

## 2.1: Absorptance, and the Definition of a Black Body

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If a body is irradiated with radiation of wavelength  $\lambda$ , and a fraction  $a(\lambda)$  of that radiation is absorbed, the remainder being either reflected or transmitted,  $a(\lambda)$  is called the *absorptance* at wavelength  $\lambda$ . Note that  $\lambda$  is written in parentheses, to mean "at wavelength  $\lambda$ ", not as a subscript, which would mean "per unit wavelength interval". The fractions of the radiation reflected and transmitted are, respectively, the *reflectance* and the *transmittance*. The sum of the absorptance, reflectance and transmittance is unity, unless you can think of anything else that might happen to the radiation.

A body for which  $a(\lambda) = 1$  for all wavelengths is a black body.

A body for which  $a$  has the same value for all wavelengths, but less than unity, is a grey body.

(Caution: We may meet the word "absorbance" later. It is not the same as absorptance.)

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