

## DIRECTORATE GENERAL BORDER ROADS

### GENERAL REPAIR INSTRUCTION NO. 142

ON

### PAINTING OF WATER TANKS, TRAILER AND VEHICLE MOUNTED

#### GENERAL

1. The instruction lays down the procedure for internal painting of water tanks. The process can also be adopted for painting of the inner surface of large receptacles fabricated out of steel metal sheet which are used for storage of water for human consumption.

2. Any water container made of steel sheet metal in continuous contact with water and air is liable to get rusted/corroded and become unhygienic. The water gets contaminated with rust and other harmful ingredients and becomes unfit for human consumption in addition, rust layers formed on the surface of the metal reduces the service life of the container.

3. To avoid the foregoing adverse effects, painting of the inner surface of water tanks by a paint which is free from harmful ingredients is necessary. Bituminous based paints being neutral are best for this purpose.

#### 4. MATERIAL REQUIRED

S/ No	Nomenclature	A/U	Qty required for		
			500 Ltrs tanks	1000 Ltrs Tanks	3000 Ltrs Tanks
1	2	3	4	5	6
1	Oil cloth No. 1	Nos	1	2	6
2	Oil cloth No. 2	"	1	2	6
3	Sodium Hydroxide (Caustic Soda)	Kgs	2.500	5.00	15.000
4	Solution rust removing	Ltrs	1.000	2.000	6.000
5	Acid Hydrochloric	"	2.000	5.000	15.000
6	Paint PFU, priming red oxide of iron and zinc chromate	"	0.750	1.500	4.500
7	Paint, ready for use, bituminous black acid alkali and heat resisting	"	1.000	2.000	6.00

#### INSPECTION

5. Inspect the water tanks before painting for :-

- (a) External damage to water tank sheets causes it to be unserviceable.
- (b) Heavy rusting/corrosion due to which water tank bottom plates get corroded, rendering it unserviceable.

Contd...P/02

Tanks should not be painted in case considered unserviceable.

### PROCEDURE

6. If water tank is considered fit for painting, the following procedure should be adopted :-

- (a) Remove the inner baffle plates by unscrewing the nuts and bolts from water tank interior. In case nuts and bolts are rusted and removal is difficult, remove by either cutting with chisel and hammer or electrical burning. Clean plates alongwith tank.
- (b) Caustic Soda Treatment :- Treat the interior of water tank by filling with 10 to 15% caustic soda solution for 24 hrs to 36 hrs depending upon the nature of previous painting. Drain out the caustic soda solution cleaning depending on its re-usability.
- (c) Scratch of the remaining paint on the inner surface which becomes considerably loose by caustic soda treatment. Scratch with stiff wire brush or emery paper and clean with fresh water.
- (d) Leaching :- De-rust the water tank with 15 to 20% hydrochloric acid solution by filling the tank fully. Stir with a rod and turn it to one side and keep it in this position for 24 hrs and turn to other side and leave it for another 24 hrs. drain out the solution to another tank. Flush with water and scrub the rusty portion thoroughly with wire brush till rust is fully removed and again flush with water. Ensure that traces of acid are not left.

### PASSIVATION OF WATER TANK WALLS

7. Treat the entire inner surface with hot 30% rust removing solution by scrubbing it with a cotton rag tied on a stick. It will give partial passivation to the inner surface and will also de-rust the remaining rusty portions if left after leaching.

### PRIMING APINT APPLICATION

8. After cleaning and drying the surface thoroughly, apply paint PFU, priming red oxide of iron & zinc chromate. Let the painted surface dry for 24 hrs to 36 hrs depending on atmospheric conditions. Similarly paint the baffle plates after cleaning.

### INTERIOR FINISHING

9. As the paint red oxide dries up, apply first coat of paint ready for use bituminous black acid alkali and heat resisting and let it dry for 24 hrs. After that apply 2<sup>nd</sup> coat of paint and let it also dry for 24 hrs. It should be ensured that the primer is fully and properly covered by the paint PFU bituminous black. In case paint is thick this can be diluted by turpentine oil. The baffle plates duly painted as described in the foregoing para graphs will be refitted in the tank.

SAFETY PRECAUTIONS

10. Chemicals used for cleaning and painting are injurious to health and the following precautions should be taken during the process :-

- (a) While handling and preparation of solutions rubber hand gloves, aprons and rubber soled shoes should be used.
- (b) Face masks should be used to avoid inhalation of the dangerous fumes of the chemicals.
- (c) Necessary precautions and care must be taken while mixing solutions, acids, alkalies and avoid spilling these solutions out of containers.
- (d) Personnel should not enter inside the tank without thoroughly flushing out the chemicals with water.
- (e) In case any acid comes in contact with the body, wash immediately with soap, apply diluted ammonia and wash thoroughly.
- (f) Painting of the tanks should only be done under conditions of good ventilation.
- (g) When a person is gas poisoned during handling of chemicals (acids) it is imperative to take the injured person to fresh air unbutton his clothes and not let him sleep until medical aid arrives.

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