

Supplementary Material for:

New insight into crack healing mechanism via electropulsing treatment

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Table S1. Material properties of Stainless steel 316L used in Abaqus model

Temperature	Density	Elastic modulus	Poisson ratio	Electrical conductivity	Thermal expansion coefficient	Specific heat	Thermal Conductivity
°C	kg/m ³	N/m ²		A·V ⁻¹ ·m ⁻¹	(m/m/K)	J/kg·K	W/m·K
20	7950	2.0E+11	0.25	1350000	1.65E-05	452	14.0
100	7920	1.9E+11	0.26	1270000	1.65E-05	486	13.5
200	7880	1.9E+11	0.26	1150000	1.65E-05	528	14.8
300	7830	1.8E+11	0.28	1080000	1.75E-05	548	16.0
400	7790	1.6E+11	0.32	1010000	1.80E-05	565	17.3
500	7740	1.6E+11	0.32	979455	1.85E-05	573	19.2
600	7690	1.5E+11	0.32	933091	1.90E-05	586	19.9
700	7640	1.4E+11	0.31	867308	2.00E-05	615	20.6
800	7590	1.3E+11	0.25	783923	2.10E-05	649	21.4
900	7590	1.3E+11	0.24	700538	2.30E-05	650	22.1
1400	7590	1.3E+05	0.20	617154	2.70E-05	681	24.2

Johnson-Cook plastic model						Latent Heat	Solidus temp	Liquidus temp
A	B	n	m	Melting temp	Transition temp	kJ/kg	°C	°C
310000000	8.81E+08	0.178	0.6	1600	25	285000	1350	1550

Crack contact properties		
Electrical conductance	Thermal conductance	Clearance
A·V ⁻¹ ·mm ⁻¹	W/mm·K	mm
1.00E+07	1.00E+07	0
0	0	1.00E-07