

Number	B-AD7
Indicator name	Colour version
Area	A
Indicator definition	The indicator is determined as a point score depending on the proportion of the area of the roof and the facade covered with a material with a reflectance index HBW in a given interval. If the roof of the building is vegetative (green), the indicator value is empty.
Indicator unit	Point score
Key words	Roof, facade, colour, reflectivity, albedo, reflectance index, overheating

Reason for tracking and usability

The influence of the used material and colour design of vertical perimeter and roof constructions on the interior comfort in well-insulated houses is small – in the case of ventilated tiles or double-skin roofs it is minimal. However, dark facade plasters (which are no longer suitable due to their thermal expansion and thermal stress of the substrate) and dark single-skin roofs (unsuitable for other reasons) lead to about twice the heat gain through the wall or roof and should not be used. However, compared to the total heat gains, this is still a relatively small impact that will not affect the achievement of summer thermal comfort. Black bodies have a reflectance of 0.05 and an emittance of 0.9 – SRI index 0; standard white bodies have a reflectivity of 0.8 and an emittance of 0.9 – SRI index 100. The higher the SRI index, the better the roof parameters in terms of the so-called cooling effect of roofs. The colour of the glare surface has a significantly more significant effect on the interior comfort in poorly insulated buildings – in these cases, the first step should be to improve the insulation. □The SRI is defined as the ability of a material to reject light expressed by an increase in temperature. Albedo's reflectivity – the amount of reflected light regardless of the material. □Colour of the roof surface (affects the reflectivity) – light reflectance index (HBW), cooling coverings (aluminium with PES varnish) have a reflectance of up to 67 % □The colour of the facade affects its heating. Insulated facades should not have an albedo lower than 30%, otherwise there is a risk of overheating and damage. □HBW index given e.g. in various colour swatches:

<https://www.eshop-murexin.cz/userdata/images/vzornik/RAL%20barvy.pdf>

□Examples of surface reflectance values: Surface Albedo
Corrugated iron roofs 0,1-0,15 Colourful facades 0,15-0,35 Trees 0,15-0,18 Asphalt 0,05-0,2 Concrete 0,25-0,7 Grass 0,25-0,3 Red-brown tiles 0,1-0,35 Brick, stone 0,2-0,4 White facade 0,5-0,9

Completeness, representativeness, validity

The indicator does not take into account the real extent and manner of glare of buildings and their shading (i.e. the importance of reflectivity in a particular case). The scale is constructed only on the basis of reflectivity. This can only be estimated by comparison with typical examples or a colour swatch. Similarly, an emissivity scale could be constructed. Albedo and SRI cannot simply be measured as a guide.

Description of data processing	<p>The indicator evaluates the proportion of roof and facade areas with a reflectance index in a given interval. From the evaluation table, the sum is determined according to the proportion of the roof with the given type of reflectivity and the facade with the given type of reflectivity. Rating table</p> <p>Index HBW roofs greater than or equal to 35: Less than 25 %: 0 points 25 to 75 %: 1 point Over 75 %: 2 points</p> <p>Index HBW facade greater than or equal to 35: Less than 25 %: 0 points 25 to 75 %: 1 point Over 75 %: 2 points</p> <p>Overall rating: The sum of the point scores of the roof and the facade.</p>
Data source	Owner/administrator data
Tracking frequency	One time, at change
Urban influence	<p>The city can directly invest in the surface treatment of roofs and facades of buildings owned by it, or support these measures on the buildings of other owners financially or otherwise.</p>
Presentation method	<p>The results will be presented in a uniform KLIMASKEN framework on a five-point scale according to the sum of points from the evaluation table: 5 (E) 4 (D) 3 (C) 2 (B) 1 (A) 0 1 2 3 4</p>
Responsibility	Owner, building manager