

Environmental control glasses

Environmental control glasses modify the internal environment. They are used to improve comfort and/or reduce energy use in the building. They may reduce cooling demands caused by solar gain and heating demands due to radiated heat. This Technical Note describes the different types of environmental control glass and their use.

This Technical Note should be read in conjunction with:

- TN 11 Glass types
- TN 13 Glass breakage
- TN 35 Assessing the appearance of glass
- TN 48 U-values of windows
- TN 50 Shading and solar gain

Introduction

Environmental control glasses are used to reduce the heat transfer through glazing by modifying the absorptance, reflectance and emissivity of the glass. They may be used to reduce heat loss through windows by reducing the U-value, TN 48, or to reduce incoming solar radiation.

This Technical Note concentrates on glazings that reduce the proportion of solar radiation transmitted through the glass.

Solar radiation can also be reduced by the use of shading devices such as blinds and brises soleil. Guidance on these is given in TN 50.

Transmission, Absorption, reflection

All radiation incident on a pane of glass is reflected, absorbed or transmitted. The reflectance and absorption are properties of the glass. The direct transmittance is calculated as:

$$i = \rho + \alpha + \tau = 100\%$$

Where:

- i = incidence
- ρ = reflectance (%)
- α = absorptance (%)
- τ = transmittance (%)

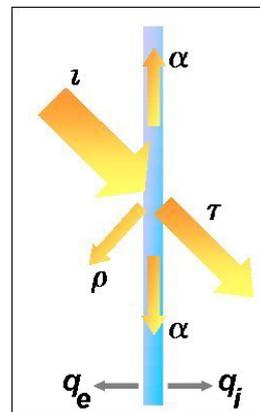


Figure 1 Reflectance, absorptance and transmittance

Reflectance depends on the surface properties of the glass or a coating if present. Absorptance depends on the glass type and any tint added to the glass.