



QM-C-7.1/Spring/0003

Inspection Plan(Check Sheet)

Item : Spring Steel Rounds (Black Bar)
(Silico-Manganese / Chrome-Vanadium & Chrome-Moly-
Vanadium)
Specn. : WD-HLS-1994, Rev.3 of Jan'09, Material- IS: 3195, T-31-1992
(Corr-II)
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. Drawing no.
(as mentioned in contract)
4. Quantity on order
5. Quantity offered for inspection on date
6. Consignee
7. 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 drawing							
7.3	Hardness:	As per Spn							
7.4	Depth of Decarburisation	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 : 3195						
		C	Si	Mn	S (max)	P (max)	Cr	V	Mo
	60Si7	0.55-0.65	1.5-2.0	0.80-1.0	0.025	0.025	--	--	
	52Cr ₄ Mo ₂ V	0.48-0.56	0.15-0.4	0.70-1.1	0.025	0.025	0.90-1.2	0.07-0.12	0.15-0.25
7.9	Reduction Ratio	16:1							



7.1 Visual Check

Sample Size: 2% of black bar per heat per section.

Actual Sample:

SN	Sample No.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
1	Freedom from defects																		
2	Marking																		
3	Colour coding																		

SN	Sample No.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.
1	Freedom from defects																		
2	Marking																		
3	Colour coding																		

SN	Sample No.	37.	38.	39.	40.	41.	42.	43.	44.	45.	46.	47.	48.	49.	50.	51.	52.	53.	54.
1	Freedom from defects																		
2	Marking																		
3	Colour coding																		

SN	Sample No.	55.	56.	57.	58.	59.	60.												
1	Freedom from defects																		
2	Marking																		
3	Colour coding																		

Total nos. of defectives.-----

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

- 0 No defect
- 1 Seams
- 2 Folds
- 3 Laps
- 4 Cracks
- 5 Deep Pits/Deep rooted seams
- 6 Grooves
- 7 Excessive scaling
- 8 Distortion
- 9 Twist
- 10 Cracks
- 11 No Marking
- 12 Marking at wrong location
- 13 In complete marking
- 14 In correct marking
- 15 No colour coding
- 16 Wrong colour coding
- 17 Colour coding at in correct location
- 18 In complete colour coding
- 19 Kinks

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7.2. Dimensional Check

Sample Size: 5 samples per heat per section. Heat No.: _____ Size of section: _____

Actual Sample:

SN	Sample No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Length																		
2	Diameter																		

SN	Sample No.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	Length																		
2	Diameter																		

SN	Sample No.	37.	38.	39.	40.	41.	42.	43.	44.	45	46	47	48	49	50	51	52	53	54
1	Length																		
2	Diameter																		

SN	Sample No.	55	56	57	58	59	60												
1	Length																		
2	Diameter																		

Total nos. of defectives.-----

Please use following defect codes while filling up the check sheets:

0 No defect

1 Excess Length 2 Shorter Length 3 Excess Diameter 4 Lesser diameter.

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7.3 Hardness:

Sample Size: 10 Bars per heat .

Heat No.: _____

Actual Sample

Value Specified-----BHN Max.

Sample No.		1	2	3	4	5	6	7	8	9	10
Diameter of Indentation	I										
	II										
	Avg.										
Hardness											
Defect Code											

Total nos. of defectives.-----

Defect Codes

- 0 Hardness as specified
- 1 Hardness more than specified
- 2 Hardness less than specified

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7.4 Depth of Decarburisation

Sample Size: 3 bars per heat per section.
Actual Sample

Heat No.: _____

Size of section: _____

Value Specified : (0.15mm + 1% of Bar dia.) -----mm Max.

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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7.5 Inclusion rating

Sample Size: 3 bars per heat per section.

Heat No.: _____

Size of section: _____

Actual Sample

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

Sample 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.

3 Worse than Specified in B Thick Series.

5 Worse than Specified in C Thick Series.

7 Worse than Specified in D Thick Series.

2 Worse than Specified in A Thin Series.

4 Worse than Specified in B Thin Series.

6 Worse than Specified in C Thin Series.

8 Worse than Specified in D Thin Series.

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7.6 Macroetch level.

Sample Size: 0.5 % subject to min. 5 bars per heat

Heat No.: _____

Actual Sample

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

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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7.7 Grain Size.

Sample Size: 3 bars per heat per section. Heat No.: _____ Size of section: _____

Actual Sample

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

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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7.8 Chemical Composition.

Sample Size: 2 Samples per heat per section... Heat No.: _____ Size of section: _____

Actual Sample

Value Specified: As per IS: 3195

SNo.	Specified Value	C	Mn	Si	S (max)	P(Max)	Cr	V	Mo
	60 Si 7	0.55 to 0.65	0.8 to 1.0	1.5 to 2.0	0.025	0.025	--	--	--
	52Cr4 Mo2V	0.48 to 0.56	0.7 to 1.1	0.15 to 0.40	0.025	0.025	0.9 to 1.2	0.07 to 0.12	0.15 to 0.25
	Value observed								
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

7.9 Reduction Ratio: - 16:1 -

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Defect codes for Chemical Composition.

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

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