Unirradiated Heat Affected Zone

CVGraph 6.02: Hyperbolic Tangent Curve Printed on 5/24/2022 4:44 PM

A = 58.10 B = 55.90 C = 90.08 T0 = -84.86 D = 0.00

Correlation Coefficient = 0.952

Equation is A + B * [Tanh((T-T0)/(C+DT))]

Upper Shelf Energy = 114.00 (Fixed)

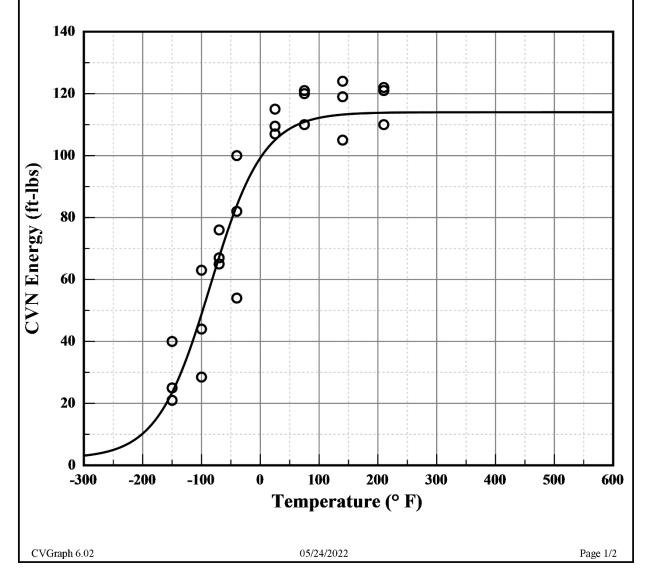
Lower Shelf Energy = 2.20 (Fixed)

Temp@30 ft-lbs=-134.60° F

Temp@35 ft-lbs=-124.40° F

Temp@50 ft-lbs=-98.00° F

Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: UnirradFluence: 0.00E+000 n/cm²



Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: UnirradFluence: 0.00E+000 n/cm²

Unirradiated Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input CVN	Computed CVN	Differential
-150	21.0	23.5	-2.51
-150	40.0	23.5	16.49
-150	25.0	23.5	1.49
-100	63.0	48.8	14.21
-100	28.5	48.8	-20.29
-100	44.0	48.8	-4.79
-70	67.0	67.2	-0.24
-70	65.0	67.2	-2.24
-70	76.0	67.2	8.76
-40	54.0	83.8	-29.84
-40	82.0	83.8	-1.84
-40	100.0	83.8	16.16
25	115.0	105.0	9.97
25	107.0	105.0	1.97
25	109.5	105.0	4.47
75	120.0	110.9	9.12
75	110.0	110.9	-0.88
75	121.0	110.9	10.12
140	105.0	113.2	-8.25
140	119.0	113.2	5.75
140	124.0	113.2	10.75
210	122.0	113.8	8.16
210	121.0	113.8	7.16
210	110.0	113.8	-3.84

CVGraph 6.02 05/24/2022 Page 2/2

Capsule V Heat Affected Zone CVGraph 6.02: Hyperbolic Tangent Curve Printed on 5/25/2022 8:06 AM A = 62.10 B = 59.90 C = 108.84 T0 = -26.66 D = 0.00Correlation Coefficient = 0.965 Equation is A + B * [Tanh((T-T0)/(C+DT))]Upper Shelf Energy = 122.00 (Fixed) Lower Shelf Energy = 2.20 (Fixed) Temp@30 ft-lbs=-91.70° F Temp@35 ft-lbs=-79.70° F Temp@50 ft-lbs=-48.90° F Plant: Prairie Island 2 Material: SA508CL3 Heat: 22642 Orientation: NA Capsule: V Fluence: 5.98E+018 n/cm² 140 0 120 100 CVN Energy (ft-lbs) 80 0 **60** 40 20 100 -200 -100 0 **200 300** 400 **500** -300 600 Temperature (° F) CVGraph 6.02 05/25/2022 Page 1/2

 Plant: Prairie Island 2
 Material: SA508CL3
 Heat: 22642

 Orientation: NA
 Capsule: V
 Fluence: 5.98E+018 n/cm²

Capsule V Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input CVN	Computed CVN	Differential
-148	9.5	13.8	-4.33
-76	42.0	36.7	5.34
-50	55.0	49.4	5.55
0	70.0	76.5	-6.48
30	75.5	90.7	-15.24
50	97.5	98.5	-0.97
70	124.5	104.7	19.84
140	119.5	116.6	2.85

CVGraph 6.02 05/25/2022 Page 2/2

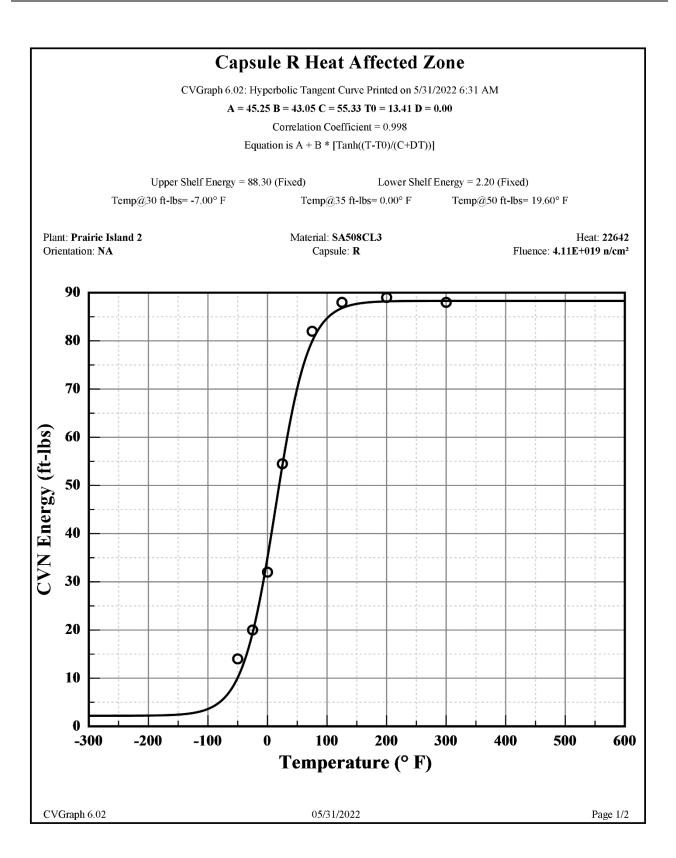
Capsule T Heat Affected Zone CVGraph 6.02: Hyperbolic Tangent Curve Printed on 5/25/2022 10:21 AM A = 50.45 B = 48.25 C = 84.27 T0 = -47.66 D = 0.00Correlation Coefficient = 0.832 Equation is A + B * [Tanh((T-T0)/(C+DT))]Upper Shelf Energy = 98.70 (Fixed) Lower Shelf Energy = 2.20 (Fixed) Temp@30 ft-lbs=-85.70° F Temp@35 ft-lbs=-75.60° F Temp@50 ft-lbs=-48.40° F Plant: Prairie Island 2 Material: SA508CL3 Heat: 22642 Orientation: NA Capsule: T Fluence: 1.10E+019 n/cm² 120 0 100 CVN Energy (ft-lbs) 80 60 0 **40** 0 20 100 -200 -100 **200 300** 400 **500** 600 -300 Temperature (° F) CVGraph 6.02 05/25/2022 Page 1/2

Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: TFluence: 1.10E+019 n/cm²

Capsule T Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input CVN	Computed CVN	Differential
-100	22.0	23.8	-1.82
-75	47.0	35.3	11.68
-50	53.5	49.1	4.39
-25	34.5	63.1	-28.62
-10	59.5	70.7	-11.18
0	102.5	75.2	27.34
75	106.0	93.7	12.28
150	87.5	97.8	-10.32

CVGraph 6.02 05/25/2022 Page 2/2

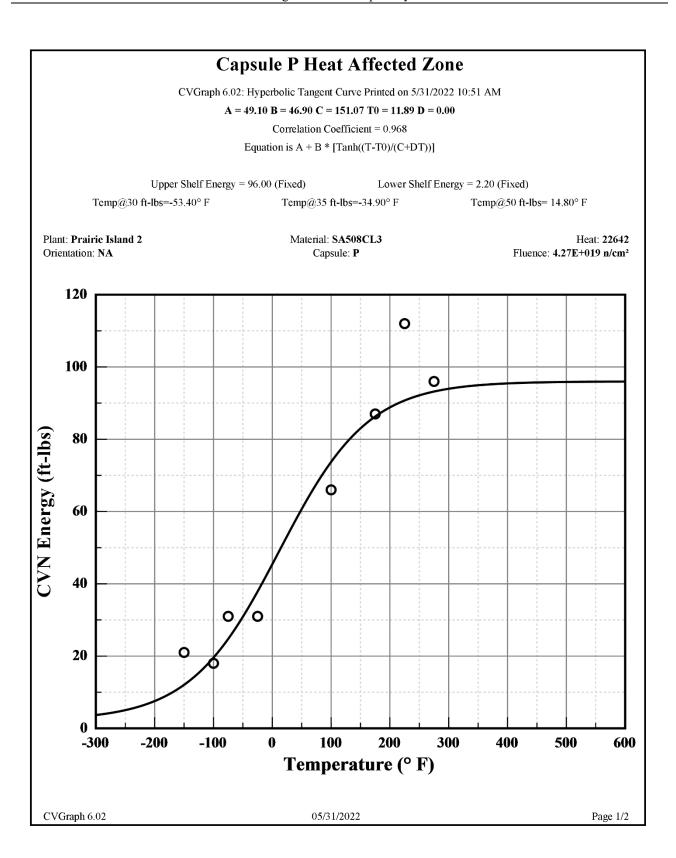


Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: RFluence: 4.11E+019 n/cm²

Capsule R Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input CVN	Computed CVN	Differential
-50	14.0	10.1	3.90
-25	20.0	19.4	0.61
0	32.0	35.0	-3.02
25	54.5	54.1	0.36
75	82.0	79.9	2.09
125	88.0	86.8	1.20
200	89.0	88.2	0.80
300	88.0	88.3	-0.30

CVGraph 6.02 05/31/2022 Page 2/2

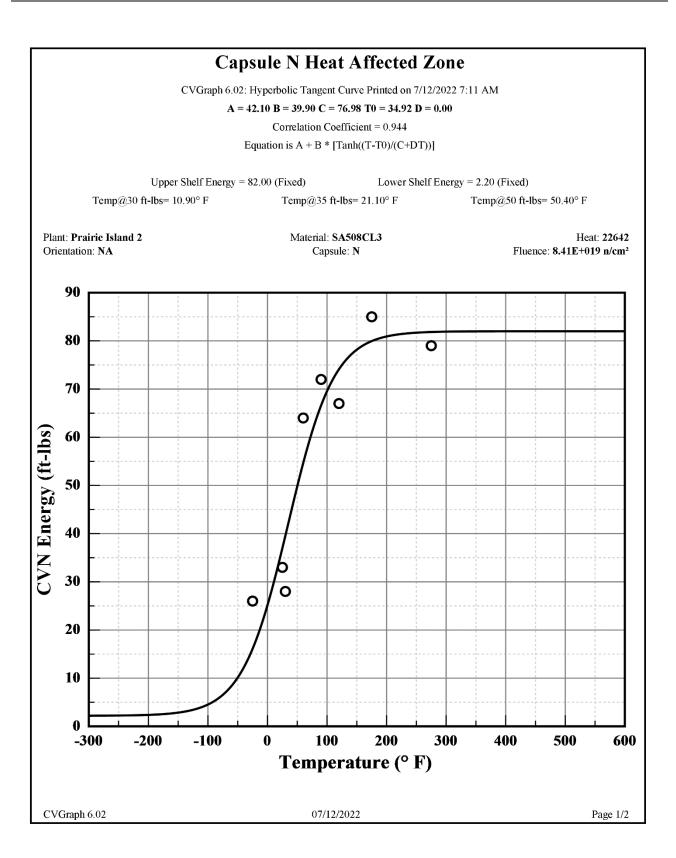


Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: PFluence: 4.27E+019 n/cm²

Capsule P Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input CVN	Computed CVN	Differential
-150	21.0	12.0	8.95
-100	18.0	19.6	-1.58
-75	31.0	24.8	6.25
-25	31.0	37.9	-6.87
100	66.0	73.7	-7.72
175	87.0	86.3	0.70
225	112.0	90.7	21.27
275	96.0	93.2	2.79

CVGraph 6.02 05/31/2022 Page 2/2



Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: NFluence: 8.41E+019 n/cm²

Capsule N Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input CVN	Computed CVN	Differential
-25	26.0	16.1	9.91
25	33.0	37.0	-3.99
30	28.0	39.6	-11.55
60	64.0	54.7	9.34
90	72.0	66.6	5.40
120	67.0	74.1	-7.11
175	85.0	80.0	5.04
275	79.0	81.8	-2.84

CVGraph 6.02 07/12/2022 Page 2/2

Unirradiated Heat Affected Zone CVGraph 6.02: Hyperbolic Tangent Curve Printed on 5/24/2022 4:46 PM A = 39.14 B = 38.14 C = 136.53 T0 = -71.33 D = 0.00Correlation Coefficient = 0.934 Equation is A + B * [Tanh((T-T0)/(C+DT))]Upper Shelf L.E. = 77.28Lower Shelf L.E. = 1.00 (Fixed) Temp@35 mils=-86.20° F Plant: Prairie Island 2 Material: SA508CL3 Heat: 22642 Orientation: NA Capsule: Unirrad Fluence: 0.00E+000 n/cm² 80 **70 60** Lateral Expansion (mils) **50** 40 0 **30 20** 0 **10** 100 -200 -100 0 **200 300** 400 **500** -300 600 **Temperature (° F)** CVGraph 6.02 05/24/2022 Page 1/2

Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: UnirradFluence: 0.00E+000 n/cm²

Unirradiated Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input L. E.	Computed L. E.	Differential
-150	40.0	19.3	20.69
-150	21.0	19.3	1.69
-150	11.0	19.3	-8.31
-100	38.0	31.2	6.75
-100	15.0	31.2	-16.25
-100	27.0	31.2	-4.25
-70	38.0	39.5	-1.51
-70	37.5	39.5	-2.01
-70	43.0	39.5	3.49
-40	32.5	47.7	-15.24
-40	51.5	47.7	3.76
-40	59.0	47.7	11.26
25	63.0	62.3	0.68
25	62.0	62.3	-0.32
25	60.5	62.3	-1.82
75	75.0	69.3	5.72
75	70.0	69.3	0.72
75	75.0	69.3	5.72
140	70.0	74.0	-3.98
140	77.0	74.0	3.02
140	74.5	74.0	0.52
210	74.0	76.1	-2.06
210	72.0	76.1	-4.06
210	75.0	76.1	-1.06

CVGraph 6.02 05/24/2022 Page 2/2

Capsule V Heat Affected Zone CVGraph 6.02: Hyperbolic Tangent Curve Printed on 5/25/2022 8:11 AM A = 39.97 B = 38.97 C = 122.34 T0 = -37.60 D = 0.00Correlation Coefficient = 0.992 Equation is A + B * [Tanh((T-T0)/(C+DT))]Upper Shelf L.E. = 78.95Lower Shelf L.E. = 1.00 (Fixed) Temp@35 mils=-53.20° F Plant: Prairie Island 2 Material: SA508CL3 Heat: 22642 Orientation: NA Capsule: V Fluence: 5.98E+018 n/cm² **80** 0 **70 60** Lateral Expansion (mils) **50** 40 **30 20** 10 100 -200 -100 0 **200 300** 400 **500** -300 600 **Temperature (° F)** CVGraph 6.02 05/25/2022 Page 1/2

 Plant: Prairie Island 2
 Material: SA508CL3
 Heat: 22642

 Orientation: NA
 Capsule: V
 Fluence: 5.98E+018 n/cm²

Capsule V Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input L. E.	Computed L. E.	Differential
-148	10.0	12.0	-2.01
-76	31.0	28.1	2.87
-50	35.0	36.0	-1.04
0	53.0	51.6	1.41
30	55.0	59.6	-4.55
50	63.0	63.9	-0.92
70	72.0	67.5	4.51
140	74.0	74.9	-0.89

CVGraph 6.02 05/25/2022 Page 2/2

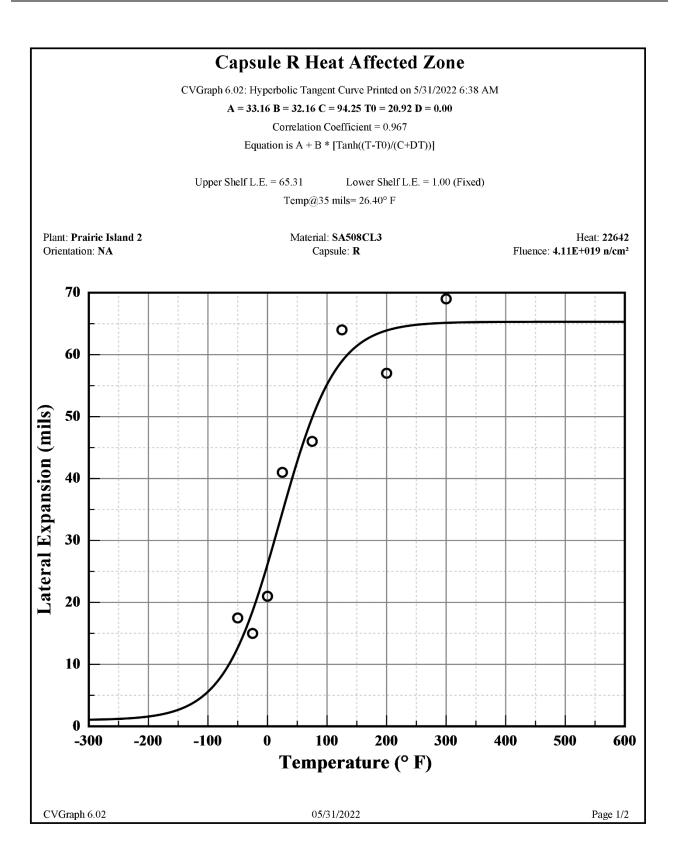
Capsule T Heat Affected Zone CVGraph 6.02: Hyperbolic Tangent Curve Printed on 5/25/2022 10:25 AM A = 39.37 B = 38.37 C = 100.26 T0 = -36.19 D = 0.00Correlation Coefficient = 0.925 Equation is A + B * [Tanh((T-T0)/(C+DT))]Upper Shelf L.E. = 77.73Lower Shelf L.E. = 1.00 (Fixed) Temp@35 mils=-47.60° F Plant: Prairie Island 2 Material: SA508CL3 Heat: 22642 Orientation: NA Capsule: T Fluence: 1.10E+019 n/cm² **80 70 60** Lateral Expansion (mils) **50** 40 0 **30** 0 **20** 10 100 -300 -200 -100 0 **200 300** 400 **500** 600 **Temperature (° F)** CVGraph 6.02 05/25/2022 Page 1/2

Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: TFluence: 1.10E+019 n/cm²

Capsule T Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input L. E.	Computed L. E.	Differential
-100	14.0	17.8	-3.79
-75	35.0	25.2	9.78
-50	34.0	34.1	-0.12
-25	28.0	43.6	-15.63
-10	49.0	49.2	-0.17
0	64.0	52.6	11.36
75	70.0	70.2	-0.20
150	75.0	75.9	-0.91

CVGraph 6.02 05/25/2022 Page 2/2

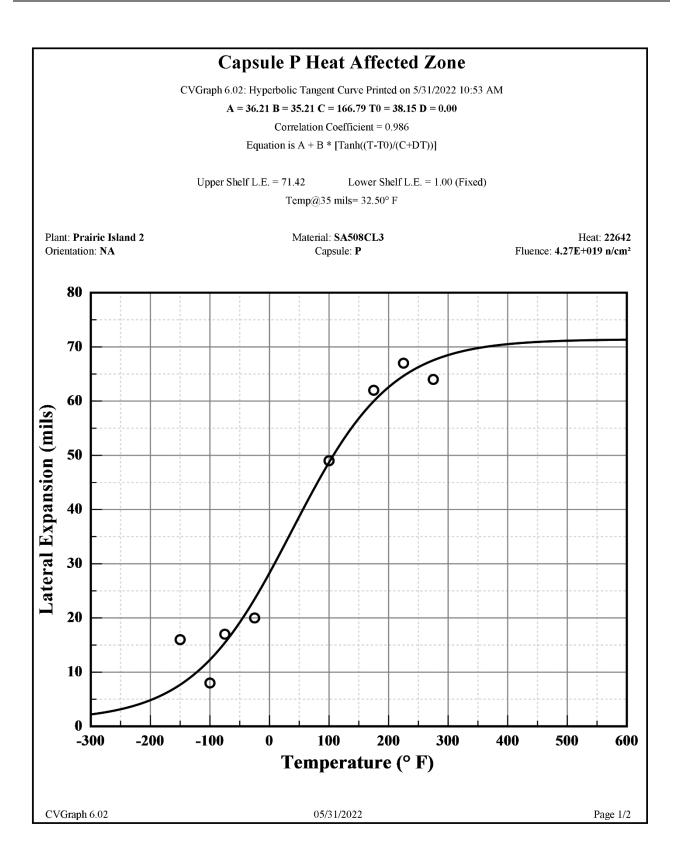


Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: RFluence: 4.11E+019 n/cm²

Capsule R Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input L. E.	Computed L. E.	Differential
-50	17.5	12.7	4.82
-25	15.0	18.6	-3.62
0	21.0	26.1	-5.13
25	41.0	34.5	6.45
75	46.0	49.8	-3.82
125	64.0	58.9	5.06
200	57.0	63.9	-6.90
300	69.0	65.1	3.86

CVGraph 6.02 05/31/2022 Page 2/2



Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: PFluence: 4.27E+019 n/cm²

Capsule P Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input L. E.	Computed L. E.	Differential
-150	16.0	7.7	8.32
-100	8.0	12.3	-4.28
-75	17.0	15.4	1.58
-25	20.0	23.5	-3.48
100	49.0	48.7	0.30
175	62.0	60.0	2.01
225	67.0	64.6	2.35
275	64.0	67.5	-3.53

CVGraph 6.02 05/31/2022 Page 2/2

Capsule N Heat Affected Zone CVGraph 6.02: Hyperbolic Tangent Curve Printed on 11/8/2022 9:21 AM A = 27.73 B = 26.73 C = 69.44 T0 = 39.29 D = 0.00Correlation Coefficient = 0.930 Equation is A + B * [Tanh((T-T0)/(C+DT))]Upper Shelf L.E. = 54.47Lower Shelf L.E. = 1.00 (Fixed) Temp@35 mils= 58.70° F Plant: Prairie Island 2 Material: SA508CL3 Heat: 22642 Orientation: NA Capsule: N Fluence: 8.41E+019 n/cm² **70** 0 60 Lateral Expansion (mils) **50** 0 O 0 **40 30 20** 0 **10** 100 -300 -200 -100 0 **200 300** 400 **500** 600 **Temperature (° F)** CVGraph 6.02 11/08/2022 Page 1/2

Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: NFluence: 8.41E+019 n/cm²

Capsule N Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input L. E.	Computed L. E.	Differential
-25	15.0	8.3	6.75
25	19.0	22.3	-3.31
30	19.0	24.2	-5.18
60	40.0	35.5	4.52
90	49.0	44.4	4.61
120	42.0	49.7	-7.70
175	62.0	53.4	8.58
275	49.0	54.4	-5.41

CVGraph 6.02 11/08/2022 Page 2/2

Unirradiated Heat Affected Zone

CVGraph 6.02: Hyperbolic Tangent Curve Printed on 5/24/2022 4:45 PM

A = 50.00 B = 50.00 C = 102.10 T0 = -85.73 D = 0.00

Correlation Coefficient = 0.930

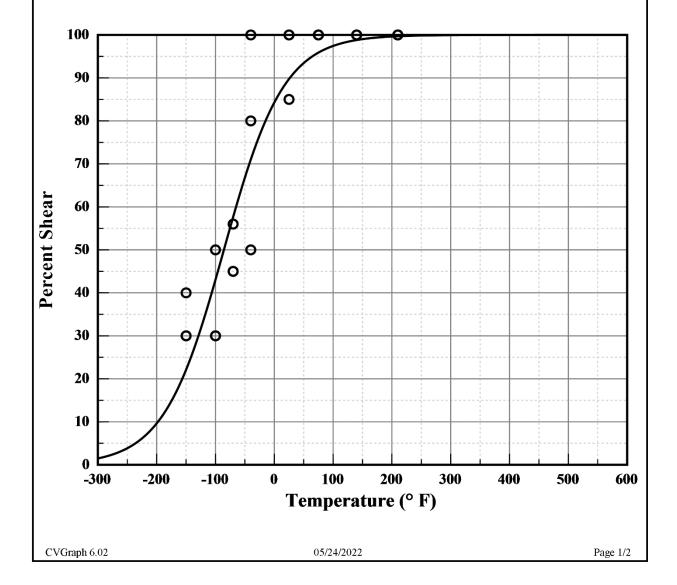
Equation is A + B * [Tanh((T-T0)/(C+DT))]

Upper Shelf %Shear = 100.00 (Fixed)

Lower Shelf %Shear = 0.00 (Fixed)

Temperature at 50% Shear = -85.70

Plant: Prairie Island 2 Material: SA508CL3 Heat: 22642
Orientation: NA Capsule: Unirrad Fluence: 0.00E+000 n/cm²



Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: UnirradFluence: 0.00E+000 n/cm²

Unirradiated Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input %Shear	Computed %Shear	Differential
-150	30.0	22.1	7.89
-150	30.0	22.1	7.89
-150	40.0	22.1	17.89
-100	50.0	43.1	6.94
-100	30.0	43.1	-13.06
-100	30.0	43.1	-13.06
-70	45.0	57.6	-12.64
-70	45.0	57.6	-12.64
-70	56.0	57.6	-1.64
-40	50.0	71.0	-21.01
-40	80.0	71.0	8.99
-40	100.0	71.0	28.99
25	85.0	89.7	-4.74
25	100.0	89.7	10.26
25	100.0	89.7	10.26
75	100.0	95.9	4.11
75	100.0	95.9	4.11
75	100.0	95.9	4.11
140	100.0	98.8	1.19
140	100.0	98.8	1.19
140	100.0	98.8	1.19
210	100.0	99.7	0.30
210	100.0	99.7	0.30
210	100.0	99.7	0.30

CVGraph 6.02 05/24/2022 Page 2/2

Capsule V Heat Affected Zone

CVGraph 6.02: Hyperbolic Tangent Curve Printed on 5/25/2022 8:07 AM

A = 50.00 B = 50.00 C = 77.27 T0 = 12.47 D = 0.00

Correlation Coefficient = 0.964

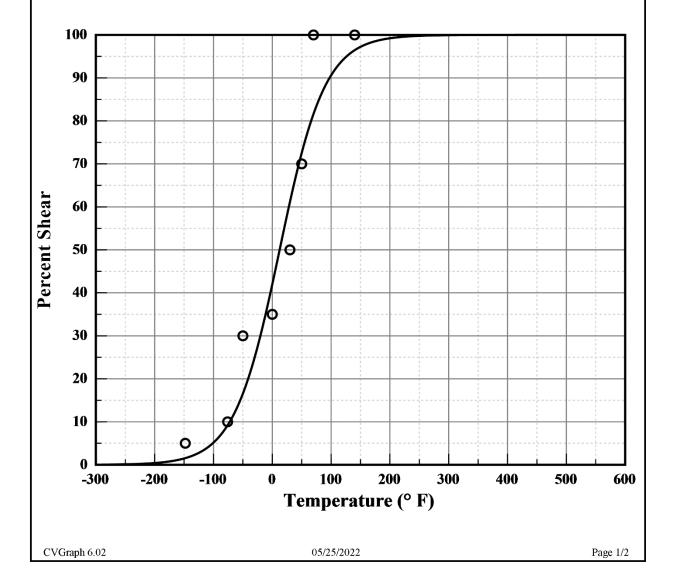
Equation is A + B * [Tanh((T-T0)/(C+DT))]

Upper Shelf %Shear = 100.00 (Fixed)

Lower Shelf %Shear = 0.00 (Fixed)

Temperature at 50% Shear = 12.50

Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: VFluence: 5.98E+018 n/cm²



 Plant: Prairie Island 2
 Material: SA508CL3
 Heat: 22642

 Orientation: NA
 Capsule: V
 Fluence: 5.98E+018 n/cm²

Capsule V Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input %Shear	Computed %Shear	Differential
-148	5.0	1.5	3.45
-76	10.0	9.2	0.80
-50	30.0	16.6	13.43
0	35.0	42.0	-7.00
30	50.0	61.2	-11.15
50	70.0	72.5	-2.54
70	100.0	81.6	18.41
140	100.0	96.4	3.55

CVGraph 6.02 05/25/2022 Page 2/2

Capsule T Heat Affected Zone

CVGraph 6.02: Hyperbolic Tangent Curve Printed on 5/25/2022 10:22 AM

A = 50.00 B = 50.00 C = 71.33 T0 = -34.10 D = 0.00

Correlation Coefficient = 0.914

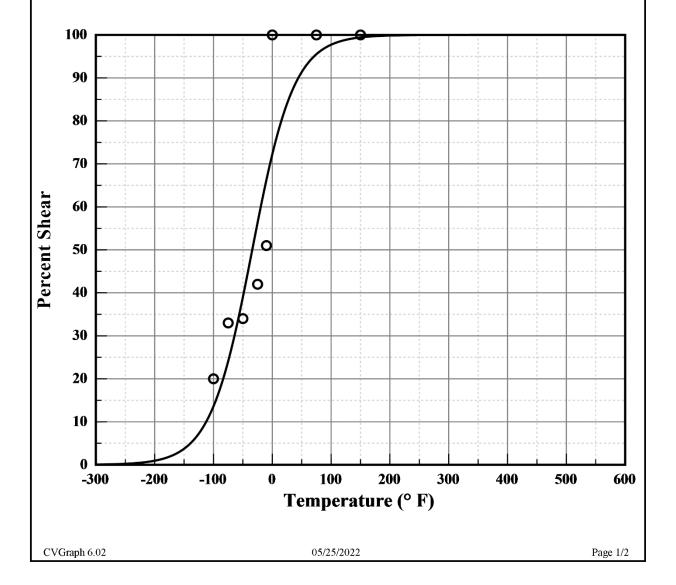
Equation is A + B * [Tanh((T-T0)/(C+DT))]

Upper Shelf %Shear = 100.00 (Fixed)

Lower Shelf %Shear = 0.00 (Fixed)

Temperature at 50% Shear = -34.00

Plant: **Prairie Island 2** Material: **SA508CL3** Heat: **22642** Orientation: **NA** Capsule: **T** Fluence: **1.10E+019 n/cm²**



Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: TFluence: 1.10E+019 n/cm²

Capsule T Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input %Shear	Computed %Shear	Differential
-100	20.0	13.6	6.39
-75	33.0	24.1	8.89
-50	34.0	39.0	-5.04
-25	42.0	56.3	-14.35
-10	51.0	66.3	-15.28
0	100.0	72.2	27.76
75	100.0	95.5	4.48
150	100.0	99.4	0.57

CVGraph 6.02 05/25/2022 Page 2/2

Capsule R Heat Affected Zone

CVGraph 6.02: Hyperbolic Tangent Curve Printed on 5/31/2022 6:37 AM

A = 50.00 B = 50.00 C = 46.73 T0 = 2.81 D = 0.00

Correlation Coefficient = 0.984

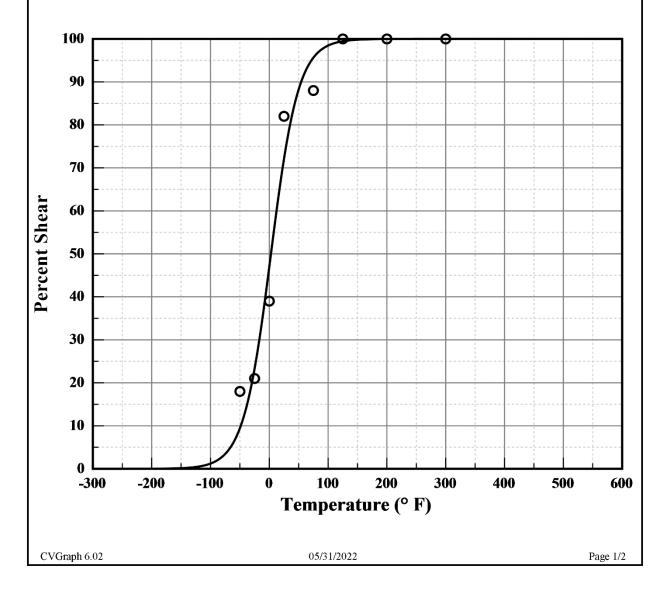
Equation is A + B * [Tanh((T-T0)/(C+DT))]

Upper Shelf %Shear = 100.00 (Fixed)

Lower Shelf %Shear = 0.00 (Fixed)

Temperature at 50% Shear = 2.90

Plant: Prairie Island 2 Material: SA508CL3 Heat: 22642
Orientation: NA Capsule: R Fluence: 4.11E+019 n/cm²



Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: RFluence: 4.11E+019 n/cm²

Capsule R Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input %Shear	Computed %Shear	Differential
-50	18.0	9.4	8.56
-25	21.0	23.3	-2.32
0	39.0	47.0	-8.00
25	82.0	72.1	9.89
75	88.0	95.6	-7.65
125	100.0	99.5	0.53
200	100.0	100.0	0.02
300	100.0	100.0	0.00

CVGraph 6.02 05/31/2022 Page 2/2

Capsule P Heat Affected Zone

CVGraph 6.02: Hyperbolic Tangent Curve Printed on 5/31/2022 10:52 AM

A = 50.00 B = 50.00 C = 169.48 T0 = 130.83 D = 0.00

Correlation Coefficient = 0.969

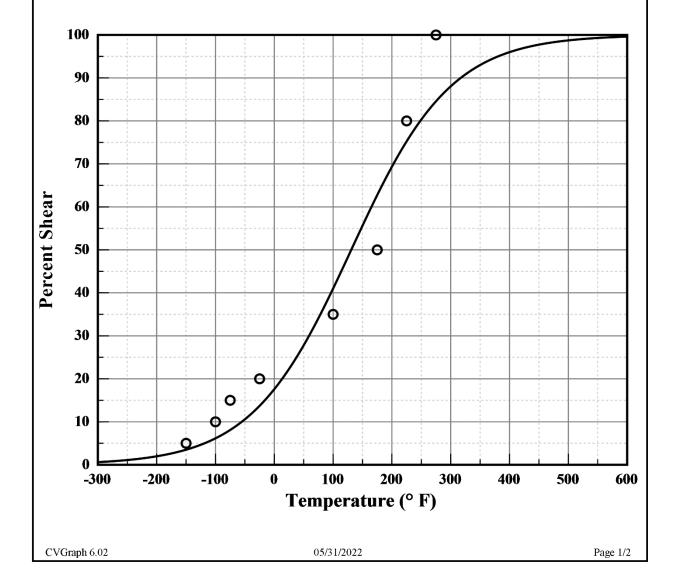
Equation is A + B * [Tanh((T-T0)/(C+DT))]

Upper Shelf %Shear = 100.00 (Fixed)

Lower Shelf %Shear = 0.00 (Fixed)

Temperature at 50% Shear = 130.90

Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: PFluence: 4.27E+019 n/cm²



Plant: Prairie Island 2Material: SA508CL3Heat: 22642Orientation: NACapsule: PFluence: 4.27E+019 n/cm²

Capsule P Heat Affected Zone Charpy V-Notch Data

Temperature (° F)	Input %Shear	Computed %Shear	Differential
-150	5.0	3.5	1.49
-100	10.0	6.2	3.84
-75	15.0	8.1	6.90
-25	20.0	13.7	6.28
100	35.0	41.0	-6.00
175	50.0	62.7	-12.74
225	80.0	75.2	4.76
275	100.0	84.6	15.43

CVGraph 6.02 05/31/2022 Page 2/2

Capsule N Heat Affected Zone

CVGraph 6.02: Hyperbolic Tangent Curve Printed on 11/8/2022 9:19 AM

A = 50.00 B = 50.00 C = 107.69 T0 = 64.02 D = 0.00

Correlation Coefficient = 0.944

Equation is A + B * [Tanh((T-T0)/(C+DT))]

Upper Shelf %Shear = 100.00 (Fixed)

Lower Shelf %Shear = 0.00 (Fixed)

Temperature at 50% Shear = 64.10

Plant: Prairie Island 2 Material: SA508CL3 Heat: 22642
Orientation: NA Capsule: N Fluence: 8.41E+019 n/cm²

