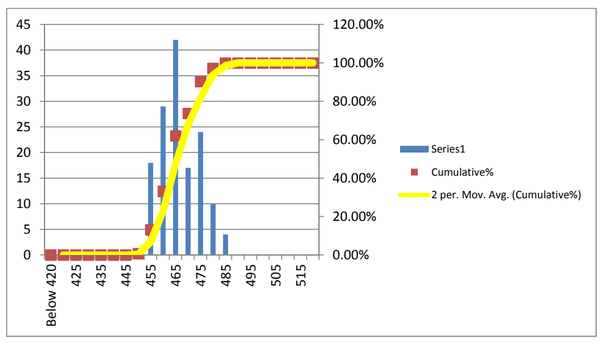
Campaign Length: 06.08.16 to 06.08.16
Total Production: 655.262 MT
Billet Rolled: BIS-202
Product: G 420-DWR (5x8 mm)

YIELD STRENGTH

Mean	466.483
Median	465
Mode	465
Std. Dev.	7.952
Min	450
Max	485
Count	145

Bin	Frequency	%	Cumulative%
Below 420	0	0.00%	0.00%
420	0	0.00%	0.00%
425	0	0.00%	0.00%
430	0	0.00%	0.00%
435	0	0.00%	0.00%
440	0	0.00%	0.00%
445	0	0.00%	0.00%
450	1	0.69%	0.69%
455	18	12.41%	13.10%
460	29	20.00%	33.10%
465	42	28.97%	62.07%
470	17	11.72%	73.79%
475	24	16.55%	90.34%
480	10	6.90%	97.24%
485	4	2.76%	100.00%
490	0	0.00%	100.00%
495	0	0.00%	100.00%
500	0	0.00%	100.00%
505	0	0.00%	100.00%
510	0	0.00%	100.00%
515	0	0.00%	100.00%
520 & Above	0	0.00%	100.00%
Total	145		

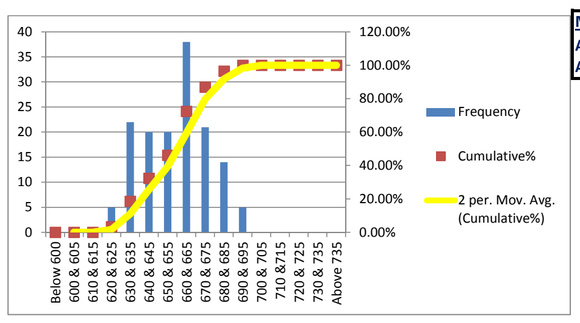


MINIMUM REQUIREMENTS
As per ISO 6935-2: 420 Mpa
As per ASTM A-615: 420 Mpa

ULTIMATE STRENGTH

Mean	657.414
Median	660
Mode	665
Std. Dev.	17.77
Min	620
Max	695
Count	145

Bin	Frequency	%	Cumulative%
Below 600	0	0.00%	0.00%
600 & 605	0	0.00%	0.00%
610 & 615	0	0.00%	0.00%
620 & 625	5	3.45%	3.45%
630 & 635	22	15.17%	18.62%
640 & 645	20	13.79%	32.41%
650 & 655	20	13.79%	46.21%
660 & 665	38	26.21%	72.41%
670 & 675	21	14.48%	86.90%
680 & 685	14	9.66%	96.55%
690 & 695	5	3.45%	100.00%
700 & 705	0	0.00%	100.00%
710 &715	0	0.00%	100.00%
720 & 725	0	0.00%	100.00%
730 & 735	0	0.00%	100.00%
Above 735	0	0.00%	100.00%
Total	145		

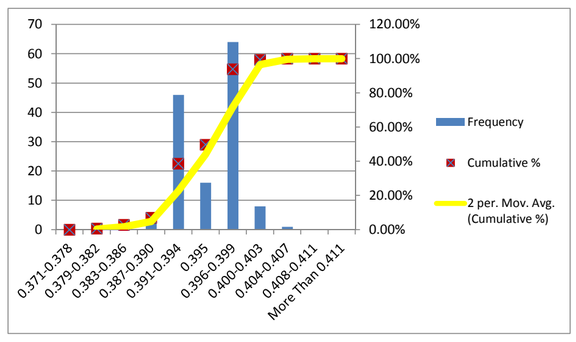


MINIMUM REQUIREMENTS
As per ISO 6935-2: 525 Mpa
As per ASTM A-615: 620 Mpa

UNIT WEIGHT

Mean	0.395
Median	0.396
Mode	0.397
Std. Dev.	0.004
Min	0.382
Max	0.405
Count	145

	Bin	Frequency	%	Cumulative %
	Less Than 0.371	0	0.00%	0.00%
-5%	0.371-0.378	0	0.00%	0.00%
-4%	0.379-0.382	1	0.69%	0.69%
-3%	0.383-0.386	3	2.07%	2.76%
-2%	0.387-0.390	6	4.14%	6.90%
-1%	0.391-0.394	46	31.72%	38.62%
0%	0.395	16	11.03%	49.66%
1%	0.396-0.399	64	44.14%	93.79%
2%	0.400-0.403	8	5.52%	99.31%
3%	0.404-0.407	1	0.69%	100.00%
4%	0.408-0.411	0	0.00%	100.00%
5%	More Than 0.411	0	0.00%	100.00%
	Total	145		

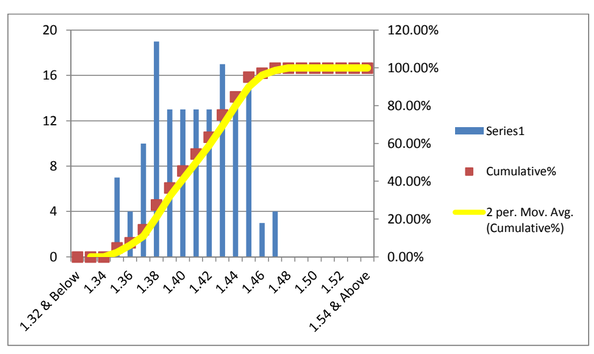


MINIMUM REQUIREMENTS
As per ISO 6935-2: ± 5%
As per ASTM A-615: -6%

T/Y RATIO

Mean	1.409
Median	1.41
Mode	1.45
Std. Dev.	0.031
Min	1.35
Max	1.47
Count	145

Bin	Frequency	%	Cumulative%
1.32 & Below	0	0.00%	0.00%
1.33	0	0.00%	0.00%
1.34	0	0.00%	0.00%
1.35	7	4.83%	4.83%
1.36	4	2.76%	7.59%
1.37	10	6.90%	14.48%
1.38	19	13.10%	27.59%
1.39	13	8.97%	36.55%
1.40	13	8.97%	45.52%
1.41	13	8.97%	54.48%
1.42	13	8.97%	63.45%
1.43	17	11.72%	75.17%
1.44	14	9.66%	84.83%
1.45	15	10.34%	95.17%
1.46	3	2.07%	97.24%
1.47	4	2.76%	100.00%
1.48	0	0.00%	100.00%
1.49	0	0.00%	100.00%
1.50	0	0.00%	100.00%
1.51	0	0.00%	100.00%
1.52	0	0.00%	100.00%
1.53	0	0.00%	100.00%
1.54 & Above	0	0.00%	100.00%
Total	145		

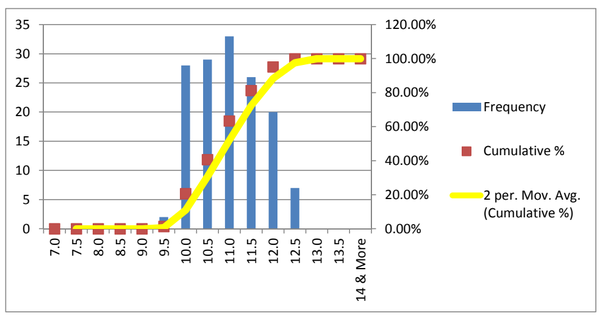


MINIMUM REQUIREMENTS
As per ISO 6935-2: T/Y: 1.25
As per ASTM A-615: Not Required

ELN. AT MAX. FORCE (Agt)(GL-200 mm)

Mean	10.986
Median	11.0
Mode	11.0
Std. Dev.	0.754
Min	9.5
Max	12.5
Count	145

Bin	Frequency	%	Cumulative %
7.0	0	0.00%	0.00%
7.5	0	0.00%	0.00%
8.0	0	0.00%	0.00%
8.5	0	0.00%	0.00%
9.0	0	0.00%	0.00%
9.5	2	1.38%	1.38%
10.0	28	19.31%	20.69%
10.5	29	20.00%	40.69%
11.0	33	22.76%	63.45%
11.5	26	17.93%	81.38%
12.0	20	13.79%	95.17%
12.5	7	4.83%	100.00%
13.0	0	0.00%	100.00%
13.5	0	0.00%	100.00%
14 & More	0	0.00%	100.00%
Total	145		

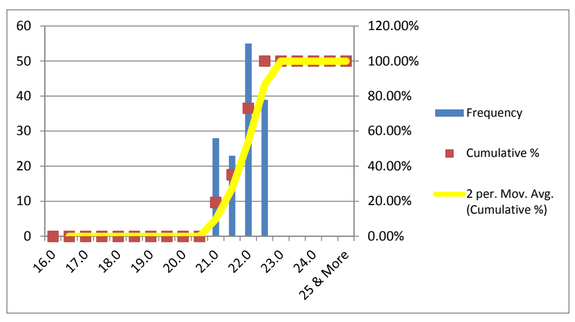


MINIMUM REQUIREMENTS
As per ISO 6935-2: 8%
As per ASTM A-615: Not Required

ELN. AFTER FRACTURE (A5)(GL-5D)

Mean	21.862
Median	22.0
Mode	22.0
Std. Dev.	0.532
Min	21.0
Max	22.5
Count	145

Bin	Frequency	%	Cumulative %
16.0	0	0.00%	0.00%
16.5	0	0.00%	0.00%
17.0	0	0.00%	0.00%
17.5	0	0.00%	0.00%
18.0	0	0.00%	0.00%
18.5	0	0.00%	0.00%
19.0	0	0.00%	0.00%
19.5	0	0.00%	0.00%
20.0	0	0.00%	0.00%
20.5	0	0.00%	0.00%
21.0	28	19.31%	19.31%
21.5	23	15.86%	35.17%
22.0	55	37.93%	73.10%
22.5	39	26.90%	100.00%
23.0	0	0.00%	100.00%
23.5	0	0.00%	100.00%
24.0	0	0.00%	100.00%
24.5	0	0.00%	100.00%
25 & More	0	0.00%	100.00%
Total	145		

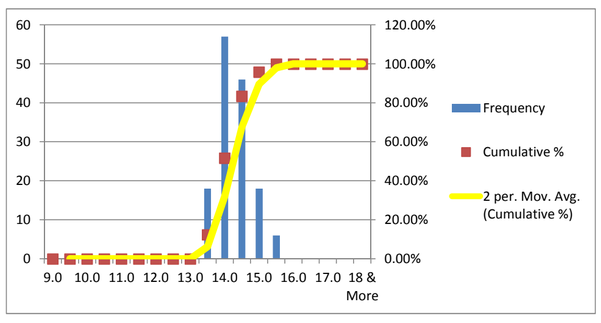


MINIMUM REQUIREMENTS
As per ISO 6935-2: 16%

ELN. AFTER FRACTURE (A)(GL-203.2 mm)

Mean	14.283
Median	14.0
Mode	14.0
Std. Dev.	0.499
Min	13.5
Max	15.5
Count	145

Bin	Frequency	%	Cumulative %
9.0	0	0.00%	0.00%
9.5	0	0.00%	0.00%
10.0	0	0.00%	0.00%
10.5	0	0.00%	0.00%
11.0	0	0.00%	0.00%
11.5	0	0.00%	0.00%
12.0	0	0.00%	0.00%
12.5	0	0.00%	0.00%
13.0	0	0.00%	0.00%
13.5	18	12.41%	12.41%
14.0	57	39.31%	51.72%
14.5	46	31.72%	83.45%
15.0	18	12.41%	95.86%
15.5	6	4.14%	100.00%
16.0	0	0.00%	100.00%
16.5	0	0.00%	100.00%
17.0	0	0.00%	100.00%
17.5	0	0.00%	100.00%
18 & More	0	0.00%	100.00%
Total	145		



MINIMUM REQUIREMENTS
As per ASTM A-615: 9%

BEND TEST:
ALL THE SAMPLES IN THIS CAMPAIGN PASSED THE BEND TEST MAINTAINING MANDREL DIA 3D

MINIMUM REQUIREMENTS
As per ISO 6935-2: 3D
As per ASTM A-615: 3.5D

REBEND TEST:
ALL THE SAMPLES IN THIS CAMPAIGN PASSED THE REBEND TEST MAINTAINING MANDREL DIA 4D

MINIMUM REQUIREMENTS
As per ISO 6935-2: 5D
As per ASTM A-615: Not Required

Nominal Diameter D	Unit Weight	Yield or Proof Strength R_{eH}	Ultimate Tensile Strength R_m	T/Y Ratio	% Total Elongation at Maximum Force A_{gt}	% Elongation after Fracture A	% Elongation after Fracture A	Height of Transverse Rib	Height of Longitudinal Rib
(mm)	(Kg/m)	(MPa)	(MPa)		GL:200mm	GL: 203.2 mm	GL: 5D	mm	mm
8	0.395	465	630	1.35	10.5	14.0	22.0		
8	0.396	455	625	1.37	10.0	14.5	22.5		
8	0.397	465	635	1.37	11.5	14.0	22.0		
8	0.395	455	620	1.36	12.0	14.5	22.5		
8	0.395	470	635	1.35	11.5	13.5	21.5		
8	0.398	470	635	1.35	12.0	13.5	21.5		
8	0.398	465	630	1.35	12.5	14.0	22.0		
8	0.396	465	635	1.37	11.5	14.0	22.0		
8	0.395	460	630	1.37	11.0	14.0	22.0		
8	0.397	470	640	1.36	10.5	13.5	21.5		
8	0.396	455	625	1.37	12.0	14.5	22.5		
8	0.399	465	630	1.35	10.5	14.0	22.0		
8	0.398	475	640	1.35	11.0	13.5	21.5		
8	0.397	475	640	1.35	11.5	13.5	21.5		
8	0.395	455	625	1.37	12.0	14.5	22.5		
8	0.396	460	625	1.36	11.5	14.0	22.0		
8	0.398	465	640	1.38	12.0	14.0	22.0		
8	0.399	460	635	1.38	12.0	14.0	22.0	0.7	0.7
8	0.397	460	640	1.39	12.5	14.0	22.0		
8	0.398	455	630	1.38	10.5	14.5	22.5		
8	0.398	455	630	1.38	10.5	14.5	22.5		
8	0.399	455	630	1.38	10.5	14.5	22.5		
8	0.400	455	635	1.40	11.0	14.5	22.5		
8	0.397	470	645	1.37	11.5	13.5	21.5		
8	0.399	460	635	1.38	12.0	14.0	22.0		
8	0.398	465	645	1.39	12.5	14.0	22.0		
8	0.397	470	650	1.38	11.0	13.5	21.5		
8	0.396	470	655	1.39	11.0	13.5	21.5		
8	0.398	475	660	1.39	10.5	13.5	21.5		
8	0.398	475	660	1.39	11.0	13.5	21.5		
8	0.399	470	665	1.41	11.5	13.5	21.5		
8	0.393	460	635	1.38	12.0	14.0	22.0		
8	0.402	465	640	1.38	12.5	14.0	22.0		
8	0.397	470	655	1.39	10.5	13.5	21.5		
8	0.400	455	635	1.40	12.5	14.5	22.5		
8	0.396	465	640	1.38	11.0	14.0	22.0		
8	0.393	465	645	1.39	11.5	14.0	22.0		
8	0.405	465	635	1.37	12.0	14.0	22.0		
8	0.398	475	665	1.40	12.5	13.5	21.5		
8	0.398	470	655	1.39	10.5	13.5	21.5		
8	0.398	465	640	1.38	10.0	14.0	22.0		
8	0.397	455	630	1.38	10.5	14.5	22.5		
8	0.402	460	635	1.38	11.0	14.0	22.0		
8	0.396	475	650	1.37	10.5	13.5	21.5		
8	0.400	475	655	1.38	11.5	13.5	21.5		
8	0.401	465	640	1.38	11.0	14.0	22.0		
8	0.396	465	640	1.38	12.0	14.0	22.0		
8	0.400	455	635	1.40	11.0	14.5	22.5		
8	0.398	455	640	1.41	10.5	14.5	22.5		
8	0.399	455	635	1.40	11.5	14.5	22.5		
8	0.397	475	655	1.38	11.5	13.5	21.5		
8	0.399	460	640	1.39	11.0	14.0	22.0		
8	0.400	465	645	1.39	11.0	14.0	22.0		
8	0.398	455	635	1.40	10.5	14.5	22.5		
8	0.399	455	630	1.38	11.0	14.5	22.5	0.64	0.47
8	0.397	465	645	1.39	11.5	14.0	22.0		
8	0.397	455	645	1.42	11.0	14.5	22.5		
8	0.392	475	665	1.40	11.5	14.0	22.5		
8	0.395	480	675	1.41	11.0	14.0	22.0		
8	0.392	480	675	1.41	11.5	14.5	22.5		
8	0.393	460	665	1.45	11.0	14.0	22.0		
8	0.393	465	685	1.47	9.5	14.5	22.5		
8	0.395	460	665	1.45	10.5	13.5	21.0		
8	0.399	470	680	1.45	11.5	14.5	22.5		
8	0.397	480	685	1.43	11.0	14.0	22.0		
8	0.398	465	655	1.41	12.0	15.0	22.5		
8	0.399	485	695	1.43	11.5	14.5	22.0		
8	0.391	465	655	1.41	11.0	14.5	22.5		
8	0.395	470	665	1.41	11.0	14.0	21.0		
8	0.394	475	665	1.40	11.5	14.5	22.0		
8	0.395	475	665	1.40	12.0	15.0	22.5		
8	0.392	480	680	1.42	11.0	14.0	21.0		

8	0.397	480	655	1.36	11.0	14.5	22.0		
8	0.395	475	660	1.39	10.5	14.5	22.0		
8	0.396	480	660	1.38	11.0	14.0	21.0		
8	0.396	460	665	1.45	10.0	14.0	21.0		
8	0.394	465	670	1.44	10.5	14.5	22.0		
8	0.399	470	665	1.41	12.0	15.5	22.5		
8	0.397	465	670	1.44	12.0	15.5	22.5		
8	0.394	485	670	1.38	11.5	15.0	22.0		
8	0.396	455	660	1.45	12.0	15.5	22.5		
8	0.392	485	665	1.37	11.0	14.5	22.0		
8	0.397	460	675	1.47	10.0	14.0	21.0		
8	0.396	465	665	1.43	10.5	14.5	22.0		
8	0.394	465	675	1.45	10.0	14.0	21.0		
8	0.391	460	675	1.47	11.0	15.0	22.0		
8	0.394	465	680	1.46	10.5	14.5	22.0		
8	0.399	485	685	1.41	10.0	14.5	22.0		
8	0.391	475	675	1.42	9.5	15.0	22.5		
8	0.393	470	680	1.45	10.0	14.5	22.0		
8	0.391	475	695	1.46	11.0	15.0	22.5		
8	0.390	480	680	1.42	10.0	14.0	21.0	0.54	0.45
8	0.394	465	665	1.43	10.0	14.0	21.0		
8	0.391	460	665	1.45	10.5	14.5	22.0		
8	0.391	465	665	1.43	10.0	14.0	21.0		
8	0.388	475	675	1.42	10.0	14.0	21.0		
8	0.391	480	690	1.44	10.5	14.5	22.5		
8	0.393	475	685	1.44	11.5	15.0	22.5		
8	0.391	460	675	1.47	11.0	14.5	22.0		
8	0.392	460	665	1.45	10.0	14.0	22.0		
8	0.389	475	695	1.46	11.5	15.0	22.5		
8	0.393	465	665	1.43	10.5	14.5	22.5		
8	0.395	460	655	1.42	10.0	14.0	22.0		
8	0.394	465	655	1.41	10.0	14.0	21.0		
8	0.393	465	655	1.41	10.5	14.5	22.0		
8	0.391	450	645	1.43	11.0	15.0	22.5		
8	0.396	475	680	1.43	10.0	14.0	21.0		
8	0.399	475	685	1.44	11.5	15.0	22.5		
8	0.394	480	690	1.44	10.0	14.0	21.0		
8	0.397	475	665	1.40	11.5	15.0	22.5		
8	0.393	465	675	1.45	11.0	14.5	22.0		
8	0.391	465	650	1.40	10.0	14.0	21.0		
8	0.396	460	655	1.42	10.0	14.0	21.0		
8	0.393	460	655	1.42	10.5	14.5	22.0		
8	0.396	475	665	1.40	11.0	14.0	21.0		
8	0.394	470	665	1.41	11.5	14.5	21.5		
8	0.393	460	660	1.43	12.0	15.0	22.0		
8	0.397	460	655	1.42	11.0	14.0	21.0		
8	0.395	460	660	1.43	10.5	14.5	21.5		
8	0.399	465	660	1.42	10.5	14.5	21.5		
8	0.395	455	655	1.44	10.0	14.5	21.5		
8	0.393	460	660	1.43	10.0	14.0	21.0		
8	0.396	480	665	1.39	10.5	14.5	22.0		
8	0.397	465	660	1.42	10.0	14.0	21.0		
8	0.395	465	665	1.43	10.0	14.0	21.0		
8	0.396	475	685	1.44	10.5	14.5	22.0		
8	0.391	455	655	1.44	12.5	15.5	22.5	0.60	0.47
8	0.394	460	660	1.43	12.0	15.0	22.5		
8	0.395	475	680	1.43	10.0	14.0	21.0		
8	0.393	465	675	1.45	10.5	14.5	22.0		
8	0.391	470	675	1.44	12.0	15.0	22.5		
8	0.384	465	665	1.43	11.0	14.5	21.5		
8	0.389	465	670	1.44	11.5	15.0	22.0		
8	0.384	475	670	1.41	10.0	14.0	21.0		
8	0.384	465	670	1.44	10.0	14.0	21.0		
8	0.382	465	670	1.44	11.0	15.0	22.0		
8	0.390	460	645	1.40	12.0	15.5	22.5		
8	0.393	460	660	1.43	11.5	15.0	22.0		
8	0.391	460	665	1.45	10.0	14.0	21.0		
8	0.393	460	655	1.42	11.0	14.5	22.0		
8	0.390	460	665	1.45	10.5	14.0	21.0		
8	0.393	465	675	1.45	10.5	14.5	21.5		
8	0.397	470	670	1.43	11.5	15.0	22.0		
8	0.392	465	660	1.42	10.0	14.0	21.0		
8	0.395	465	670	1.44	12.0	15.5	22.5		
8	0.391	470	680	1.45	10.0	14.0	21.0	0.62	0.52