

Technical Requirement of Pin as per Drg. No. 613 44 058

- 1.0 **Metallic Pin** : Drg. No. 613 44 058
- 1.1 **Material** : The pin shall be made of cold deformed hexagonal bar of **Chrome Silicon Steel** of good quality.
- Grade** : 38 x C GOST 4543 – 71 (chemical composition given below) or alternative material EN24 to BS 970.

1.2 **Chemical Composition (in %)**

C	Si	Mn	Cr	S	P
0.34 - 0.42	1.00 - 1.40	0.30 - 0.60	1.30 - 1.60	0.035 Max	0.035 Max

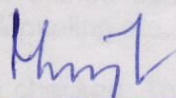
Residual content of Copper and Nickel should not exceed 0.30% each

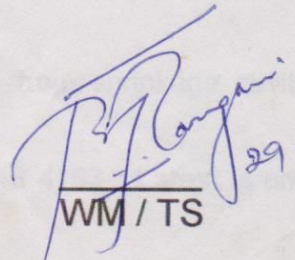
1.3 **Mechanical Properties**

UTS Kgf / mm ² (Min.)	Yield Point Kgf / mm ² (Min.)	Elongation % (Min.)	Reduction of Area % (Min.)	Impact Strength Kg m / Cm ² (Min.)	Hardness HB
95	75	12	50	7	311 - 415

- 1.4 **Condition of supply** : The pin shall be isothermally hardened to achieve required mechanical properties followed by zinc coating **Fe Zn6, IS 1573 : 1970** and Chromate passivation to **IS 1340 : 1977**. The samples shall be selected from each H.T. batch for evaluating mechanical properties as specified above.
- 2.0 Sample for mechanical tests should represent the longitudinal direction of the components and specimens to be prepared from heat-treated blank correspond to the norms as per table given in clause no.1.2 & 1.3. Cutting out of test pieces should be done by cold technique and with use of protective measures, to avoid surface hardening and overheating.
- 2.1 100% Pin will be subjected to hardness test. Hardness is to be checked at a distance of not more than 50mm from the threaded end.
- 2.2 Impact strength will be determined on Type I / II specimens as per **GOST 9454 - 78** at room temp. Length = 55 ±0.6mm, Width = 10 / 7.5 ±0.10mm, Height = 10 ±0.1mm, U type Notch of 2 x 2 mm, Radius of concentrator = 1 ±0.07mm, Height of working section = 8 ±0.1mm.
- 2.3 Prior to Zinc plating shot blasting of threaded end of pin is to be carried out.
- 2.4 Total decarburization value should not exceed 0.27mm in crest of thread & 0.08 mm in bottom of thread.
- 2.5 Track pin shall be subjected to bend test of 50mm deflection with a span of 265mm.
- 2.6 All the pins should be subjected to magnetic crack detection test to show their freedom from hairline crack. No cracks are allowed.
- 2.7 Macro structure test on etched surface or fracture must be free from shrinkage cavity, porosity, slag inclusion & peeling etc.
- 2.8 Inclusion rating shall be checked. Thin series of all types of 1.5 to **IS 4163 : Latest** is only allowed.

- 2.9 One sample/batch will be subjected to microstructure test of magnification 100 X and should consist of homogeneous distribution of fine grain throughout the whole section in the matrix of tempered Martensite.
- 3.0 **Visual Inspection** : Pin is to be free from the following defects :
- 3.1 Corrosion
- 3.2 Defects in construction
- 3.3 Presence of Foreign bodies
- 3.4 Moisture & Dust
- 3.5 Any form of deterioration of material & finishing
- 3.6 Distortion
- 3.7 Mechanical Imperfection
- 4.0 **Packing** :
- 4.1 Threaded portion should be packed properly to avoid transit damage.
- 4.2 Pin is also to be protected from bending. Straightness should be within 0.5 mm.
- 5.0 **Dimension Controlling** : As per Drg. No. 613 - 44 - 058
- 5.1 All threads to confirm to **IS 4218 : Pt IV**. Check with proper thread gauge before shot blasting.
- 5.2 Tolerance on dimensions unless other wise stated as per **IS 2102 : Latest**.
- 5.3 For dimensional check the firm will design and manufacture its own gauges duly calibrated by NABL accredited laboratory. Gauges will be the property of purchaser & firm will have to return them back after completion of order.
- 6.0 The supplier will offer the material batch wise for inspection accompanied with pre inspection report & test certificate. Firm can take help of out side NABL certified laboratory and its test report are accompanied with its NABL Validation certificate.
- 6.1 Batch means the no. of components heat treated continuously without stopping salt bath heat treatment line.
- 6.2 Pilot Sample to be approved before Bulk Supply.
- 7.0 **Test Certificate** :
- The test certificate should contain following :
- Chemical composition of material batch wise as obtained from the supplier of raw material
 - Mechanical Properties report.
 - Magnetic crack detection test report.
 - Decarburization report & Microstructure test report.
 - Heat treatment schedule.
 - Dimension reports.


Jt.GM / FP-II


WM / TS
29.07.2009