange faces, coupling bolt holes	B
Welded low pressure Turbine components	B
Longitudinal Grider and front	B
Outer machined	B
LP upper part outer machined surface	B
LP inner outer casings outer machined surface	B
LP Inner, inner casings outer machined surface	B
Fasteners of Threaded portions	B
Unthreaded portions (M64 and above)	B
HP Exhaust Elbow outer machined surface	B
Shaft lifting and clearance measuring device, machined surface	B
Assembly fixtures for HP Turbine, machined surface	B
Turning over device for HP Turbine, machined surface	B
Transportation device for HP Turbine, machined surface	B
Oil tank	B
Outer machined surface	B
Injector Nb. 300	B
Outer machined surface	B
Main steam and re-heat strainer body	B
Outer	B
Cast exhaust hood	B
Outer machined surface	B



ANNEXURE –III

DETAILS OF COMPONENTS	TRP APPLICATION CATEGORY
Cross around pipes, inner	C
Valves-casings and covers	
Inner un-machined surface	C
Bearing pedestals with assembled parts and bearing housings	
Outer un-machined surface	C
HP and outer turbine outer casing-	
Inner	C
HP and IP inner casing and diaphragm-carrier and guide blade carrier-	
Outer	C
Inner	C
HP, LP and other rotors.	
All surfaces except journals, Thrust collars	
Flange cases and coupling bolt holes	C
STEAM TURBINE AND COMPRESSORS	
Welded low pressure Turbine components -	
Logitudinal Girder and front valves	
Inner	C
LP upper part,	
Inner	C
LP Inner, outer casings	C
Inner including blades	C
Outer un-machined	C
LP Inner, inner casings	
Inner including blades	C
Outer un-machined	C
Cover for shaft sealing casing	
Inner	C
Steam inlet and extraction connections	
Inner and outer	C
HP Exhaust elbow	
Inner	C
Handling Barring Gear and hydraulic Gear oil tank	
Inner	C
Injector Nb.300	
Inner	C
Main steam and re-heat strainer body	
Inner	C

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ANNEXURE –III

DETAILS OF COMPONENTS	TRP APPLICATION CATEGORY
Blanking arrangement for strainer body	C
Oil strainer	C
Main steam and reheat strainer handling device, machined	C
Oil throttle valve, inner	C
Oil stripper journal	C
Cast exhaust hood	
Inner	C
Compressor Rotor	D/E
Bearings, Oil seals, couplings, spare blades, gland ring	G
Lifting beams and clamps machined	G
Valves – casings and covers	
Inner machined	G
Spindles	G
Fasteners of Threaded portions	
Unthreaded portions	G
Emergency Governor	G
Piping of governing and LP bypass central rack and supply unit for valves, inner	G
Suspension arrangement for ESU and interceptor valve	
Machined surfaces and springs	G
Tools and tackles for governing equipment, machined	G
Oil pipeline outside the governing equipment	I
Other pipings	I
ELECTRICAL MACHINES	A
Rotor Journals, Slip rings, Journals of Armature	
Stator End Flanges, machined flanges, Machined surfaces of Foundation Frames, Base plates.	B
Machined components, Base plates, Machined surfaces of Oil cooler, Air cooler, Accessories	B
Rotor coupling face, threaded holes of exposed surfaces, bearing shells. Fasteners, internal/external threaded surfaces	G
Commutator of Armature, Bushings	H



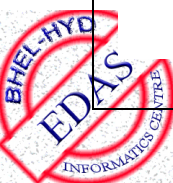
ANNEXURE –III

DETAILS OF COMPONENTS	TRP APPLICATION CATEGORY
SWITCHGEAR Hydraulic pistons	A
Operating mechanisms after testing and before shipment HLD Base frame, Machined Flange surfaces and mechanism housing, Terminal butting surfaces.	D/E
Machined Ferrous components like shafts, pins, gears Springs, links and levers, castings, machined surfaces of fabricated housings, catches, latches, rollers protective pipe flanges.	F
Chains and bearings, pull rod (threaded portion), Base frame Tapped holes, external/internal threaded surfaces, fasteners.	G
HEAT EXCHANGERS inside condenser shells, inside deaerator shells, machined surfaces of flanges and drilled tube sheets/ support plates	D/E
Inside of Rectangular and very large condensers. Machined surfaces of condenser, tube sheets.	G
Inside water chamber and shell side of feed water heaters	J
OIL FIELD EQUIPMENT Rig instrumentation Valves and disconnectors dampers for gauges, indicating instruments. Mud Agitators Machined surfaces of mud system Hoisting and rotating equipment Rotory, Swivel, travelling block, Hydra Hooks Mud system Centrifugal pump, external surfaces of mud agitators Mud pump external surfaces, loose parts of mud pump. Mud pump internal surfaces with oil contact.	G G G G
Centrifugal pump, mud pump internal surfaces with liquid contact. (Except Oil)	L

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ANNEXURE – III

DETAILS OF COMPONENTS	TRP APPLICATION CATEGORY
BOWL MILLS Machined surfaces	D/E
Inside Gear case assembly	F
Bearings, Drive couplings, fastener, external/internal threaded surfaces	G
PUMPS Journal Bearings, bearing surfaces and exposed portion of shafts.	A
Exposed machined surfaces of ferrous components like thrust collar large fabricated frames, foundation frames, pump discharge covers, tubular cooler, cartridge, keyway blocks of pump casings, Head gears, Canisters, Foundation Rings, elements, CWP parts.	B
Ferrous components stored in assembly shop, freshly machined surfaces with more than 1 to 3 months gap between one operation to another	F
Spare parts, fasteners, external/internal threaded joints	G
All exposed tapped holes and flanged openings on the pumps and tubings	K
GAS TURBINES Journal & Thrust Bearings, Rotor journals & Thrust collars	A
Ferrous components stored in assembly shop, freshly machined surfaces with more than one month gap between operations	F
All exposed tapped holes and flanged openings on the pumps	K
Exposed machined surfaces/parting planes of all ferrous fabricated frames including base plates, couplings	B
Fasteners, External/Internal threaded joints	G
Oil pipes when stored for long periods or when despatched loose	I
Torque converter – fill with lube oil, plug all openings If storage and/or despatch period together exceeds 3 months	
Fuel pump and flow dividers-fill with HSD, plug all openings, if storage and/or despatch period together exceeds 3 months	



ANNEXURE – A

LIST OF SUPPLIERS OF TRP

M/S. BHEL, Bhopal	-	Rust preventive oil
M/S. Ceturion coatings, Madras	-	Rust preventive compound (proprietary)
M/S. Agromore Ltd., Bangalore	-	Rust preventive Agents
M/S. Mascot chemical works, Bangalore	-	- “ -
M/S. Chembond chemicals Pvt. Ltd., Bombay	-	- “ -
M/S. Pradeep Metal Treatment Chemical Pvt. Ltd., Thane	-	- “ -
M/S. Surendra Enterprises, Hyderabad	-	- “ -
M/S. Canning Mithra phomics Ltd., Bombay	-	- “ -
M/S. Grawer & Weil (Ind) Ltd., Bombay	-	- “ -
M/S. Metrit Industries, Bombay	-	- “ -
M/S. Electro chemicals, Calcutta	-	- “ -
M/S. CMF Systems, Secunderabad	-	- “ -
M/S. Peddainton chemicals Industries (Ind), Bombay	-	- “ -
M/S. Protochem Industries, Bombay	-	- “ -
M/S. Suprabha protective, Products, Pune	-	Rust Poliq – N (Proprietary)
M/S. OKS, 5/9, Primorse Road, Bangalore - 560025	-	1) OKS – 240 Anti – seize compound 2) OKS – 1140 High Temperature Silicone grease 3) OKS – 410 Mos 2 High performance long life grease 4) OKS – 300 Mos 2 Mineral oil concentrate (Additive) 5) OKS – VCI : 368 N 6) OKS - VCI : 369 N 7) OKS - 2140 8) OKS - 2160 9) OKS - 2201
M/S. Prosol Chemicals Pvt. Ltd.	-	1) Rustex - 221
M/S. Futech chemicals (P), Secundeabad	-	1) Futech - AR (LT)