Spec sheet

ARGO-CHECK Intensity slide for fluorescence imaging systems

04/2018

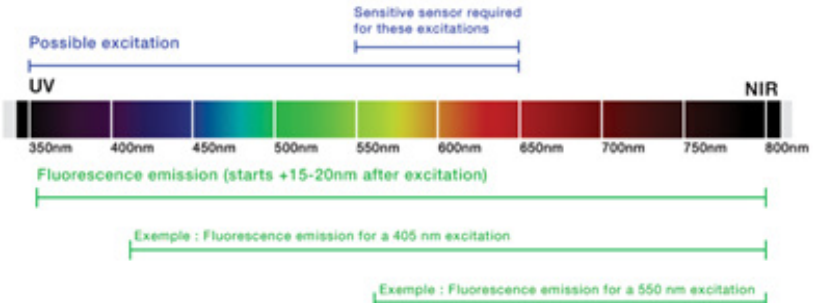
Introduction

Argolight multidimensional slides are specifically designed for assessing and following the performances of fluorescence based imaging systems.

Argo-CHECK Intensity slides are specifically designed for high-magnification systems, typically for magnification from 20 up to 100x. The slides consist in a special glass piece (ArgoGlass) set on a metal carrier. Different fluorescent patterns are embedded inside the glass. They also exhibit a contrast in bright and dark fields, DIC (Differential Interference Contrast) and phase contrast. The patterns are accurately positioned and stable to light illumination. The analysis of patterns images can be simplified using Argolight software solutions.

Fluorescence properties

Patterns are excitable from 300 nm to 650 nm. The emission is a broad continuum and the efficiency decreases as the excitation wavelength shifts towards the red.



Fluorescence stability

Under normal use (irradiances, either peak or average, no higher than 50 GW/cm^2), the fluorescence spectrum for a given illumination setting is identical in shape and intensity to any similar part of the patterns.

Under specific illumination configurations, the intensity of the patterns may decrease. However, this decrease is transient. The fluorescence intensity recovers to its initial value after some time. The recovery time depends on the irradiation conditions (power density, wavelength, pixel size, exposure time).

This behaviour is reproducible. For a given intensity and exposure time, the rate of decrease and recovery time will always be the same.

Read the full study at www.argolight.com.

ArgoGlass® Description

ArgoGlass® is a special glass produced at the Argolight facility to insure its homogeneity and purity. Its refractive index is similar to the one of microscope cover glasses.

Slide compatibility

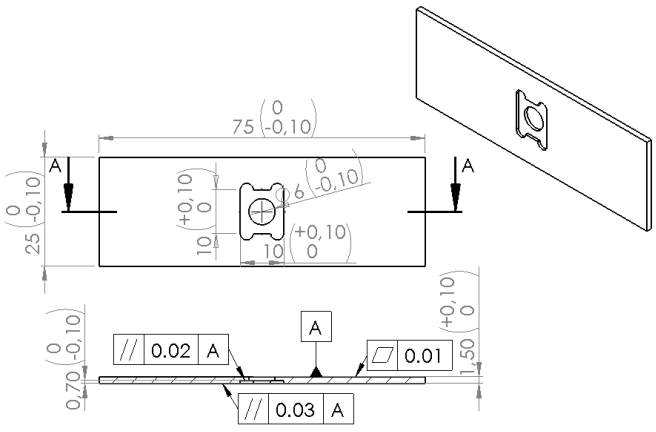
Imaging compatibility

Compatible	Not compatible but not damaging	Not compatible and damaging
Widefield Microscopy Confocal Microscopy Structured Illumination Microscopy FLIM Spinning Disk Microscopy	PALM STORM FRAP FRET Any imaging technology using depletion or multiple dyes.	STED Multiphoton Microscopy Any imaging technology using ultrashort pulsed laser

Objective compatibility

The slides are compatible with dry and oil immersion objectives. The slides are compatible with water immersion, but continuous exposure longer than five minutes should be avoided.

Schematics of the slide



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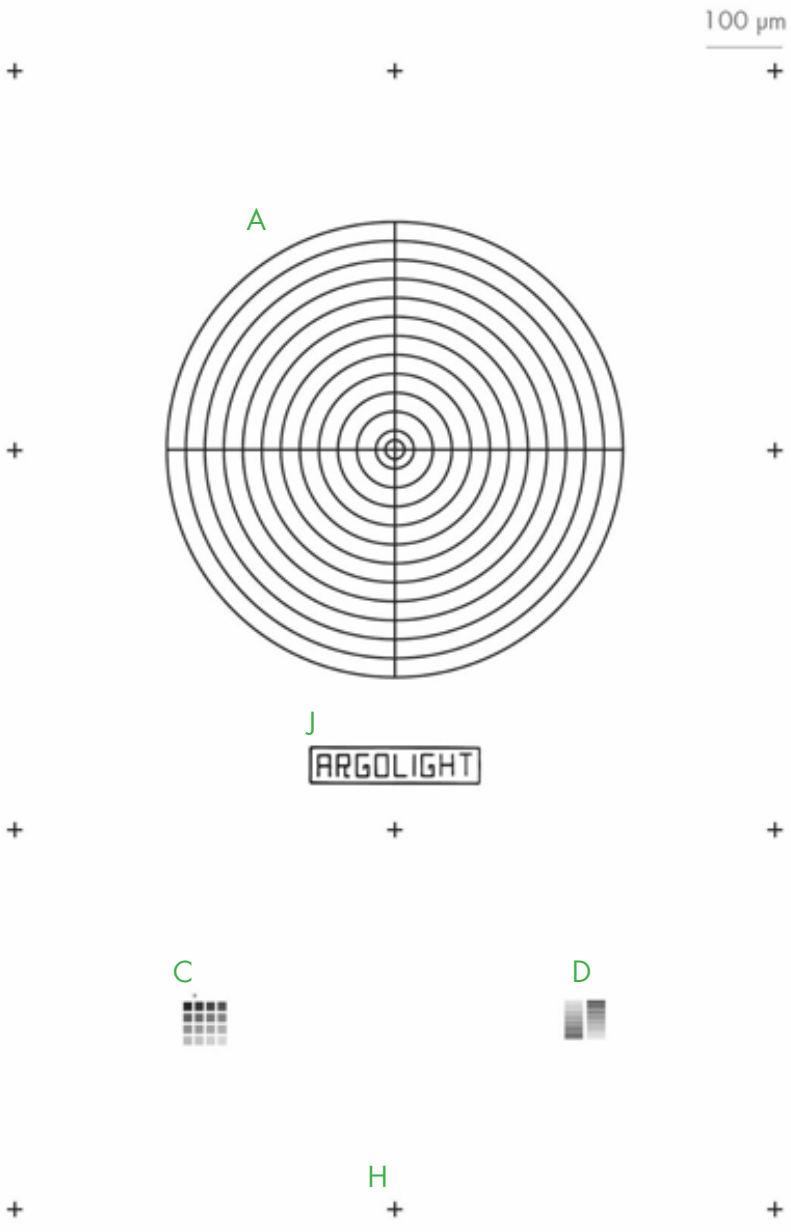
Patterns inside the slide

Patterns are positioned (170 ± 5) µm below the top glass surface, on a horizontal plane which flatness is within ± 5 mrad.

This emulates the presence of a microscope coverglass, having a thickness of (170 ± 5) µm and a refractive index of (1.5255 ± 0.0015) at 546.1 nm.

The maximum relative positioning error is ± 110 nm in XY and ± 110 nm in Z within each individual pattern. The thickness (in the Z direction) of these patterns is about (600 ± 200) nm FWHM (Full Width at Half Maximum). Patterns description can be found below.

Patterns overview



Patterns description

The slide contains 5 types of patterns.

Pattern A - Target. Concentric circles with increasing radii from 25 µm to 300 µm with a step of 25 µm, plus an extra circle with a radius of 12.5 µm, featuring a target.

Pattern C - 4 x 4 Intensity. Sixteen 8.5 µm-wide squares having different fluorescence intensity levels following a linear evolution, organized in a 4 × 4 matrix.

Pattern D - 2x16 Intensity. Twice sixteen 22.5 µm × 1.5 µm rectangles having different fluorescence intensity levels following a linear evolution, organized in a 2×16 matrix.

Pattern H - Repositioning crosses. The repositioning crosses are 20 µm long and are positioned 500 µm from one to another in the X direction, the Y direction, or both.

Pattern J - Logo. Letters forming the name "Argolight", and surrounded by a 220 µm × 50 µm frame.