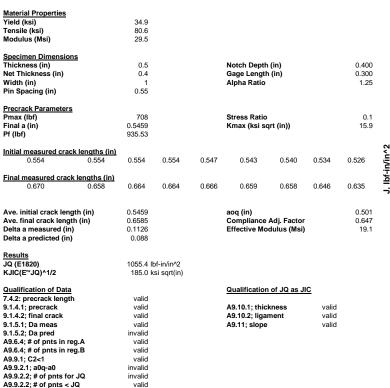


SUMMARY OF FRACTURE TOUGHNESS A286-0-1

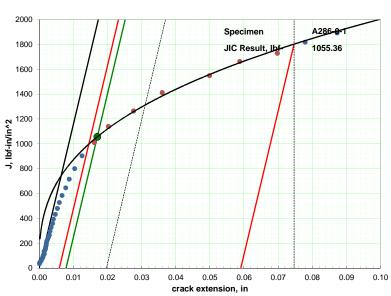
Specimen Type: CT
Material: SSA286
Drawing No.: Fig. 2
Temperature: RT
Relative Humidity: 57%

element

Requestor: Wall
Company: Electric Power
Research Institute
P.O. No.: 4700007062
Job No.: 02039-011217
Machining Source: Customer



valid



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

Approved for release by:

Tim Esau, Quality Manager

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A9.9.2.2; correlation

Element Materials Technology 3701 Port Union Road Fairfield OH 45014, USA

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SUMMARY OF FRACTURE TOUGHNESS A286-0-2

Specimen Type: CT
Material: SSA286
Drawing No.: Fig. 2
Temperature: RT
Relative Humidity: 54%

element

Requestor: Wall
Company: Electric Power
Research Institute
P.O. No.: 4700007062
Job No.: 02039-011217
Machining Source: Customer

Material Properties								
Yield (ksi)	34.9							
Tensile (ksi)	80.6							
Modulus (Msi)	29.5							
,								
Specimen Dimensions								
Thickness (in)	0.5			Notch Depth	(in)		0.400	
Net Thickness (in)	0.4			Gage Length	ı (in)		0.300	
Width (in)	1			Alpha Ratio			1.25	
Pin Spacing (in)	0.55			-				
Precrack Parameters								
Pmax (lbf)	709			Stress Ratio			0.1	
Final a (in)	0.5423			Kmax (ksi so	qrt (in))		15.7	
Pf (lbf)	951.74							
								c
Initial measured crack lengths (in)								5
0.560 0.564	0.559	0.551	0.546	0.539	0.524	0.518	0.513	Ş
Final measured crack lengths (in)								lhf-in/in^2
0.677 0.666	0.662	0.659	0.650	0.651	0.638	0.619	0.617	₹
0.077 0.000	0.002	0.059	0.050	0.001	0.036	0.019	0.017	-
Ave. initial crack length (in)	0.5423			aog (in)			0.501	
Ave. final crack length (in)	0.649			Compliance	Adi. Factor		0.687	
Delta a measured (in)	0.1067			Effective Mo			20.3	
Delta a predicted (in)	0.0782							
()								
Results								
JQ (E1820)	1091.3 lb	of-in/in^2						
KJIČ(E'*JQ)^1/2	188.1 k	si sqrt(in)						
Qualification of Data				Qualification	of JQ as J	IC		
7.4.2: precrack length	valid							
9.1.4.1; precrack	valid			A9.10.1; thic		valid		
9.1.4.2; final crack	valid			A9.10.2; liga		valid		
9.1.5.1; Da meas	valid			A9.11; slope		valid		
9.1.5.2; Da pred	invalid							

valid

valid

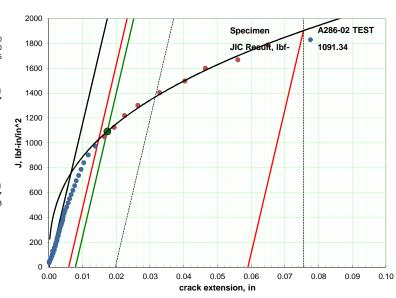
valid

valid

valid

valid

invalid



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys; EPRI Task ID: 1-110095-01-02;

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A9.6.4; # of pnts in reg.A

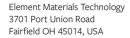
A9.6.4; # of pnts in reg.B

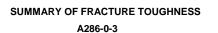
A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1; C2<1





Specimen Type: CT
Material: SSA286
Drawing No.: Fig. 2
Temperature: RT
Relative Humidity: 50%

element

Requestor: Wall
Company: Electric Power
Research Institute
P.O. No.: 4700007062
Job No.: 02039-011217
Machining Source: Customer

Material Properties Yield (ksi) Tensile (ksi)		34.9 80.6											A	ASTM E182	20-20 Sta	ndard Tes	t			
Modulus (Msi)		29.5							2000			, ,	,							
Specimen Dimensions Thickness (in)		0.5			Notch Depti			0.400	1800			/ //				Specimer		_	0-3 TEST	Ī.
Net Thickness (in)		0.4			Gage Lengt	ı (in)		0.300	1000			1 11		/		JIC Resul	1,-Hof-"/	1154	.52	
Width (in)		_ 1			Alpha Ratio			1.25				I II	- / /				- 1			
Pin Spacing (in)		0.55							1600	-			/							
Precrack Parameters											- 1	- //	/)		- /			
Pmax (lbf)		709			Stress Ratio			0.1	1400				مرا							
Final a (in)		0.5457			Kmax (ksi s	qrt (in))		15.9	1400			H								
Pf (lbf)		936.57									- /	ر ۱۱	-				- /			
									~ 1200				- 1							
Initial measured crack lea			0.500	0.540	0.540				È		- 1	JP	- /							
0.528	0.532	0.534	0.539	0.543	0.549	0.557	0.565	0.565	1000 ≟		1/	? /	- /							
Final measured crack len	naths (in)								1000 1200		1/3		/							
0.627	0.654	0.654	0.662	0.669	0.677	0.675	0.677	0.683	_		1 . 1	/	1							
									800 رُ		/ •	/	/							
										/	1:11		/							
Ave. initial crack length (0.5457 0.6655			aoq (in)	Adl Footes		0.501 0.675	600	1/	•		/			/				
Ave. final crack length (in Delta a measured (in)	11)	0.0000			Compliance Effective Mo			19.9	000	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	2		<i>i</i>			- 1				
Delta a medicted (in)		0.0845			LifeCtive Wit	uuius (iiisi)		15.5		III	8	1								
Delta a predicted (iii)		0.0040							400	+H		- /								
Results										1 //	H	- /								
JQ (E1820)		1154.5 II	bf-in/in^2						200		H					- 1				
KJIC(E'*JQ)^1/2		193.5 k	si sqrt(in)						200		11	/								
Qualification of Data					Qualification	of IO ac I	ıc				II	/				- 1				
7.4.2: precrack length		valid			Qualification	i ui jų as j	<u> </u>		0	***							نسسسن			
9.1.4.1; precrack		valid			A9.10.1; thic	kness	valid		(0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10
9.1.4.2; final crack		valid			A9.10.2; liga		valid							crack	extensi	on, in				
9.1.5.1; Da meas		valid			A9.11; slope		valid													
9.1.5.2; Da pred		invalid			•					All resul	ts are rep	orted For In	formation (Only						
A9.6.4; # of pnts in reg.A		valid																		
A9.6.4; # of pnts in reg.B		valid								Applicat	ble Specif	cation: AS	TM E1820-	20						
A9.9.1; C2<1		valid										. D			00 1 1111-3	. A D.:	AU- OA O.	004		
A9.9.2.1; a0q-a0		invalid							(_ustom	er: Electric	c Power Re	search Inst	itute, Inc. 34	∠∪ Hillview	Ave, Palo	AITO CA 94	3U4		

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Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

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A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

valid

valid



SUMMARY OF FRACTURE TOUGHNESS A286-0-4

Specimen Type: CT SSA286 Material: Drawing No.: Fig. 2 Temperature: Relative Humidity: RŤ 48%

element

Requestor: Wall Company: Electric Power Research Institute P.O. No.: 4700007062 Job No.: 02039-011217 Machining Source: Customer

Material Properties									
Yield (ksi)		34.9							
Tensile (ksi)		80.6							
Modulus (Msi)		29.5							
Specimen Dimensions									
Thickness (in)		0.5			Notch Depth	(in)		0.400	
Net Thickness (in)		0.4			Gage Length	ı (in)		0.300	
Width (in)		1			Alpha Ratio			1.25	
Pin Spacing (in)		0.55							
Precrack Parameters									
Pmax (lbf)		709			Stress Ratio			0.1	
Final a (in)		0.5459			Kmax (ksi so	ırt (in))		15.9	
Pf (lbf)		935.33							
									~
Initial measured crack len									~
0.547	0.548	0.548	0.548	0.548	0.545	0.545	0.543	0.540	5
									J. Ibf-in/in^2
Final measured crack leng									2
0.655	0.659	0.668	0.675	0.675	0.666	0.662	0.651	0.642	-
Ave initial areal launth (i		0.5459			(in)			0.501	
Ave. initial crack length (in Ave. final crack length (in		0.5459			aoq (in) Compliance	Ad: Faster		0.501	
Delta a measured (in)	,	0.0032			Effective Mo			21.7	
					Effective Mo	aulus (IVISI)		21.7	
Delta a predicted (in)		0.0809							
Results									
JQ (E1820)		1016.2 lb	f in/in/2						
KJIC(E'*JQ)^1/2			si sqrt(in)						
KSIC(E SQ)*1/2		101.5 K	si sqrt(iii)						
Qualification of Data					Qualification	of JQ as JI	C.		
7.4.2: precrack length		valid					_		
9.1.4.1; precrack		valid			A9.10.1; thic	kness	valid		
9.1.4.2; final crack		valid			A9.10.2; ligar		valid		
9.1.5.1: Da meas		valid			A9.11; slope		valid		
9.1.5.2; Da pred		invalid			, stope		vanu		
A9.6.4; # of pnts in reg.A		valid							
pinto in reg.A		· and							

valid

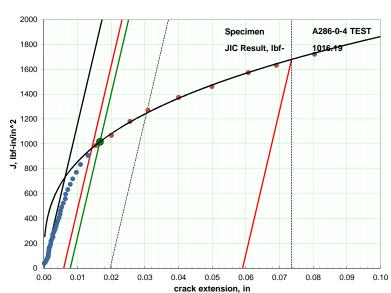
valid

valid

valid

valid

invalid



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys; EPRI Task ID: 1-110095-01-02;

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A9.6.4; # of pnts in reg.B

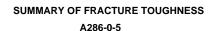
A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1; C2<1





Requestor: Wall Company: Electric Power Research Institute P.O. No.: 4700007062 Job No.: 02039-011217 Machining Source: Customer

Specimen Type: CT Material: SSA286 Drawing No.: Fig. 2 Temperature: Relative Humidity: 48%

Material Properties Yield (ksi) Tensile (ksi)

element

Modulus (Msi) Specimen Dimensions Thickness (in)

Net Thickness (in) Width (in) Pin Spacing (in)

Precrack Parameters
Pmax (lbf) Final a (in)

Pf (lbf) Initial measured crack lengths (in)

Final measured crack lengths (in)

Ave. initial crack length (in) Ave. final crack length (in) Delta a measured (in) Delta a predicted (in)

Results JQ (E1820) lbf-in/in^2 KJIC(E'*JQ)^1/2 ksi sqrt(in)

Qualification of Data 7.4.2: precrack length 9.1.4.1; precrack 9.1.4.2; final crack 9.1.5.1; Da meas 9.1.5.2; Da pred A9.6.4; # of pnts in reg.A A9.6.4; # of pnts in reg.B A9.9.1: C2<1 A9.9.2.1; a0q-a0 A9.9.2.2; # of pnts for JQ A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

Notch Depth (in) Gage Length (in) Alpha Ratio

Stress Ratio Kmax (ksi sqrt (in))

Compliance Adj. Factor Effective Modulus (Msi)

Qualification of JQ as JIC

A9.10.1; thickness A9.10.2: ligament A9.11; slope

Void Test, specimen was overloaded during test setup.

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

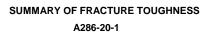
Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

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Specimen Type: CT SSA286 Material: Drawing No.: Fig. 2 Temperature: Relative Humidity: RŤ 45%

element

Requestor: Wall Company: Electric Power Research Institute P.O. No.: 4700007062 Job No.: 02039-011217 Machining Source: Customer

Material Properties Yield (ksi) Tensile (ksi) Modulus (Msi)		34.9 80.6 29.5							
Specimen Dimensions Thickness (in) Net Thickness (in) Width (in) Pin Spacing (in)		0.5 0.4 1 0.55			Notch Depth Gage Length Alpha Ratio			0.400 0.300 1.25	
Precrack Parameters Pmax (lbf) Final a (in) Pf (lbf)		603 0.5374 974.02			Stress Ratio Kmax (ksi sq	ırt (in))		0.1 13.1	
Initial measured crack 0.539	lengths (in) 0.539	0.539	0.534	0.534	0.536	0.536	0.540	0.542	J, Ibf-in/in^2
Final measured crack I 0.834	engths (in) 0.813	0.809	0.802	0.802	0.804	0.805	0.809	0.813	J, Ibf-i
Ave. initial crack length Ave. final crack length Delta a measured (in) Delta a predicted (in)		0.5374 0.8084 0.271 0.2351			aoq (in) Compliance Effective Mod			0.501 0.707 20.9	
Results JQ (E1820) KJIC(E**JQ)^1/2			of-in/in^2 si sqrt(in)						
Qualification of Data 7.4.2: precrack length 9.1.4.1; precrack 9.1.4.2; final crack 9.1.5.1; Da meas 9.1.5.2; Da pred		valid valid valid valid invalid			A9.10.1; thick A9.10.2; ligar A9.11; slope	kness	valid valid valid		

valid

invalid

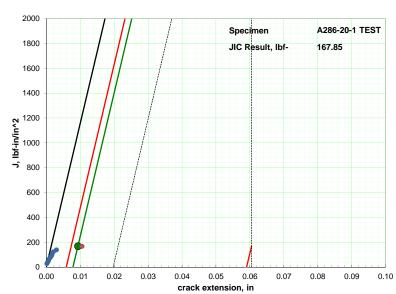
valid

invalid

invalid

invalid

valid



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys; EPRI Task ID: 1-110095-01-02;

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A9.6.4; # of pnts in reg.A

A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1; C2<1



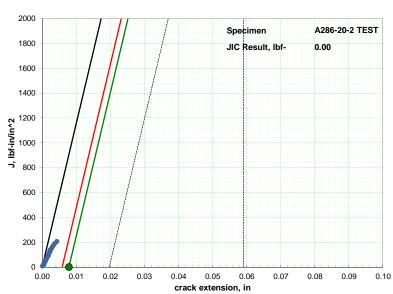


Specimen Type: CT SSA286 Material: Drawing No.: Fig. 2 Temperature: Relative Humidity: RŤ 53%

element

Requestor: Wall Company: Electric Power Research Institute P.O. No.: 4700007062 Job No.: 02039-011217 Machining Source: Customer

Material Properties										
Yield (ksi)		34.9								
Tensile (ksi)		80.6								
Modulus (Msi)		29.5								
,									2000 -	
Specimen Dimensio	ns									
Thickness (in)	_	0.5			Notch Depth	(in)		0.400	4000	
Net Thickness (in)		0.4			Gage Length			0.300	1800 -	
Width (in)		1			Alpha Ratio			1.25		
Pin Spacing (in)		0.55							1600 -	
									1000	
Precrack Parameters	<u>s</u>									
Pmax (lbf)		603			Stress Ratio			0.1	1400 -	
Final a (in)		0.5362			Kmax (ksi so	ırt (in))		13.1		
Pf (lbf)		979.71								1
									~ 1200 -	- 1
Initial measured crae									<u> </u>	
0.523	0.527	0.530	0.535	0.536	0.538	0.543	0.546	0.547	<u>ج</u>	- /
Electronic description	I. I (!)								1200 - 10	- 1
Final measured crac 0.885	0.877	0.871	0.870	0.869	0.873	0.877	0.882	0.885	≗	1 1
0.000	0.677	0.071	0.670	0.009	0.673	0.677	0.002	0.000	- 800 ح	
									000	/ /
Ave. initial crack len	ath (in)	0.5362			aog (in)			0.501		
Ave. final crack leng		0.8757			Compliance	Adi Factor		0.704	600 -	
Delta a measured (in		0.3395			Effective Mo			20.8		
Delta a predicted (in		0.0056				uu.uo (o.,		20.0		
Dona a prodictor (iii	,	0.0000							400	1 11
Results										
JQ (E1820)		0.01	bf-in/in^2							1 - 11
KJIC(E'*JQ)^1/2		0.0	si sqrt(in)						200	
, ,			,							
Qualification of Data	1				Qualification	of JQ as JI	<u>C</u>		0.4	
7.4.2: precrack lengt	h	valid							•	00 0.01
9.1.4.1; precrack		valid			A9.10.1; thic	kness	valid		0.	0.01
9.1.4.2; final crack		valid			A9.10.2; ligar		valid			
9.1.5.1; Da meas		valid			A9.11; slope		valid			
9.1.5.2; Da pred		invalid							Al	Il results are rep
A9.6.4; # of pnts in r	eg.A	invalid								



ASTM E1820-20 Standard Test

reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

Brittle fracture occurred, no J1C value could be determined.

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A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1; C2<1

A9.9.2.1; a0q-a0

invalid

invalid

invalid

invalid

valid

Machining Source: Customer

P 513 984 4112 F 513 984 8258 T 888 786 7555 info.cincinnati@element.com element.com

SUMMARY OF FRACTURE TOUGHNESS A286-20-3

0.400

1.25

0.1

13.1

0.535

0.556

0.502

0.683

20.2

Requestor: Wall Company: Electric Power Research Institute P.O. No.: 4700007062 Job No.: 02039-011217

Relative Humidity: 58%	
Material Properties	
Yield (ksi)	34.9
Tensile (ksi)	80.6
Modulus (Msi)	29.5

0.5377



CT

RT

SSA286

Fig. 2



element

Specimen Type:

Material:

Drawing No.:

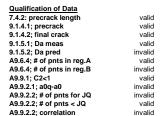
Temperature:

Final a (in)





Results JQ (E1820) 151.4 lbf-in/in^2 KJIC(E'*JQ)^1/2 70.1 ksi sqrt(in)



Compliance Adj. Factor

Effective Modulus (Msi)

Notch Depth (in)

Gage Length (in)

Alpha Ratio

Stress Ratio

0.531

0.581

aoq (in)

0.535

0.581

0.540

0.584

Kmax (ksi sqrt (in))

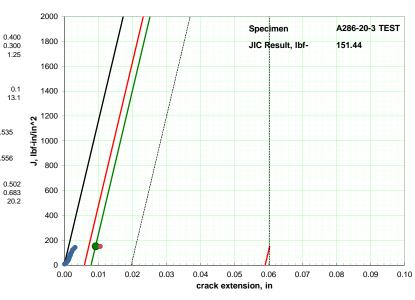


0.529

0.573

0.533

0.567



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys; EPRI Task ID: 1-110095-01-02;

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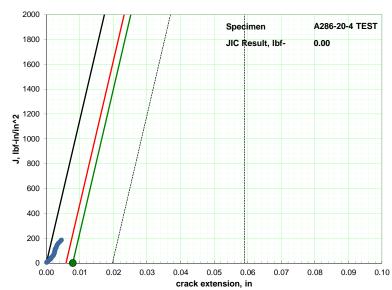


Specimen Type: CT SSA286 Material: Drawing No.: Fig. 2 Temperature: Relative Humidity: RŤ

Company: Electric Power Research Institute P.O. No.: 4700007062 Job No.: 02039-011217 Machining Source: Customer

Requestor: Wall

Material Properties Yield (ksi) Tensile (ksi) Modulus (Msi)		34.9 80.6 29.5							
Specimen Dimensions Thickness (in) Net Thickness (in) Width (in) Pin Spacing (in)		0.5 0.4 1 0.55			Notch Depth Gage Length Alpha Ratio			0.400 0.300 1.25	
Precrack Parameters Pmax (lbf) Final a (in) Pf (lbf)		603 0.5421 952.76			Stress Ratio Kmax (ksi sq	rt (in))		0.1 13.3	
Initial measured crack le 0.545	0.546	0.546	0.543	0.542	0.541	0.541	0.537	0.537	
Final measured crack le 0.925	o.925	0.920	0.918	0.915	0.910	0.910	0.909	0.909	
Ave. initial crack length Ave. final crack length (Delta a measured (in) Delta a predicted (in)		0.5421 0.9155 0.3734 0.0067			aoq (in) Compliance Effective Mo			0.502 0.696 20.5	
Results JQ (E1820) KJIC(E'*JQ)^1/2			of-in/in^2 si sqrt(in)						
Qualification of Data 7.4.2: precrack length 9.1.4.1; precrack 9.1.4.2; final crack 9.1.5.1; Da meas 9.1.5.2; Da pred A9.6.4; # of pnts in reg.l A9.9.1; C2<1 A9.9.2.1; a0q-a0 A9.9.2.2; # of pnts for Ju	3	valid valid valid valid invalid invalid valid invalid invalid			Qualification A9.10.1; thick A9.10.2; ligar A9.11; slope	ness	valid valid valid		
A0022,# of pate 10	•	invalid							



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

Brittle fracture occurred, no J1C value could be determined

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A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

invalid

invalid

element

57%

SUMMARY OF FRACTURE TOUGHNESS A286-20-5

Requestor: Wall
Company: Electric Power
Research Institute
P.O. No.: 4700007062
Job No.: 02039-011217
Machining Source: Customer

relative Harmany.	71 70								
Material Properties									
Yield (ksi)		34.9							
Tensile (ksi)		80.6							
Modulus (Msi)		29.5							
Specimen Dimension	<u>18</u>								
Thickness (in)		0.5			Notch Depth	(in)		0.400	
Net Thickness (in)		0.4			Gage Length	ı (in)		0.300	
Width (in)		1			Alpha Ratio			1.25	
Pin Spacing (in)		0.55							
Precrack Parameters	i								
Pmax (lbf)		498			Stress Ratio			0.1	
Final a (in)		0.5391			Kmax (ksi so	qrt (in))		10.9	
Pf (lbf)		966.28							
Initial measured crac	k lengths (in)								5
0.528	0.531	0.533	0.535	0.538	0.543	0.545	0.549	0.549	CA :: / 11 741
Final measured crac	k lengths (in)								3
0.873	0.884	0.890	0.895	0.903	0.906	0.906	0.900	0.864	-
Ave. initial crack leng		0.5391			aoq (in)			0.501	
Ave. final crack lengt		0.894			Compliance			0.645	
Delta a measured (in		0.3549			Effective Mo	dulus (Msi))	19.0	
Delta a predicted (in))	0.0699							
Results									
JQ (E1820)		0.0 II	of-in/in^2						
KJIC(E'*JQ)^1/2		0.0 k	si sqrt(in)						
Qualification of Data					Qualification	of JQ as J	IC		
7.4.2: precrack lengtl	h	valid							
9.1.4.1; precrack		valid			A9.10.1; thic		valid		
9.1.4.2; final crack		valid			A9.10.2; liga	ment	valid		
9.1.5.1; Da meas		valid			A9.11; slope		valid		
9.1.5.2; Da pred		invalid							
A9.6.4; # of pnts in re	eg.A	invalid							

invalid

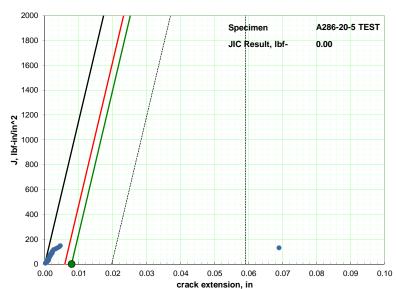
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invalid

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valid



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

Brittle fracture occurred, no J1C value could be determined.

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A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1; C2<1

A9.9.2.1; a0q-a0

element

Specimen Type:

Temperature: Relative Humidity:

Material: Drawing No.: CT

SSA286

Fig. 2

57%

SUMMARY OF FRACTURE TOUGHNESS A286-40-1

Specimen Type: CT SSA286 Material: Drawing No.: Fig. 2

invalid

invalid

invalid

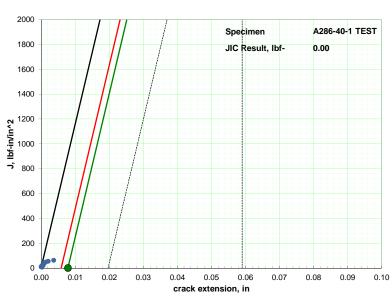
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valid

valid

Requestor: Wall Company: Electric Power Research Institute P.O. No.: 4700007062 Job No.: 02039-011217 Machining Source: Customer

Material Properties Yield (ksi) Tensile (ksi) Modulus (Msi)		34.9 80.6 29.5							2000 -	
Specimen Dimensions Thickness (in) Net Thickness (in) Width (in) Pin Spacing (in)		0.5 0.4 1 0.55			Notch Depth Gage Length Alpha Ratio			0.400 0.300 1.25	1800 - 1600 -	
Precrack Parameters Pmax (lbf) Final a (in) Pf (lbf)		603 0.5366 977.72			Stress Ratio Kmax (ksi so			0.1 13.1	1400 -	
Initial measured crack 0.562 Final measured crack	0.552	0.542	0.535	0.532	0.529	0.529	0.529	0.531	1200 - 1200 - 1200 - 1200 - 1200	
0.697 Ave. initial crack lengt	0.687	0.680	0.671	0.656	0.647	0.643	0.642	0.637	ے 800 ہے ۔	//
Ave. final crack length Delta a measured (in) Delta a predicted (in)		0.6617 0.125 0.0038			Compliance Effective Mo			0.696 20.5	600 - 400 -	
Results JQ (E1820) KJIC(E'*JQ)^1/2			bf-in/in^2 si sqrt(in)						200 -	
Qualification of Data 7.4.2: precrack length 9.1.4.1; precrack 9.1.4.2; final crack		valid valid valid			A9.10.1; thic A9.10.2; ligar	kness ment	valid valid		0.	00 0.01
9.1.5.1; Da meas 9.1.5.2; Da pred A9.6.4; # of pnts in reg	.A	valid invalid invalid			A9.11; slope		valid		Al	Il results are rep



ASTM E1820-20 Standard Test

reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

Brittle fracture occurred, no J1C value could be determined.

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A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1; C2<1

A9.9.2.1; a0q-a0

element

Temperature: Relative Humidity:

RŤ 52%





Specimen Type: CT SSA286 Material: Drawing No.: Fig. 2 Temperature: Relative Humidity: RŤ 56%

element

Requestor: Wall Company: Electric Power Research Institute P.O. No.: 4700007062 Job No.: 02039-011217 Machining Source: Customer

Material Properties Yield (ksi) Tensile (ksi) Modulus (Msi)		34.9 80.6 29.5							
Specimen Dimensions Thickness (in) Net Thickness (in) Width (in) Pin Spacing (in)		0.5 0.4 1 0.55			Notch Depth Gage Length Alpha Ratio			0.400 0.300 1.25	
Precrack Parameters Pmax (lbf) Final a (in) Pf (lbf)		498 0.5348 986.24			Stress Ratio Kmax (ksi sq	rt (in))		0.1 10.8	
Initial measured crack le 0.549	o.544	0.541	0.536	0.530	0.525	0.527	0.532	0.535	lhf_in/in^2
Final measured crack le 0.843	ngths (in) 0.850	0.854	0.854	0.854	0.854	0.854	0.854	0.854	1
Ave. initial crack length Ave. final crack length (i Delta a measured (in) Delta a predicted (in)		0.5348 0.8528 0.318 0.0044			aoq (in) Compliance A			0.501 0.735 21.7	
Results JQ (E1820) KJIC(E**JQ)^1/2			of-in/in^2 si sqrt(in)						
Qualification of Data 7.4.2: precrack length 9.1.4.1; precrack 9.1.4.2; final crack 9.1.5.1; Da meas 9.1.5.2; Da pred A9.6.4; # of pnts in reg.6	4	valid valid valid valid invalid invalid			Qualification A9.10.1; thick A9.10.2; ligar A9.11; slope	ness	valid valid valid		

invalid

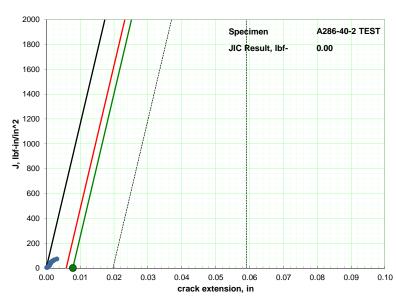
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valid



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

Brittle fracture occurred, no J1C value could be determined

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A9.6.4; # of pnts in reg.B

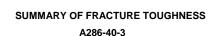
A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

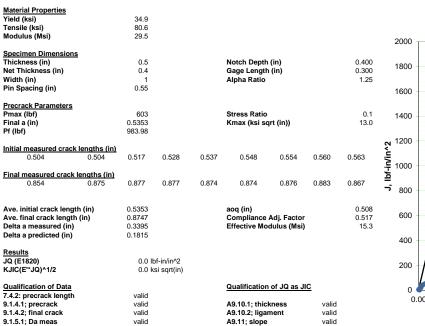
A9.9.2.2; correlation

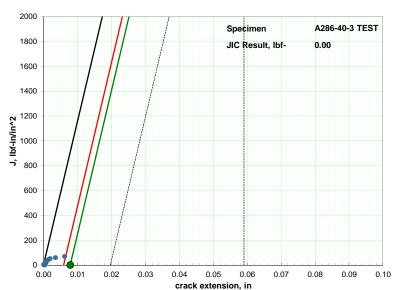
A9.9.1; C2<1





Requestor: Wall Specimen Type: CT Company: Electric Power SSA286 Research Institute Drawing No.: Fig. 2 P.O. No.: 4700007062 Job No.: 02039-011217 Temperature RŤ Machining Source: Customer Relative Humidity: 52%





ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

Brittle fracture occurred no J1C value could be determined

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9.1.5.2; Da pred

A9.9.2.1; a0q-a0

A9.9.1: C2<1

A9.6.4; # of pnts in reg.A

A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

invalid

invalid

invalid

invalid

invalid

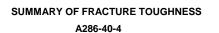
invalid

invalid

valid

element

Material:



Specimen Type: CT
Material: SSA286
Drawing No.: Fig. 2
Temperature: RT
Relative Humidity: 51%

element

Requestor: Wall
Company: Electric Power
Research Institute
P.O. No.: 4700007062
Job No.: 02039-011217
Machining Source: Customer

Material Properties								
Yield (ksi)	34.9							
Tensile (ksi)	80.6							
Modulus (Msi)	29.5							
Specimen Dimensions								
Thickness (in)	0.5			Notch Depth			0.400	
Net Thickness (in)	0.4			Gage Length	ı (ın)		0.300 1.25	
Width (in) Pin Spacing (in)	0.55			Alpha Ratio			1.25	
Fill Spacing (iii)	0.55							
Precrack Parameters								
Pmax (lbf)	603			Stress Ratio			0.1	
Final a (in)	0.5365			Kmax (ksi so	rt (in))		13.1	
Pf (lbf)	978.42			•				
								~
Initial measured crack lengths (in)								~ {``
0.538 0.536	0.535	0.535	0.537	0.539	0.539	0.535	0.535	₹
Fig. 1								J, Ibf-in/in^2
Final measured crack lengths (in) 0.860 0.877	0.882	0.882	0.882	0.882	0.882	0.873	0.865	≗
0.800 0.877	0.002	0.002	0.002	0.002	0.002	0.673	0.003	∹
Ave. initial crack length (in)	0.5365			aog (in)			0.500	
Ave. final crack length (in)	0.8778			Compliance	Adj. Factor		0.735	
Delta a measured (in)	0.3413			Effective Mo	dulus (Msi)		21.7	
Delta a predicted (in)	0.1422							
Results								
JQ (E1820)		of-in/in^2						
KJIC(E'*JQ)^1/2	U.U K	si sqrt(in)						
Qualification of Data				Qualification	of JQ as .II	С		
7.4.2: precrack length	valid					_		
9.1.4.1; precrack	valid			A9.10.1; thic	kness	valid		
9.1.4.2; final crack	valid			A9.10.2; liga		valid		
9.1.5.1; Da meas	valid			A9.11; slope		valid		
0.4 F.2: Do wood	investid							

invalid

invalid

invalid

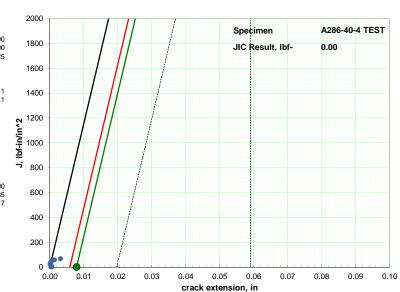
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valid



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

Brittle fracture occurred, no J1C value could be determined.

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9.1.5.2; Da pred

A9.9.1; C2<1

A9.9.2.1; a0q-a0

A9.6.4; # of pnts in reg.A

A9.6.4; # of pnts in reg.B

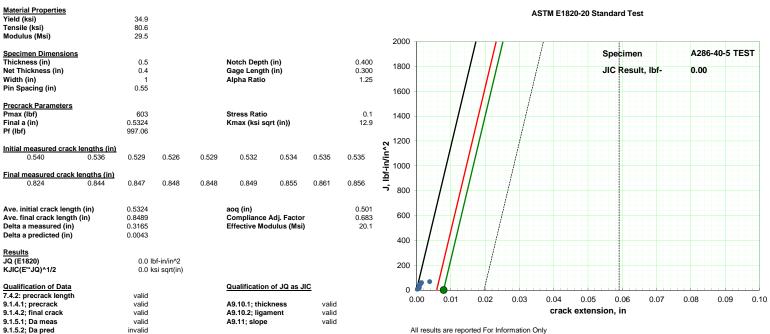
A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation



Requestor: Wall Company: Electric Power Research Institute P.O. No.: 4700007062 Job No.: 02039-011217 Machining Source: Customer



All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

Brittle fracture occurred no J1C value could be determined

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A9.6.4; # of pnts in reg.A

A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1: C2<1

A9.9.2.1; a0q-a0

invalid

invalid

invalid

invalid

invalid

invalid

valid

element

Specimen Type:

Relative Humidity:

Material:

Drawing No.:

Temperature

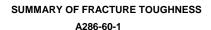
CT

RŤ

50%

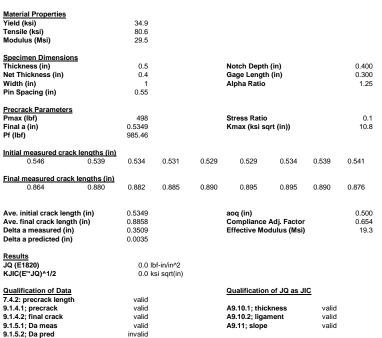
SSA286

Fig. 2



Specimen Type: CT
Material: SSA286
Drawing No.: Fig. 2
Temporature: RT

Requestor: Wall
Company: Electric Power
Research Institute
P.O. No.: 4700007062
Job No.: 02039-011217
Machining Source: Customer



invalid

invalid

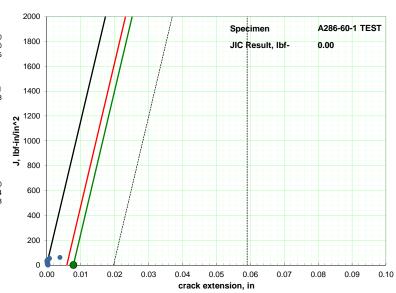
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valid



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

Brittle fracture occurred, no J1C value could be determined.

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A9.6.4; # of pnts in reg.A

A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1: C2<1

A9.9.2.1; a0q-a0

element

Relative Humidity:

49%



Specimen Type: CT
Material: SSA286
Drawing No.: Fig. 2
Temperature: RT
Relative Humidity: 51%

element

Requestor: Wall
Company: Electric Power
Research Institute
P.O. No.: 4700007062
Job No.: 02039-011217
Machining Source: Customer

Material Properties								
Yield (ksi)	34.9							
Tensile (ksi)	80.6							
Modulus (Msi)	29.5							
Specimen Dimensions								
Thickness (in)	0.5			Notch Depth			0.400	
Net Thickness (in)	0.4			Gage Length	ı (in)		0.300	
Width (in)	1			Alpha Ratio			1.25	
Pin Spacing (in)	0.55							
Precrack Parameters								
Pmax (lbf)	498			Stress Ratio			0.1	
Final a (in)	0.5329			Kmax (ksi so	ırt (in))		10.7	
Pf (lbf)	994.74							
								Ņ
Initial measured crack lengths		0.505	0.500	0.500	0.500	0.547	0.550	~
0.526 0.526	0.525	0.525	0.528	0.532	0.538	0.547	0.559	≅
Final measured crack lengths	(in)							J, Ibf-in/in^2
0.844 0.885		0.894	0.903	0.901	0.896	0.892	0.855	2
0.044 0.000	0.092	0.094	0.903	0.901	0.090	0.092	0.655	ت
Ave. initial crack length (in)	0.5329			aog (in)			0.501	
Ave. final crack length (in)	0.8891			Compliance	Adi Factor		0.720	
Delta a measured (in)	0.3561			Effective Mo			21.2	
Delta a predicted (in)	0.0041			LITCOLIVE INO	aaias (iiisi)		21.2	
Delta a predicted (iii)	0.0041							
Results								
JQ (E1820)	0.0 II	of-in/in^2						
KJIC(E'*JQ)^1/2	0.0 k	si sqrt(in)						
	0.0 1.							
Qualification of Data				Qualification	of JQ as J	IC		
7.4.2: precrack length	valid					_		
9.1.4.1; precrack	valid			A9.10.1; thic	kness	valid		
9.1.4.2: final crack	valid			A9.10.2; liga		valid		
,				,gu				

A9.11; slope

valid

valid

invalid

invalid

invalid

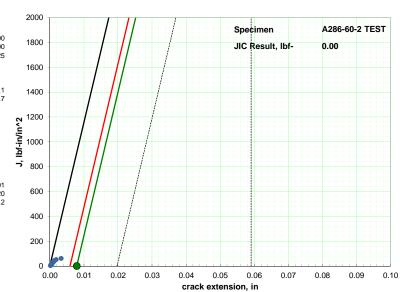
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invalid

invalid

invalid

valid



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

Brittle fracture occurred, no J1C value could be determined.

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9.1.5.1; Da meas

9.1.5.2; Da pred

A9.9.1; C2<1

A9.9.2.1; a0q-a0

A9.6.4; # of pnts in reg.A

A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

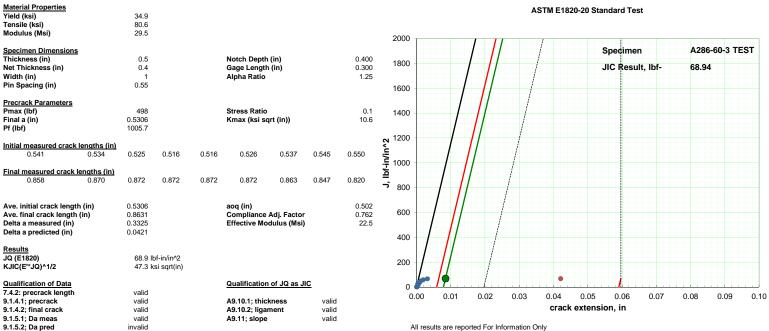
A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation





Requestor: Wall Specimen Type: CT Company: Electric Power SSA286 Research Institute Fig. 2 P.O. No.: 4700007062 Job No.: 02039-011217 RŤ Machining Source: Customer Relative Humidity: 50%



All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys; EPRI Task ID: 1-110095-01-02;

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A9.6.4; # of pnts in reg.A

A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1: C2<1

A9.9.2.1; a0q-a0

invalid

valid

valid

invalid

invalid

invalid

valid

element

Material:

Drawing No.:

Temperature

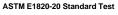


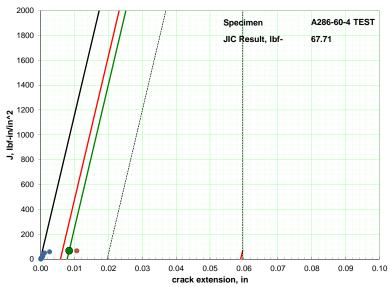
Specimen Type: CT
Material: SSA286
Drawing No.: Fig. 2
Temperature: RT
Relative Humidity: 50%

element

Requestor: Wall
Company: Electric Power
Research Institute
P.O. No.: 4700007062
Job No.: 02039-011217
Machining Source: Customer

Material Properties										
Yield (ksi)		34.9								
Tensile (ksi)		80.6								
Modulus (Msi)		29.5								2000
										2000
Specimen Dimensions										
Thickness (in)		0.5			Notch Depth			0.400 0.300		1800
Net Thickness (in) Width (in)	0.4				Gage Length (in)					
Pin Spacing (in)	1 0.55			Alpha Ratio			1.25			
riii Spacing (iii)		0.55								1600
Precrack Parameters										
Pmax (lbf)		498			Stress Ratio			0.1		1400
Final a (in)	0.5328			Kmax (ksi sq	10.7		1400			
Pf (lbf)		995.52			•					
									~	1200
Initial measured crack									~ ?``	
0.553	0.550	0.540	0.529	0.521	0.520	0.524	0.533	0.536	₹	
									J, Ibf-in/in^2	1000
Final measured crack I		0.000	0.070	0.070	0.007	0.004	0.007	0.075	₫	
0.837	0.853	0.863	0.873	0.879	0.887	0.891	0.887	0.875	J,	800
										000
Ave. initial crack length (in)		0.5328	0.5328			aog (in)			0.500	
Ave. final crack length (in)		0.8739			Compliance	0.755		600		
Delta a measured (in)		0.3411			Effective Mo	22.3	3			
Delta a predicted (in)		0.0106				` ,				
. ,										400
Results										
JQ (E1820)			bf-in/in^2							200
KJIC(E'*JQ)^1/2		46.9 k	si sqrt(in)							200
O!!!!!!					0	-4 10 11				
Qualification of Data 7.4.2: precrack length		valid			Qualification	of JQ as J	<u></u>			0
9.1.4.1; precrack length		valid			A9.10.1; thick	mace	valid			0
9.1.4.2; final crack		valid			A9.10.1; tilici		valid			
9.1.5.1; Da meas		valid			A9.11; slope		valid			
9.1.5.2; Da pred		invalid			, зюрс		valia			Α
A9.6.4; # of pnts in reg	.А	valid								,,
	_									





All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys; EPRI Task ID: 1-110095-01-02;

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A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1; C2<1

A9.9.2.1; a0q-a0

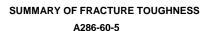
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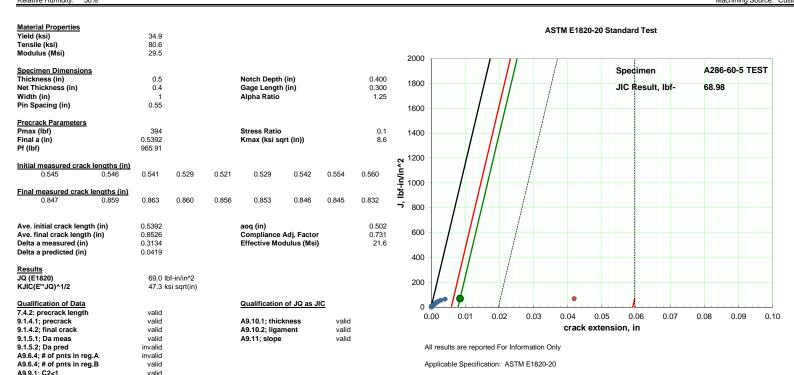
valid



Specimen Type: CT
Material: SSA286
Drawing No.: Fig. 2
Temperature: RT
Relative Humidity: 50%

element

Requestor: Wall
Company: Electric Power
Research Institute
P.O. No.: 4700007062
Job No.: 02039-011217
Machining Source: Customer



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Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

EPRI Task ID: 1-110095-01-02;

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

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A9.9.2.1; a0q-a0

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

invalid

invalid

invalid

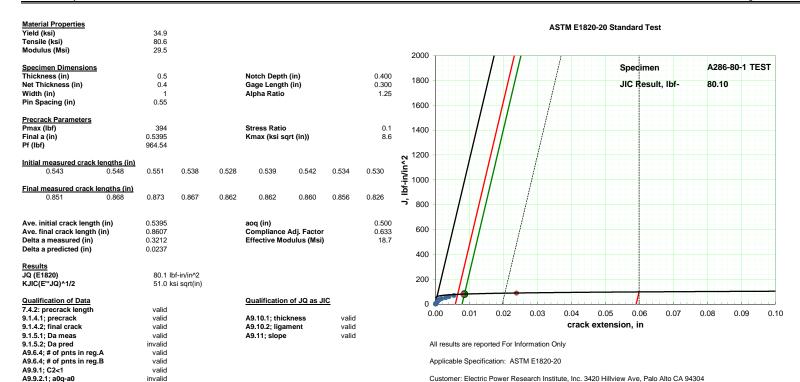


SUMMARY OF FRACTURE TOUGHNESS A286-80-1

Specimen Type: CT Material: SSA286 Drawing No.: Fig. 2 Temperature RŤ Relative Humidity: 49%

element

Requestor: Wall Company: Electric Power Research Institute P.O. No.: 4700007062 Job No.: 02039-011217 Machining Source: Customer



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Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys;

EPRI Task ID: 1-110095-01-02;

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A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

invalid

invalid

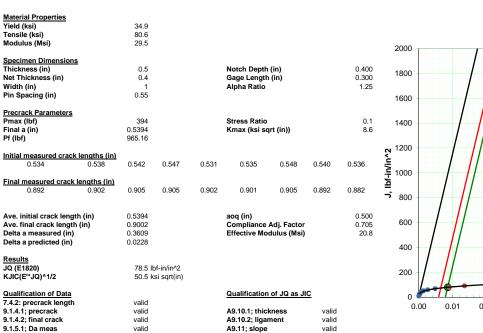


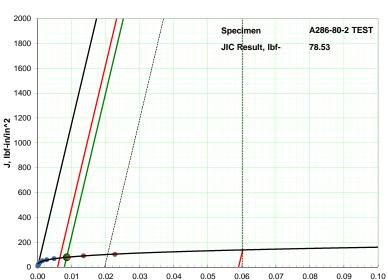
Research Institute



SUMMARY OF FRACTURE TOUGHNESS A286-80-2

Requestor: Wall Specimen Type: CT Company: Electric Power SSA286 Material: Drawing No.: Fig. 2 P.O. No.: 4700007062 Job No.: 02039-011217 Temperature RŤ Machining Source: Customer Relative Humidity: 50%





ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys; EPRI Task ID: 1-110095-01-02;

crack extension, in

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9.1.5.2; Da pred

A9.9.2.1; a0q-a0

A9.9.1: C2<1

A9.6.4; # of pnts in reg.A

A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

invalid

valid

valid

valid

invalid

invalid

valid

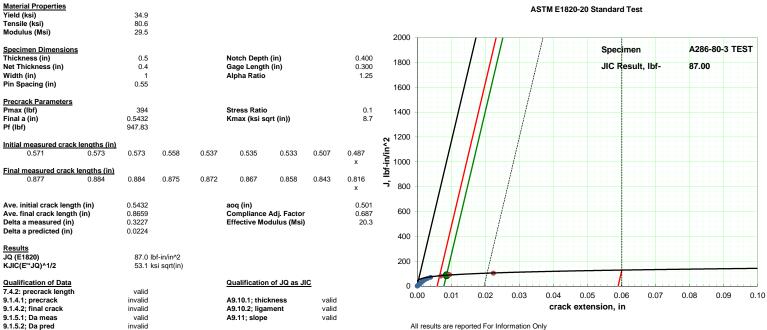




Material:

SUMMARY OF FRACTURE TOUGHNESS A286-80-3

Requestor: Wall Specimen Type: CT Company: Electric Power SSA286 Research Institute Drawing No.: Fig. 2 P.O. No.: 4700007062 Job No.: 02039-011217 Temperature RŤ 47% Machining Source: Customer Relative Humidity:



All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys; EPRI Task ID: 1-110095-01-02;

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A9.6.4; # of pnts in reg.A

A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1: C2<1

A9.9.2.1; a0q-a0

valid

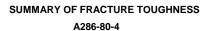
valid

valid

invalid

invalid

valid



Specimen Type: CT SSA286 Material: Drawing No.: Fig. 2 Temperature: Relative Humidity: RŤ 47%

element

Requestor: Wall Company: Electric Power Research Institute P.O. No.: 4700007062 Job No.: 02039-011217 Machining Source: Customer

Material Properties									
Yield (ksi)		34.9							
Tensile (ksi)		80.6							
Modulus (Msi)		29.5							
moduluo (moi)		20.0							2
Specimen Dimension	s								
Thickness (in)	_	0.5			Notch Depth	0.400			
Net Thickness (in)		0.4			Gage Length (in)				
Width (in)		1			Alpha Ratio				
Pin Spacing (in)		0.55			•				
Precrack Parameters									
Pmax (lbf)		394			Stress Ratio			0.1	
Final a (in)		0.5391			Kmax (ksi so	rt (in))		8.6	
Pf (lbf)		966.37							
									ญ่
Initial measured cracl	0.564	0.550	0.544	0.540	0.500	0.500	0.507	0.504	2
0.573	0.564	0.553	0.541	0.518	0.529	0.533	0.527	0.521	≅.
Final measured crack	langthe (in)								J, Ibf-in/in^2
0.840	0.864	0.868	0.863	0.854	0.866	0.854	0.857	0.817	=
0.040	0.004	0.000	0.000	0.004	0.000	0.004	0.007	0.017	٦,
Ave. initial crack leng	th (in)	0.5391			aog (in)			0.501	
Ave. initial crack leng Ave. final crack lengt		0.5391 0.8566			aoq (in) Compliance	Adi. Factor		0.501 0.668	
Ave. initial crack leng Ave. final crack lengtl Delta a measured (in)	h (in)				aoq (in) Compliance Effective Mo				
Ave. final crack lengt	h (in)	0.8566			Compliance			0.668	
Ave. final crack length Delta a measured (in)	h (in)	0.8566 0.3176			Compliance			0.668	
Ave. final crack length Delta a measured (in)	h (in)	0.8566 0.3176			Compliance			0.668	
Ave. final crack length Delta a measured (in) Delta a predicted (in) Results JQ (E1820)	h (in)	0.8566 0.3176 0.0287	of-in/in^2		Compliance			0.668	
Ave. final crack lengtl Delta a measured (in) Delta a predicted (in) Results	h (in)	0.8566 0.3176 0.0287	of-in/in^2 si sqrt(in)		Compliance			0.668	
Ave. final crack length Delta a measured (in) Delta a predicted (in) Results JQ (E1820) KJIC(E"JQ)^1/2	h (in)	0.8566 0.3176 0.0287			Compliance Effective Mo	dulus (Msi)		0.668	
Ave. final crack lengti Delta a measured (in) Delta a predicted (in) Results JQ (E1820) KJIC(E"*JQ)^1/2	h (in)	0.8566 0.3176 0.0287 84.7 lt 52.4 k			Compliance	dulus (Msi)	<u>c</u>	0.668	
Ave. final crack length Delta a measured (in) Delta a predicted (in) Results JQ (E1820) KJIC(E*JQ)^1/2 Qualification of Data 7.4.2: precrack length	h (in)	0.8566 0.3176 0.0287 84.7 lb 52.4 k			Compliance Effective Mo	duľus (Msi) of JQ as JI	_	0.668	
Ave, final crack lengt Delta a measured (in) Delta a predicted (in) Results JQ (E1820) KJIC(E"JQ)^1/2 Qualification of Data 7.4.2: precrack length 9.1.4.1; precrack	h (in)	0.8566 0.3176 0.0287 84.7 lb 52.4 k valid valid			Compliance Effective Mo Qualification A9.10.1; thicl	of JQ as JII	valid	0.668	
Ave. final crack length Delta a measured (in) Delta a predicted (in) Results JQ (E1820) KJIC(E"*JQ)^1/2 Qualification of Data 7.4.2: precrack length 9.1.4.1; precrack 9.1.4.2; final crack	h (in)	0.8566 0.3176 0.0287 84.7 lt 52.4 k valid valid valid			Compliance Effective Mo Qualification A9.10.1; thicl A9.10.2; ligar	of JQ as JII	valid valid	0.668	
Ave. final crack length Delta a measured (in) Delta a predicted (in) Results JQ (E1820) KJIC(E*JQ)^1/2 Qualification of Data 7.4.2: precrack length 9.1.4.1; precrack 9.1.4.2; final crack 9.1.5.1; Da meas	h (in)	0.8566 0.3176 0.0287 84.7 lt 52.4 k valid valid valid valid			Compliance Effective Mo Qualification A9.10.1; thicl	of JQ as JII	valid	0.668	
Ave. final crack length Delta a measured (in) Delta a predicted (in) Results JQ (E1820) KJIC(E"*JQ)^1/2 Qualification of Data 7.4.2: precrack length 9.1.4.1; precrack 9.1.4.2; final crack	h (in) [′]	0.8566 0.3176 0.0287 84.7 lt 52.4 k valid valid valid			Compliance Effective Mo Qualification A9.10.1; thicl A9.10.2; ligar	of JQ as JII	valid valid	0.668	

valid

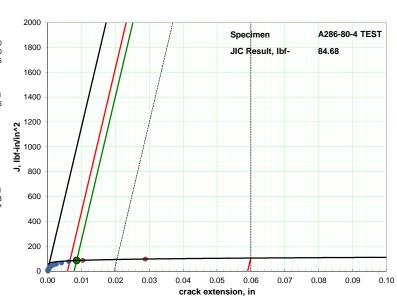
valid

invalid

invalid

valid

valid



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys; EPRI Task ID: 1-110095-01-02;

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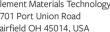
A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1; C2<1



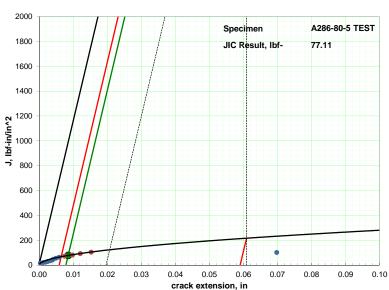
Machining Source: Customer

P 513 984 4112 F 513 984 8258 T 888 786 7555 info.cincinnati@element.com element.com

SUMMARY OF FRACTURE TOUGHNESS A286-80-5

Requestor: Wall Company: Electric Power Research Institute P.O. No.: 4700007062 Job No.: 02039-011217

Material Properties 34.9 Yield (ksi) Tensile (ksi) 80.6 Modulus (Msi) 29.5 2000 Specimen Dimensions Thickness (in) 0.5 Notch Depth (in) 0.400 1800 Net Thickness (in) 0.4 Gage Length (in) 0.300 Width (in) Alpha Ratio 1.25 Pin Spacing (in) 0.55 1600 Precrack Parameters 394 Stress Ratio 0.1 Pmax (lbf) 1400 Final a (in) 0.5389 Kmax (ksi sqrt (in)) 8.6 Pf (lbf) 967.39 ş ¹²⁰⁰ Initial measured crack lengths (in) lbf-in/in 0.541 0.530 0.533 0.545 0.537 0.537 0.540 0.546 0.540 1000 Final measured crack lengths (in) 0.892 0.892 0.892 0.892 0.901 0.895 0.847 800 Ave. initial crack length (in) 0.5389 0.502 aoq (in) 600 0.8866 Compliance Adj. Factor 0.443 Ave. final crack length (in) Delta a measured (in) 0.3478 Effective Modulus (Msi) 13.1 Delta a predicted (in) 0.0716 400 Results JQ (E1820) 77.1 lbf-in/in^2 200 KJIC(E'*JQ)^1/2 50.0 ksi sqrt(in) **Qualification of Data** Qualification of JQ as JIC 7.4.2: precrack length valid 0.00 9.1.4.1; precrack A9.10.1; thickness valid valid 9.1.4.2; final crack valid A9.10.2: ligament valid 9.1.5.1; Da meas valid A9.11; slope valid 9.1.5.2; Da pred invalid A9.6.4; # of pnts in reg.A valid



ASTM E1820-20 Standard Test

All results are reported For Information Only

Applicable Specification: ASTM E1820-20

Customer: Electric Power Research Institute, Inc. 3420 Hillview Ave, Palo Alto CA 94304

Additional customer nos.: SOW: Compact Tension Testing of Cold-Worked Stainless Steel Alloys; EPRI Task ID: 1-110095-01-02;

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A9.6.4; # of pnts in reg.B

A9.9.2.2; # of pnts for JQ

A9.9.2.2; # of pnts < JQ

A9.9.2.2; correlation

A9.9.1: C2<1

A9.9.2.1; a0q-a0

invalid

invalid

invalid

invalid

valid

valid

element

Specimen Type:

Relative Humidity:

Material:

Drawing No.:

Temperature

CT

RŤ

57%

SSA286

Fig. 2