Rock laboratory parameters for steady-state creep of a variety of crustal and upper mantle rocks. Parameters are given for dislocation climb powerlaw creep:

$$\sigma = \left[\frac{\dot{\varepsilon}}{A_{PL}}\right]^{\frac{1}{N}} .\exp\left[\frac{E_{PL}}{NRT}\right]$$

For poly-crystalline olivine, rock laboratory parameters are also available for Dorn law creep (so-called "high-stress, low-temperature plasticity"):

$$\sigma = \sigma_{DL}\left(1 - \left[-\frac{RT}{E_{DL}}.\ln\left(\frac{\dot{\varepsilon}}{A_{DL}}\right)\right]^{1/2}\right)$$

(Goetze and Evans, 1979)

$$\sigma_{DL} = \sigma_D(1 - [-\frac{RT}{E_D} ln(\frac{\dot{\varepsilon}}{A_D})]^{\frac{1}{2}})^2$$

(Demouchi et al., 2013)

					Power law creep				**Dorn law creep**		
	mineral	**dry/ wet**	**lit. ref**		**N**	**E_{PL}**	**A_{PL}**		**σ_{DL}**	**E_{DL}**	**A_{DL}**
					power	**activation energy**	**inititial constant**		**plastic strength**	**activation energy**	**initial constant**
						[J/mole]	**[$Pa^{-N}.s^{-1}$]**		**[Pa]**	**[J/mole]**	**[s]**
1	rocksalt	?	1		4.5	66500	7.94e-31				
2	anhydrite	?	1		2.0	152300	3.16e-11				
3	quartzite	w	1		1.9	172600	1.26e-13				
4	quartzite	d	1		2.72	134000	6.03e-24				
5	granite[1]	w	1		1.9	140600	7.94e-16				
6	granite[2]	d	1		3.3	186500	3.16e-26				
7	Diorite	w	1		2.4	212000	1.26e-16				
8	diabase	d	1		3.05	276000	6.31e-20				
9	o-pyroxene	w	1		2.8	271000	1.00e-19				
10	o-pyroxene	d	1		2.4	293000	1.26e-15				
11	c-pyroxene	w	1		3.3	490000	2.34e-15				
12	c-pyroxene	d	1		5.8	330000	2.51e-43				
13	dunite	w	1		4.5	498000	3.98e-25				
14	dunite	d	1		3.6	535000	7.94e-18				
15	olivine	d	2		3.0	510000	7.00e-14		8.5e9	535000	5.7e11
16	Granulite (felsic)	?	3		3.1	243000	2.01e-21				
17	Granulite (mafic)	?	3		4.2	445000	8.83e-22				
18	micro-gabbro	?	?		3.4	497000	1.99e-11				

[1] From Carter and Tsenn, 1987: log A = - 3.7 $MPa^{-N}.s^{-1}$; A=(10 ^- 3.7).* (10^(-6.*1.9)) = 7.94e-16 $Pa^{-N}.s^{-1}$

[2] From Carter and Tsenn, 1987: log A = - 5.7 $MPa^{-N}.s^{-1}$; A=(10 ^- 5.7).* (10^(-6.*3.3)) = 3.16e-26 $Pa^{-N}.s^{-1}$

19	anorthosite	d	4		3.2	239000	2.06e-23				

Literature references:
1= Carter and Tsenn, 1987. Tectonophysics, 136, 27-63.
2= Goetze and Evans, 1979. Geophys.J.R.astr.Soc., 59, 463-478.
3= Wilks and Carter, 1990. Tectonophysics, 182, 57-77.
4= Shelton and Tullis, 1981. EOS Transactions AGU, 62(17), 396.

	mineral	**dry/ wet**	**lit. ref**		**N**	**E_{PL}**	**A_{PL}**		**σ_{DL}**	**E_{DL}**	**A_{DL}**
					power	**activation energy**	**inititial constant**		**plastic strength**	**activation energy**	**initial constant**
						[J/mole]	**[$Pa^{-N}.s^{-1}$]**		**[Pa]**	**[J/mole]**	**[s]**
1	rocksalt	?	1		5.3	102000	9.9848e-32				
3	quartzite	d	1		2.4	156000	2.6673e-20				
4	quartzite	w	1		2.3	154000	5.0717e-18				
5	quartz	d	1		2.0	167000	1e-15				
6	quartz diorite	d	1		2.4	219000	5.1754e-18				
7	granite	d	1		3.2	123000	1.1357e-28				
8	granite	w	1		1.9	137000	7.9621e-16				
9	diabase	d	1		3.4	260000	7.9621e-25				
10	o-pyroxene	d	1		2.4	293000	1.2739e-15				
11	c-pyroxene	d	1		2.6	335000	3.9437e-15				
12	Plagioclase (An75)	d	1		3.2	238000	2.0822e-23				
16	Granulite (felsic)	?	1		3.1	243000	2.0095e-21				
17	Granulite (mafic)	?	1		4.2	445000	8.8334e-22				
19	anorthosite	d	1		3.2	238000	2.0191e-23				

Literature references:
1=Ranalli, Rheology of the Earth, 1995 (from Kirby, 1983; Kirby and Kroneberg, 1987; Ranalli and Murphy 1987; Ji and Zaho, 1993, Wilks and Carter, 1990).

	mineral	**dry/ wet**	**lit. ref**		**N**	**E_{PL}**	**A_{PL}**		**σ_{DL}**	**E_{DL}**	**A_{DL}**
					power	**activation energy**	**inititial constant**		**plastic strength**	**activation energy**	**initial constant**
						[J/mole]	**[$Pa^{-N}.s^{-1}$]**		**[Pa]**	**[J/mole]**	**[s]**
1	Diorite	w	2		2.4	212000	1.2739e-16				
2	Olivine	d	2		3.0	510000	4e-12				
3	Peridotite	d	3		3.5	532000	2.5e-17				
4	Peridotite	w	3		4.0	471000	2.0e-21				

2= Moisio et al., 2000. Tectonophysics 320, 175–194
3=Alfonso and Ranalli, 2004. Tectonophysics 394, 221–232.