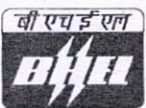
	BHARAT HEAVY ELECTRICALS LIMITED SEAMLESS STEEL TUBE PLANT TIRUCHIRAPPALLI-14	Ref. No. SSTP: Chem: Heavy Duty Phosphate:01 Rev: 00 Date: 19-08-2024 Page: 1 of 2
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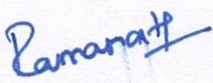
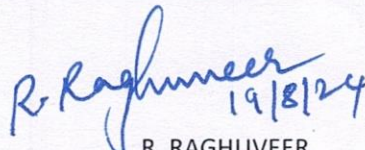
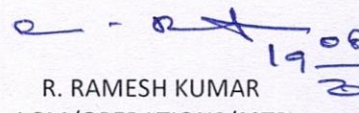
Requirements for Heavy duty Zinc Phosphate for cold drawing of tubes

Purpose: To treat the surface of the steel tubes for protection against corrosion and enabling coating of lubricant for smooth cold drawing of tubes.

1	Application	For Cold drawing of Seamless Carbon and low/high Alloy Steel tubes
2	Type	Two Pack System Viz., 1. Initial make-up chemical 2. Replenishment chemical
For Initial make-up chemical :		
a.	Specific Gravity at 30° C	1.48 to 1.52
b.	Total acid for 10 ml of 5% solution	28 to 32 Points
c.	Free acid for 10 ml of 5% solution	3.5 to 5 Points
d.	Chemical Composition	Phosphoric Acid – Min. 22 % to Max 32 % Nitric Acid-Min.30 % to Max 40% Zinc- Min. 15 % to Max 20%
For Replenishment chemical		
e.	Specific Gravity at 30° C	1.49 to 1.53
f.	Total acid for 10 ml of 5% solution	15 to 18 Points
g.	Free acid for 10 ml of 5% solution	48-52 Points
h.	Chemical Composition	Phosphoric Acid – Min. 38 % to Max 48 % Nitric Acid-Min. 15 % to Max 30 % Zinc- Min. 13 % to Max 18 %
3	Operating Temperature of bath (in ° C)	70 to 75
4	Soaking Time	10 - 15 Minutes (for Carbon Steel) 15 - 20 Minutes (for Alloy Steel)
5	Coating weight (gm per square meter)	Minimum 7
6	Corrosion Protection	Tube surface treated with phosphate shall not get rusted for 3 days in normal atmospheric in-door condition (at ambient temperature).
7	Application method	Dipping
8	Soap coating test	Smooth uniform white coating of Soap shall be formed on the surface of tube (test piece)

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9	Addition of Accelerators/Catalyst	To be indicated. Proprietary accelerators/catalyst if any required to be used along with the Zinc Phosphate chemical to make suitable for this application shall form part of the offer and to be supplied as a package. Such of those proprietary additives if applicable shall be indicated by the supplier in the offer to be submitted.
10	Sludge formation	Formation shall be minimum and to be settled at the bottom not at the other places viz., heating coils, bath walls
11	General Conformance to IS Specification	IS: 6005:1998 (R-2002) Clauses: 3.0, 4.1, 4.2, 4.2.1, 5.2 7 6.0 including Table-3
12	Keeping Property (Shelf life) – in Months	12
13	Packing	<p>The chemical shall be supplied in damper proof HDPE carboys of 30 Liters capacity with the following marking.</p> <ol style="list-style-type: none"> 1. Phosphating Chemical for BHEL SSTP use only 2. Supplier Name 3. Batch No. & Date 4. Quantity 5. Shelf Life 6. BHEL Specn. SSTP:Chem: M or R (whichever is applicable) <p>Differentiation is required for Initial Make-up chemical & replenishment chemical. It shall be supplied in different colour carboys.</p>
14	Material Safety Data Sheet (MSDS)	Relevant MSDS shall be furnished
15	Test Certificate	The supplier shall furnish test certificate for the above requirements along with supply. However, sample will be checked from every lot supplied for its compliance to TDC at BHEL Lab. The Results of the BHEL Lab will be the Sole Criteria for Acceptance.

Prepared by	Reviewed by	Approved by
 N. RAMANATHAN MANAGER/CMP	 19/8/24 R. RAGHUVeer Sr. MANAGER/HM & CM PRODUCTION	 19/08/24 R. RAMESH KUMAR AGM/OPERATIONS/SSTP