

## Values for dielectric constants

Here are some values for dielectric constants:

- First, some of the more interesting materials with [electronic polarization](#) at work, at least to some noticeable extent.

Illustration

Static $\epsilon_r$ for some semiconductors.			
Covalent bonding		Covalent and ionic bonding	
Electronic polarization is the main mechanism		Mix of electronic and ionic polarization	
<b>C</b>	5.7	<b>ZnO</b>	4.6
<b>Si</b>	12.0	<b>ZnS</b>	5.1
<b>Ge</b>	16.0	<b>ZnSe</b>	5.8
<b>SiC</b>	6.7	<b>CdS</b>	5.2
<b>GaP</b>	8.4	<b>CdSe</b>	7.0
<b>GaAs</b>	10.9	<b>BeO</b>	3.0
<b>InP</b>	9.6	<b>MgO</b>	3.0

The numbers are from "Solid State Physics" of Ashcroft / Mermin (an advanced text book).

- Next, some numbers for [ionic crystals](#). Besides the static  $\epsilon_r(\omega = 0)$ , the value  $\epsilon_r(\omega = \infty)$  for very high frequencies is also given. This means that after ionic polarization "dies out", there is still some electronic polarization left.

Static and high-frequency $\epsilon_r$ for some ionic crystals		
Crystal	$\epsilon_r(\omega = 0)$	$\epsilon_r(\omega = \infty)$
LiF	9.01	1.96
NaF	5.05	1.74
KF	5.46	1.85
LiCl	11.95	2.78
NaCl	5.90	2.34
KCl	4.84	2.19
LiBr	13.25	3.17
NaBr	6.28	2.59
LiI	16.85	3.80
NaI	7.28	2.93

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