

Article

# Avrami Kinetic-Based Constitutive Relationship for Armco-Type Pure Iron in Hot Deformation

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Received: 2 March 2019; Accepted: 16 March 2019; Published: date

**Table 1.** Fitted values of Armco-type pure iron.

$\dot{\epsilon}$ (s <sup>-1</sup> )	T(K)	$\sigma_y$ (MPa)	$\sigma_p$ (MPa)	$\sigma_{ds}$ (MPa)	$\epsilon_p$
0.001	1273	36.02794	50.47781	45.2478	0.086
0.001	1323	31.72519	43.09229	37.3655	0.073
0.001	1373	29.34195	37.13487	32.4999	0.059
0.001	1423	27.80233	31.91863	28.706	0.036
0.001	1473	26.4718	28.86352	25.8734	0.029
0.01	1273	44.14972	72.14014	61.212	0.154
0.01	1323	39.04316	57.94587	50.7029	0.119
0.01	1373	34.95826	50.29298	42.935	0.098
0.01	1423	32.7738	43.44835	37.522	0.076
0.01	1473	31.29607	38.97089	33.655	0.06
0.1	1273	55.44848	103.81614	84.011	0.25
0.1	1323	48.4447	87.03382	68.299	0.202
0.1	1373	46.01868	73.63832	56.594	0.157
0.1	1423	41.47365	63.59462	47.842	0.131
0.1	1473	36.5368	53.63641	40.408	0.115
1	1273	58.71967	131.88352	122.372	0.39
1	1323	53.94529	114.61217	101.704	0.314
1	1373	52.21824	102.10061	88.207	0.265
1	1423	47.23381	86.26196	73.866	0.229
1	1473	42.69994	72.54276	57.978	0.189

**Table 2.** Calculated values of Armco-type pure iron.

$\dot{\epsilon}$ (s <sup>-1</sup> )	T(K)	$k$	$\sigma_{rs}$ (MPa)	$\sigma_c$ (MPa)	$\epsilon_c$	$\ln k^*$	$n^*$
0.001	1273	9.61018	60.24045	47.919	0.059	-13.69749	3.51017
0.001	1323	11.21226	50.41119	40.731	0.05	-13.79998	3.60011
0.001	1373	15.62937	41.4645	35.607	0.041	-13.40011	3.69281
0.001	1423	26.35968	34.23337	31.201	0.026	-12.61837	3.54791
0.001	1473	39.75291	29.93008	28.530	0.014	-12.13594	3.62474
0.01	1273	6.2969	86.43735	65.725	0.089	-7.62588	3.00744
0.01	1323	7.6893	68.67281	52.16	0.062	-7.23236	3.0746
0.01	1373	8.76047	59.64982	45.773	0.055	-6.73808	3.15784
0.01	1423	11.98356	49.67465	40.295	0.043	-6.81502	3.68377
0.01	1473	18.72998	42.56069	36.782	0.032	-5.74097	3.20039
0.1	1273	6.11048	115.991	92.938	0.126	-2.63715	2.7916
0.1	1323	6.62627	99.34604	76.216	0.094	-2.14892	2.7923
0.1	1373	8.72747	81.74238	64.319	0.069	-1.81797	3.0567
0.1	1423	10.94744	69.29044	55.658	0.056	-1.41178	3.20598
0.1	1473	12.06592	59.24301	47.985	0.051	-0.77808	2.84978
1	1273	6.20466	138.8244	122.001	0.197	2.20368	2.3755
1	1323	6.24298	124.2662	101.441	0.141	2.74228	2.38285

1	1373	6.80885	111.3173	91.273	0.127	3.20585	2.44387
1	1423	7.25448	94.99807	77.294	0.112	3.51808	2.36509
1	1473	8.35016	80.12228	64.798	0.089	3.95962	2.58834



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