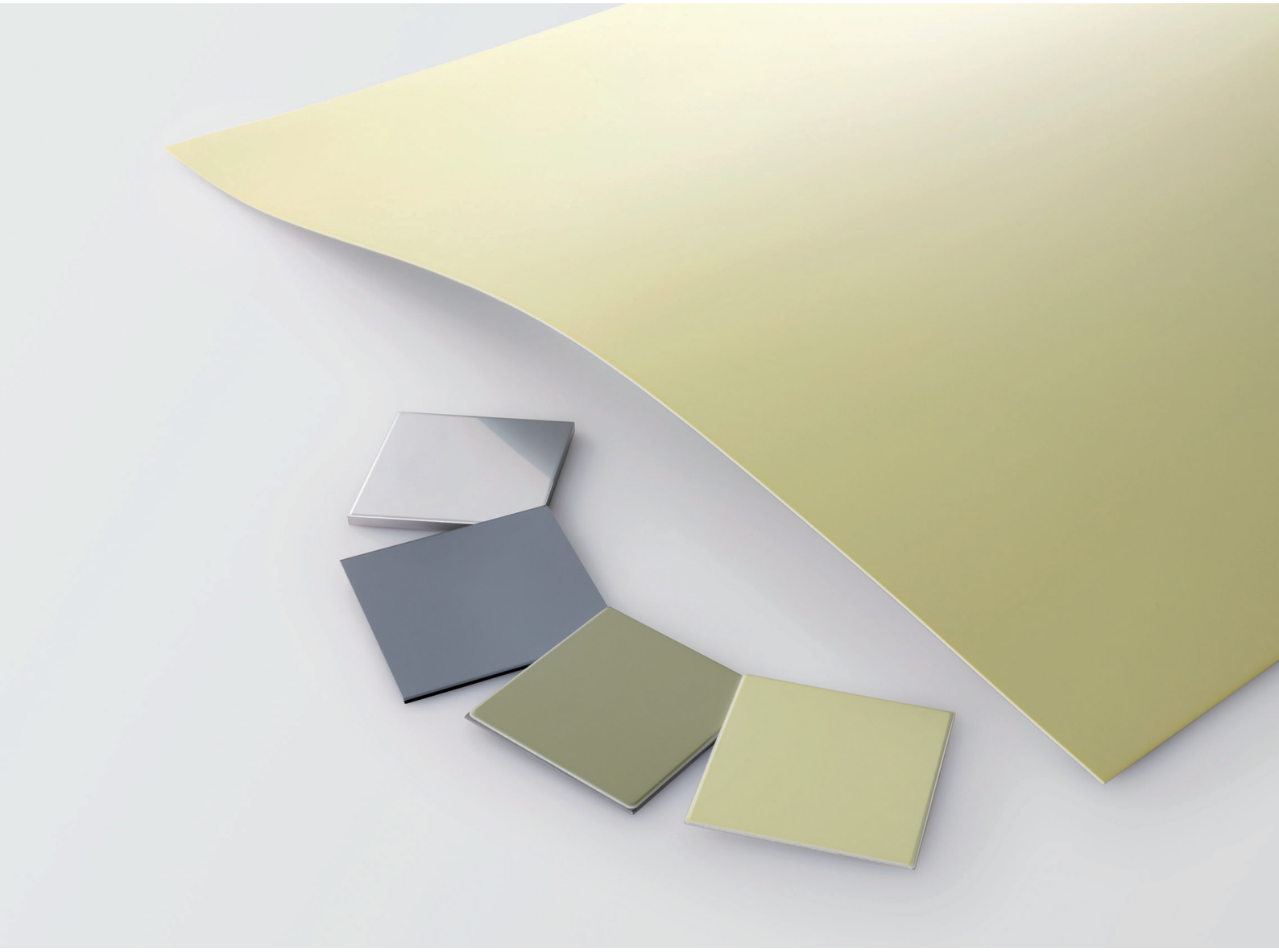
2025.12

HAMAMATSU
PHOTON IS OUR BUSINESS

X-ray scintillator

FOS® / ACS® / GPXS® / ALS® / FSS®

FOS : Fiber Optic Plate with CsI Scintillator
ACS : Amorphous-Carbon Plate with CsI Scintillator
GPXS : Great Performance X-ray CsI Scintillator
ALS : Aluminum Plate with CsI Scintillator
FSS : Flexible Sheet with CsI Scintillator

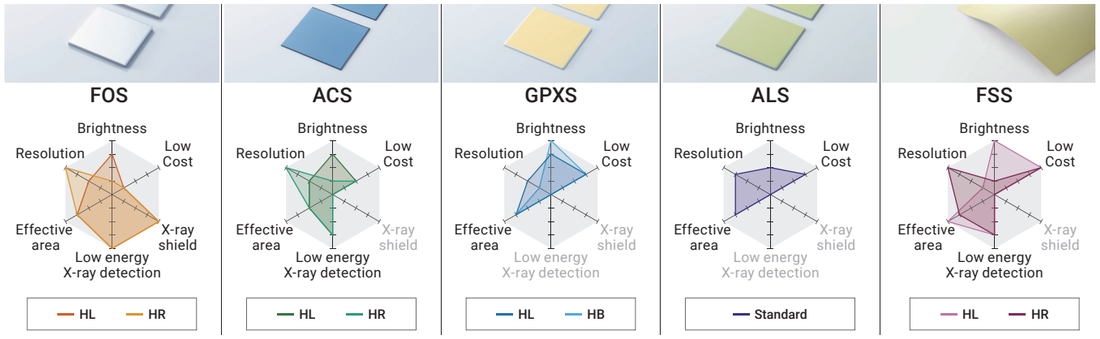


Overview

Products

We offer five main types of scintillators, which are further divided into several types based on performance.
HL is for high light output, and HR is for high resolution.

Characteristics and features



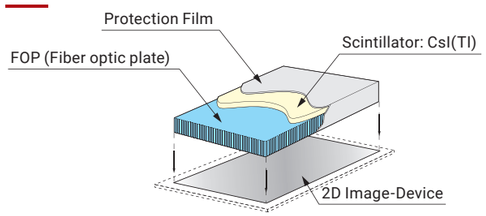
Selection guide

Items			FOS	ACS	GPXS	ALS	FSS	Unit
Plate type			Fiber optic plate	Amorphos-Carbon Plate	Alminum Plate		Organic film	—
Scintillator type			CsI Scintillator					—
Availability in dimension	Scintillator effective area	Min.	10 x 10	14 x 14			10 x 10	mm
		Max.	300 x 300*1	450 x 450			570 x 440	
	Substrate thickness		1.0 to 3.0	0.5 / 1.0 / 2.0	0.3 / 0.5	0.3 / 0.5 / 1.0	0.32 / 0.47	mm
	Scintillator thickness	Max.	2500				800	μm

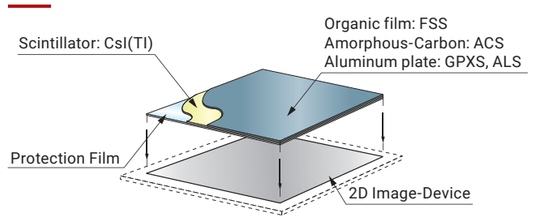
*1:CsI coating available on supplied FOP up to 440 mm × 440 mm.

Structure

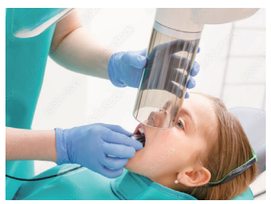
FOS



ACS, GPXS, ALS, FSS



Application examples


● Dental intra oral


● Dental CT


● Mammography


● Chest examination

Specifications

Line-up

The specifications listed in the table below are standard specifications. We can offer various size of effective area and scintillator thicknesses not listed in the table. Please feel free to contact us for more information.

FOS

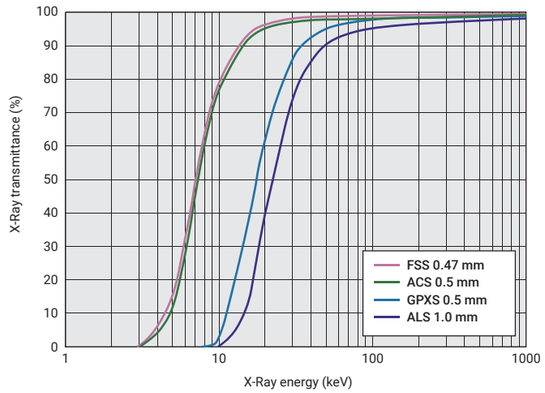
Items	FOS								Unit
	J6671		J6675		J6677		J6679		
Suffix	No suffix	-01	No suffix	-01	No suffix	-01	No suffix	-01	—
Product type *1	HL	HR	HL	HR	HL	HR	HL	HR	—
Outer dimension	30.5 x 21		18 x 18		50 x 50		Φ26.5		mm
Effective area	27 x 17		14 x 14		46 x 46		Φ23.5		mm
Substrate thickness	3								mm
CsI thickness	150								μm
Relative light output *2	70	40	70	40	70	40	70	40	% Typ.
CTF *3*4	22	38	22	38	22	38	22	38	% Typ.

ACS, GPXS, ALS, FSS

Items	ACS		GPXS		ALS	FSS		Unit
	J8734		J13112	J13113	J8978	J17765		
Suffix	No suffix	-01	No suffix	No suffix	No suffix	No suffix	-01	—
Product type *1	HL	HR	HL	HB	—	HL	HR	—
Outer dimension	50 x 50							mm
Effective area	46 x 46		44 x 44	45 x 45	44 x 44	47 x 47		mm
Substrate thickness	0.5				1	0.47	0.32	mm
CsI thickness	150		600	400	600	600		μm
Relative light output *2	125	50	270	320	190	390	140	% Typ.
CTF *3	12 *4	25 *4	33 *5		37 *5	30 *5	38 *5	% Typ.

*1: HL: high light output type, HR: high resolution type, HB: high brightness type
*2: Relative values, with 100 % being equal to the light output from conventional phosphor screen (Lanex-R), Light output was measured by camera with lens coupling under the following conditions: (X-ray tube voltage 60 kV p, aluminum filter 1mm thick)
*3: CTF (contrast transfer function) CsI(Tl): X-ray tube voltage 60 kV p, aluminum filter 1 mm thick
*4: at 10 lp/mm
*5: at 3 lp/mm

X-ray transmittance



● FSS: Organic film

FSS realizes unique characteristics by an organic film, a light-element material not found in conventional products.
This provides superior X-ray transmittance compared with GPXS and ALS, which employ metallic materials.
Its lightweight and outstanding flexibility enable easy assemble with image sensors, greatly enhancing design freedom.
Furthermore, FSS employs a unique deposition technology that makes most of the outer dimensions can use as the effective area, which means minimizing dead space.
As a result, it contributes to more compact, space-saving detector can be designed when combined with image sensors.

Related products

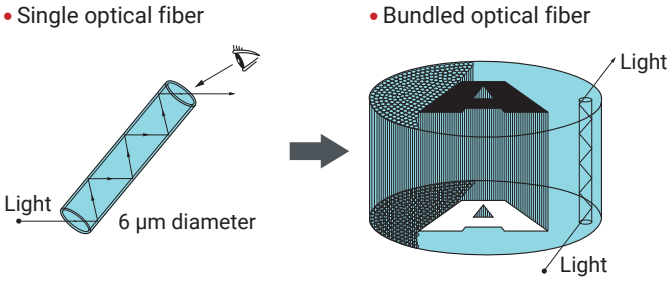
X-ray shield fiber optic plate (FOP)

The X-ray shield type FOP has a shielding capability about 3 times higher than a standard FOP when it's exposed to X-rays emitted from a 70 kV X-ray tube (comparison made using a 3 mm thick FOP). Almost all X-rays whitch are penetrated the scintillator and aren't converted into light are absorbed in the XRS-FOP. This eliminates X-ray damage of image sensors such as CCDs.

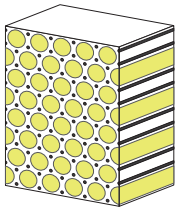
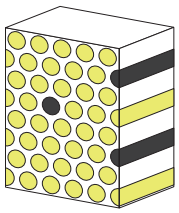
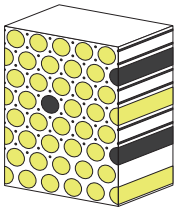
The FOP is an optical device consisting of millions of glass fibers each several micrometers in diameter, bundled parallel to one another. Since light is transmitted through each fiber, an image appears to float. The image can be transferred one end of the fiber to the other without any distortion.

Principle

Light is transmitted from one end to the other while repeating reflection through fibers.
Each optical fiber transfers light, so the image (letter "A") appears to be floating.



Structural differences

Items			ISA method		Deadsingle method		Deadsingle + ISA method	Unit
Structural image *1								—
Feature			High bright		Good bright and resolution		High resolution	—
Available in dimension	Effective area	Min.	10 x 10	100 x 100	10 x 10	100 x 100	150 x 150	mm
		Max.	100 x 100	150 x 150	100 x 100	150 x 150	300 x 300	mm
	Thickness	Min.	0.8	1.0	0.8	1.0	2.0	mm
Fiber diameter			6				8	µm
Numerical aperture			1					N.A

*1: The yellow grass channels are optical fiber and the black glass channels are Absorbent glass. Absorbent glass absorbs any whatever light that was not reflected.

HAMAMATSU PHOTONICS K.K.

Visit our website for product and contact information.
www.hamamatsu.com

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