



**QM-C-7.1/Spring/0005**

**Inspection Plan(Check Sheet)**

**Item** : Spring Steel Rounds Wire Rod  
Chrome Silicon Steel 54 SiCr6  
**Specn.** : WD-HLS-1994, Rev.4 Part B of June, 2022  
**Amd.** :  
**Drg. No. & Alt.** :

1. Firm's Name :

2. Date (period) of Inspection :

3. Contract Details :

a. Contract No. and date.

b. Order placing Authority.

c. Specification no.

(as mentioned in contract)

d. Material Size & Grade:  
(as mentioned in contract)

4. Quantity on order: Total Weight ( Tons / Kg)

5. Quantity offered for inspection on Date (No. of Coils / Total Weight )

6. Invoice No. & Heat No.

7. Consignee

8. Delivery Period

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## SUMMARY OF RESULT

Sr No.	Parameters			Specified Value						Observation		
										Max.	Min.	
7.1.	Visual Check			As per Spn.								
7.2	Dimensional Check			As per Contract No /P.O No.								
7.3	Tensile Strength			As per Specification								
7.4	Depth of Decarburization			0.15mm + 1% of bar dia.								
7.5	Inclusion rating			1.5 ABCD for thin &1 ABCD for thick series								
7.6	Macro etch level.			As per ASTM E 381 Plate 1								
7.7	Grain Size.			ASTM size No 6 or Finer								
7.8	Chemical compositions			As per IS:4454(Part-2) Grade-54SiCr6								
	Steel Grade	C	Si	Mn	S (max)	P (max)	Cr	V	Mo			Cu(Max)
	54SiCr6	0.50-0.60	1.2-1.6	0.5-0.90	0.025	0.025	0.5-0.8	--	--			0.2
	Sample 1											
	Sample 2											
7.9	Reduction Ratio		16:1									

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### 7.1 Visual Check ( Physical Check)

Sample Size : 2% of Total Coils per Section per Heat

Actual No. of Samples

SN	Sample Coil No.	1.	2.	3.	4.	5.
1	Freedom from defects					
2	Tag on each coil duly filled					

Please use following defect codes for visual check while filling up the check sheets

No defect	Seams	Folds	Laps	Cracks	Grooves
0	12	2	3	4	5
Twist	Excessive scaling	Deep Pits/Deep rooted seams	Surface Scratches during Handling	Kinks	Distortion
6	7	8	9	10	11

Status Tag/ Coil Identification Tag

Tag Dully Filled in and Quality Status OK	Tag Not Readable	Damaged Tag	Incomplete Filled Tag	No Status Tag
0	1	2	3	4

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### 7.2. Dimensional Check

Sample Size: 5 samples per heat per section. Heat No.: \_\_\_\_\_ Actual Sample:

SN	Sample Coil No.	1	2	3	4	5
1	Diameter $\pm$ 0.4mm					
2	Ovality across cross section 0.50mm Max					

### 7.3. Tensile Strength:(For Oil hardened and tempered wire)

Sample Size:2 Samples Per Heat Per Size . Heat No.: \_\_\_\_\_

Wire Rod Dia: \_\_\_\_\_mm

Specified UTS: 1150N/mm<sup>2</sup>& RA-30% Min.

Actual Samples:

Sample Coil No.	1	2
Diameter of Wire		
UTS N/ mm <sup>2</sup> )		
Reduction Area		

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### 7.3 Depth of Partial Decarburization

Sample Size: 3 Wire Rod per Heat per Section.

Heat No.:\_\_\_\_\_

Diameter of Wire Rod:\_\_\_\_\_

Value Specified : 1% of Wire Rod dia.) ----- mm Max.

#### Actual Samples

Sample No.	1	2	3	4	5
Depth of Decarb					
Defect Code					

Total nos. of defectives.-----

Defect Codes

0 No Defect

1 Depth of Decarb more than specified.

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#### 7.4 Inclusion rating

Sample Size: 3 samples per heat per section

Diameter of Wire Rod: \_\_\_\_\_

Value Specified: Not worse than 1.5 A, B, C, & D for thin and 1.0 A, B, C, & D for thick series.

Actual Sample

ample No.		1	2	3	4	5
A	THICK					
	THIN					
B	THICK					
	THIN					
C	THICK					
	THIN					
D	THICK					
	THIN					
Defect Code						

Total nos. of defectives. -----

#### Defect Codes

- |   |   |   |  |
|---|---|---|--|
| 0 | No Defect                               |   |  |
| 1 | Worse than Specified in A Thick Series. | 2 | Worse than Specified in A Thin Series. |
| 3 | Worse than Specified in B Thick Series. | 4 | Worse than Specified in B Thin Series. |
| 5 | Worse than Specified in C Thick Series. | 6 | Worse than Specified in C Thin Series. |
| 7 | Worse than Specified in D Thick Series. | 8 | Worse than Specified in D Thin Series. |

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### 7.5 Macro etch Level

Sample Size: 3 Samples per heat per section

Heat No.: \_\_\_\_\_

Diameter of Wire Rod: \_\_\_\_\_

Value Specified: Not to be worse than C2, R2 & S2 of ASTM E 381 Plate 1.

Actual Samples

Sample No.	1	2	3	4	5
C					
R					
S					
Defect Code					

Total nos. of defectives. -----

Defect Codes

- 0 No Defect
- 1 Worse than C2
- 2 Worse than R2
- 3 Worse than S2

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### 7.6 Grain Size.

Sample Size: 3 Samples per heat per section .

Heat No.: \_\_\_\_\_

Value Specified: ASTM SIZE No. 6 or Finer of ASTM E 112

Actual Sample

Sample No.	1	2	3	4	5
Grain Size (ASTM NO)					
Defect Code					

Total nos. of defectives. -----

Defect Codes

- 0 No Defect
- 1 Coarser than ASTM NO. 6.

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### 7.7 Chemical Composition.

Sample Size: 2 Samples per heat per section... Heat No.: \_\_\_\_\_

Actual Sample

Value Specified: As per IS: 4454(Part-2) Grade-54SiCr6

SNo.	Specified Value	C	Si	Mn	S (max)	P(Max)	Cr	V	Mo	Cu(Max)
	54 SiCr6	0.50 to 0.60	1.2 to 1.6	0.50 to 0.90	0.025	0.025	0.5 to 0.8	--	-	0.2
D <sup>1</sup>										
2										

e

### Defect codes for Chemical Composition.

0	No Defect.	8	p more than specification..
1	C Less than specification..	9	Cr Less than specification..
2	C more than specification..	10	Cr more than specification..
3	Si Less than specification..	11	V Less than specification..
4	Si more than specification..	12	V more than specification..
5	Mn Less than specification..	13	Mo Less than specification..
6	Mn more than specification..	14	Mo more than specification..
7	S more than specification..		

### 7.8 Reduction Ratio: - 16:1 –

Size of Ingots or billets \_\_\_\_\_; Diameter of Wire Rod \_\_\_\_\_ mm

Ratio of Size of Ingots or Billets: Diameter of Wire Rod

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