

A photograph of a steep, rocky mountain slope. A series of interconnected metal mesh fences are installed along the slope, designed to catch falling rocks. The fences are made of a diamond-shaped mesh and are supported by cables and anchors. The background shows a rugged, grey rock face with some sparse vegetation.

# PRACTFENCE

Displacement Suppression Type  
Rockfall Protection Fence





**Opus-T increases the illumination intensity inside tunnels and helps drivers to acquire visual information more easily. With excellent durability as well as fire and impact resistance, the panels make tunnels safer for drivers.**

Favorable driving environments is necessary for highway tunnels for safe drive. Installation of Opus-T on the tunnel wall improves illuminance inside tunnel and helps driver to acquire visual information more easily. Opus-T is highly durable, fire and impact resistant and makes tunnel to be safer roadway.

## Points of Opus-T

### Durability, Weather Resistance

Surface of the panel is made by glazed porcelain tiles with low water absorption rate and prevent freezing damage. The panel prevent deterioration, maintain reflection rate and grazing for an extended period of time.

### Fire Resistance

Certified noncombustible material according to MLIT in Japan. Tiles are not exfoliated from panels subject to flame heating by fire since tiles are unitized with panel base material. Panels do not emit poisonous gas.

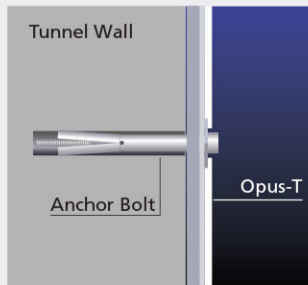
### Impact Resistance

Panels are designed against flying stone or pebble in addition to scrubbing load subject to mechanically rotating brushes. Panels are manufactured in factory having consistent quality and prolonged stable adhesive strength.

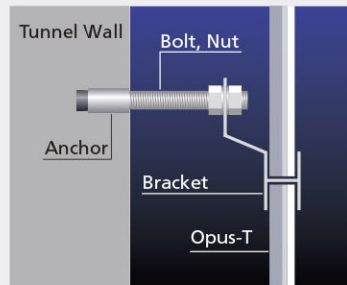
### Easy Installation

Panels installation is fast and easy. Two type of mounting system, direct anchor and bracket anchor are available.

#### Direct Anchor



#### Bracket Anchor

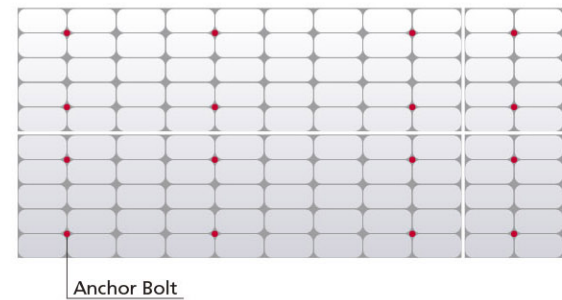


### Easy Maintenance

Flat and smooth tile surface having high surface hardness prevent dirt and grime due to static electricity. It is possible to minimize maintenance cost since reflection rate and glossiness of tile can be maintained easily by regular cleaning.



#### Anchor Bolt Positions

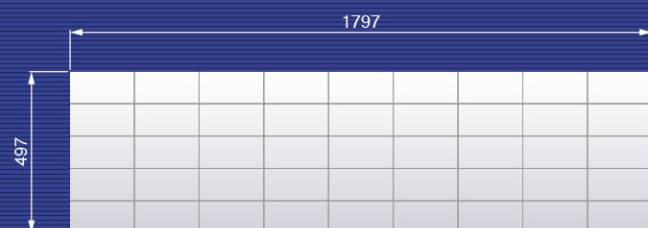


### Standard Panel Size/Mass

Panel Dimension **1800x500x16mm** Mass **29kg/m<sup>2</sup>**



Panel Dimension **1797x497x16mm** Mass **29kg/m<sup>2</sup>**



# Bracket Anchor Installation

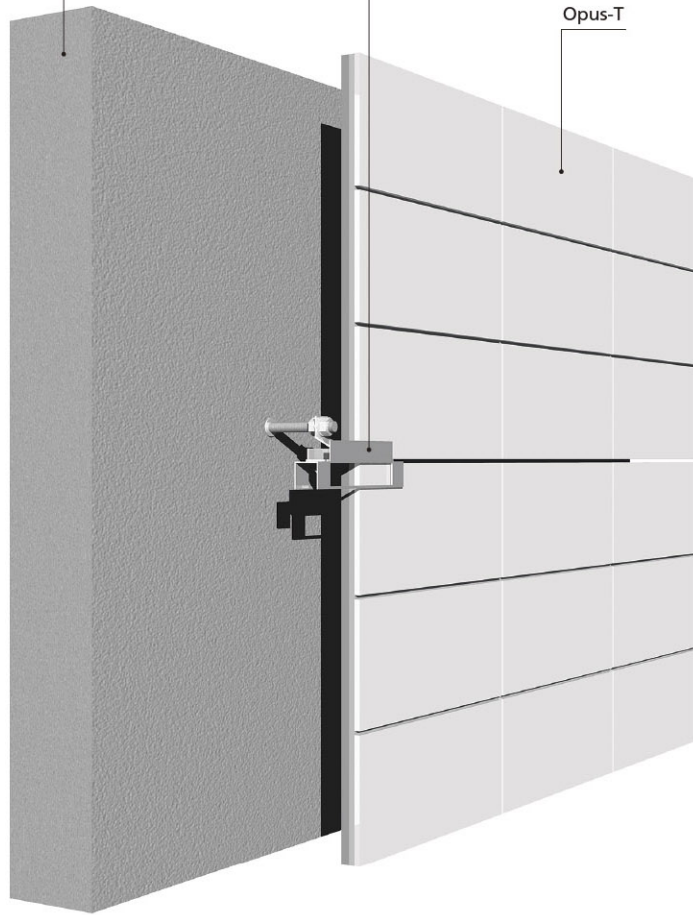
Anchor Bolt



Tunnel Wall

Bracket

Opus-T

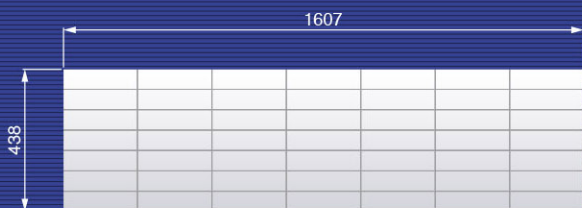


Bracket Positions

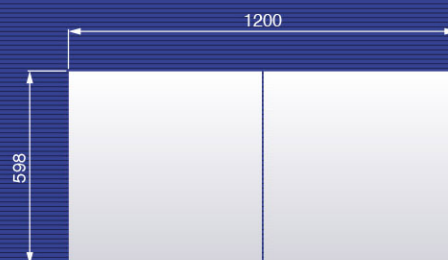


Bracket

Panel Dimension **1607x438x16mm** Mass **29kg/m<sup>2</sup>**



Panel Dimension **1200x598x19mm** Mass **33kg/m<sup>2</sup>**



## Characteristics of tile and panel

	Characteristics	Opus-T Specification	ISO / JIS	
Tile	Material	Exterior glazed porcelain tiles	-	
	Color	White	-	
	Initial reflection rate (%)	≥65	JIS Z 8722	
Panel	Fire resistance	Minister approved noncombustible material NM-3630	-	
	Impact resistance	Pass the inspection	JIS A 1408	
	Bending fracture load (N)	≥450	JIS A 1408	
	Deflection (mm)	≥10	JIS A 1408	
	Water absorption rate (%)	≤22	ISO 10904 / JIS A 5430	
	Moisture content (%)	≤10	ISO 10904 / JIS A 5430	
	Asbestos contamination rate (%)	Non-asbestos material	-	
	Adhesive strength	Hot water (N/mm <sup>2</sup> )	≥0.4	JIS A 5548
		Thermal degradation (N/mm <sup>2</sup> )	≥0.4	JIS A 5548
		Cold cure (N/mm <sup>2</sup> )	≥0.4	JIS A 5548
Under alkaline water (N/mm <sup>2</sup> )		≥0.4	JIS A 5548	
Freezing and thawing (N/mm <sup>2</sup> )		≥0.4	JIS A 1435	

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