

## Equipment set for additive and subtractive colour mixing U21883

### Instruction manual

11/05 ALF



- 1 Base plate
- 2 Colour filter
- 3 Holder
- 4 Mirror
- 5 Lens

### 1. Description

The equipment set is used for demonstrating additive and subtractive colour mixing on an overhead projector.

It consists of a base plate with three mirror/lens holders. The base plate is mounted onto the projection surface of the overhead projector. Depending on the projection distance, three large circles (30-80 cm in diameter) are projected onto a screen or wall.

By rotating the holders and mirrors, the colour circles may be projected either distinctly or partially overlapping one another.

### 2. Scope of delivery

Projection disc with 3 mirror/lens holders  
6 Colour filters: red, green, blue, magenta, yellow and cyan

### 3. Technical data

Dimensions:	130 mm x 190 mm x 250 mm
Weight:	0.570 kg
Colour filter:	120 mm x 50 mm

### 4. Theory

Additive colour mixing is also called chromatic colour mixing. Every colour comprises one part of the visible spectrum. By mixing the colours, spectral bands are added. As a result, the mixed colour is always lighter than the respective original colours. All these colours sum up to form white.

Subtractive colour mixing is also known as pigment mixing. Individual wavelength ranges of the visible spectrum, i.e. colours, are filtered from the entire spectrum of visible light. In other words, they are subtracted. Every colour added absorbs a further part of the visible spectrum. The mixed colours are thus always darker than the original colours. All these colours sum up to form black.

### 5. Operation

Preferably conduct the experiments in a darkened room.

- Place the base plate upon an overhead projector.

### 5.1 Additive colour mixing

- Insert the red, green and blue colour filters into the holders.
- Create a sharp image of the boundaries of the colour filters.
- Turn the holders in such a way that the images overlap.
- If an image depiction of only two colours is desired, cover the middle aperture, e.g. with a piece of cardboard.

Filter colours			Mixed colours
Red	Blue		Magenta
	Blue	Green	Cyan
Red		Green	Yellow
Red	Blue	Green	White

### 5.2 Subtractive colour mixing

- Place the magenta, yellow and cyan colour filters one on top of the other onto the projection surface of the overhead projector.

Filter colours			Mixed colours
Magenta	Yellow		Red
	Yellow	Cyan	Green
Magenta		Cyan	Blue
Magenta	Yellow	Cyan	Black