X-RAY SCINTILLATOR

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

HAMAMATSU

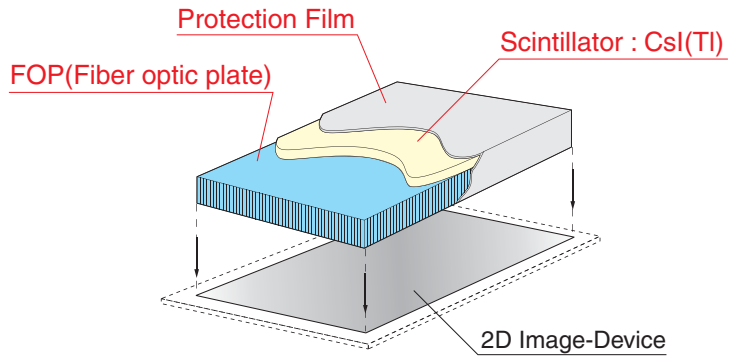
PHOTON IS OUR BUSINESS

X-RAY SCINTILLATOR FOS ACS GPXS ALS

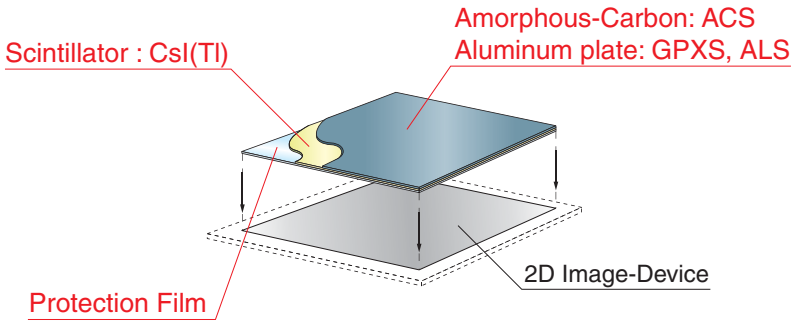
STRUCTURE

Scintillator: CsI(Tl)
Columnar structure

FOS



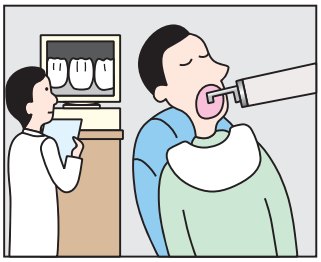
ACS / GPXS / ALS

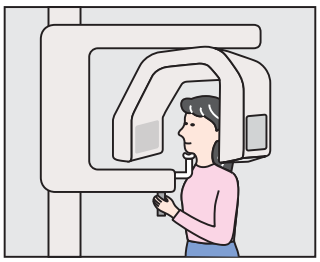


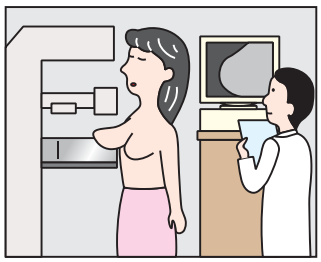
FEATURES

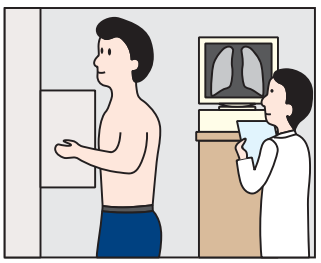
Large format	Maximum size: 468 mm (17") x 468 mm (17") for ACS, GPXS and ALS
High light output	3.2 times higher with GPXS-HB type (CsI 400 µm) than Lanex-R (powdery phosphor). [Typ.]
High resolution	20 Lp/mm at CTF 13 % FOS-HR type (CsI 150 µm). [Typ.]

APPLICATION EXAMPLE


Dental intra oral


Dental CT


Mammography


Chest examination

SELECTION GUIDE

Product name	Structure	Availability in dimension				Features	Applications
		Scintillator effective area (mm)		Substrate thickness (mm)	Scintillator thickness (μm)		
		Max.	Min.				
FOS	Fiber Optic Plate with CsI Scintillator	300 × 300 *	10 × 10	1 to 3	2500 Max.	X-ray shield, Low energy X-ray detection	Dental intra oral, Dental panoramic, Mammography
ACS	Amorphous-Carbon Plate with CsI Scintillator	450 × 450	14 × 14	0.5 to 2		High resolution, Large format	Dental intra oral, Mammography, Chest examination
GPXS	Aluminum Plate with CsI Scintillator	450 × 450	14 × 14	0.3 or 0.5		High light output, Large format	Chest examination, Dental CT
ALS	Aluminum Plate with CsI Scintillator	450 × 450	14 × 14	0.3 or 1		High light output, Large format	Dental-panoramic, Chest examination

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

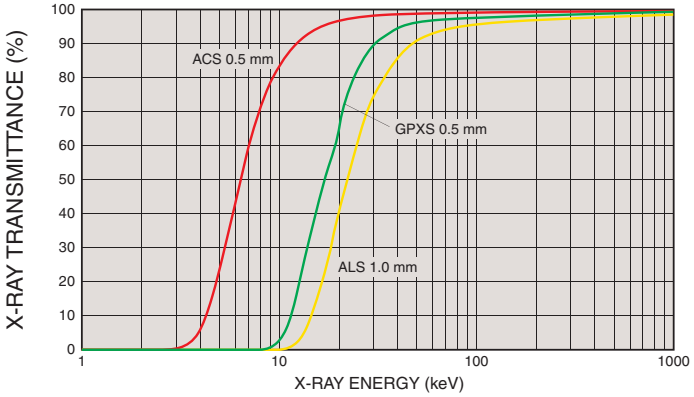
STANDARD PRODUCTS LINE-UP

* Available in various sizes and scintillator thickness.

	Type No.	Scintillator type	Outer dimension (mm)	Effective area (mm)	Substrate Thickness (mm)	CsI Thickness (μm)	Relative light output Ⓐ (% Typ.)	CTF Ⓑ (% Typ.)	Type Ⓒ
FOS	J6671	CsI (Tl)	30.5 × 21	27 × 17	3	150	70	22 Ⓓ	HL
	J6671-01					150	40	38 Ⓓ	HR
	J6673	CsI (Tl)	50 × 10	46 × 6	3	150	70	22 Ⓓ	HL
	J6673-01					150	40	38 Ⓓ	HR
	J6675	CsI (Tl)	18 × 18	14 × 14	3	150	70	22 Ⓓ	HL
	J6675-01					150	40	38 Ⓓ	HR
	J6677	CsI (Tl)	50 × 50	46 × 46	3	150	70	22 Ⓓ	HL
	J6677-01					150	40	38 Ⓓ	HR
	J6679	CsI (Tl)	φ26.5	φ23.5	3	150	70	22 Ⓓ	HL
	J6679-01					150	40	38 Ⓓ	HR
ACS	J8734	CsI (Tl)	50 × 50	46 × 46	0.5	150	125	12 Ⓓ	HL
	J8734-01					150	50	25 Ⓓ	HR
GPXS	J13112	CsI (Tl)	50 × 50	44 × 44	0.5	600	270	33 Ⓔ	
	J13113			45 × 45		400	320	33 Ⓔ	HB
	J10666-100	CsI (Tl)	468 × 468	450 × 450	0.5	600	270	33 Ⓔ	
	J10666-200					400	320	33 Ⓔ	HB
ALS	J8978	CsI (Tl)	50 × 50	44 × 44	1	600	190	37 Ⓔ	
	J9857	CsI (Tl)	468 × 468	450 × 450	1	600	190	37 Ⓔ	

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

X-RAY TRANSMITTANCE



* a-C: Amorphous-Carbon
Amorphous Carbon has good X-ray transmittance characteristics because it is a light element material.
In addition, it is a glass like material with no particle causing blemish defects.
It can be polished to a good of flatness for combination with a 2D image device.
Also, it is environmentally safe.

RELATED PRODUCT

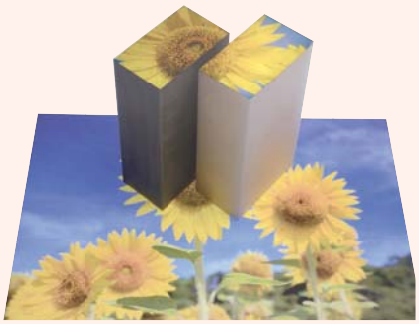
X-RAY SHIELD FIBER OPTIC PLATE(FOP)

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 which are penetrate 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.

Fiber Optic Plate: FOP

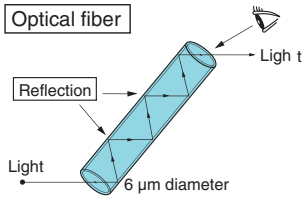
WHAT'S FOP?

The FOP is a optical device consisting of millions of glass fibers of 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 from one end of the fiber to the other without any distortion.

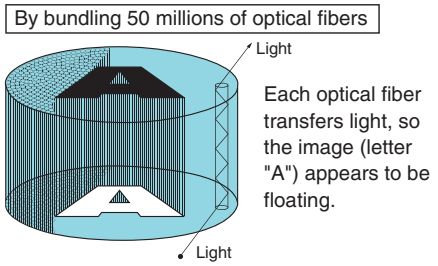


Why does the image appear to float?

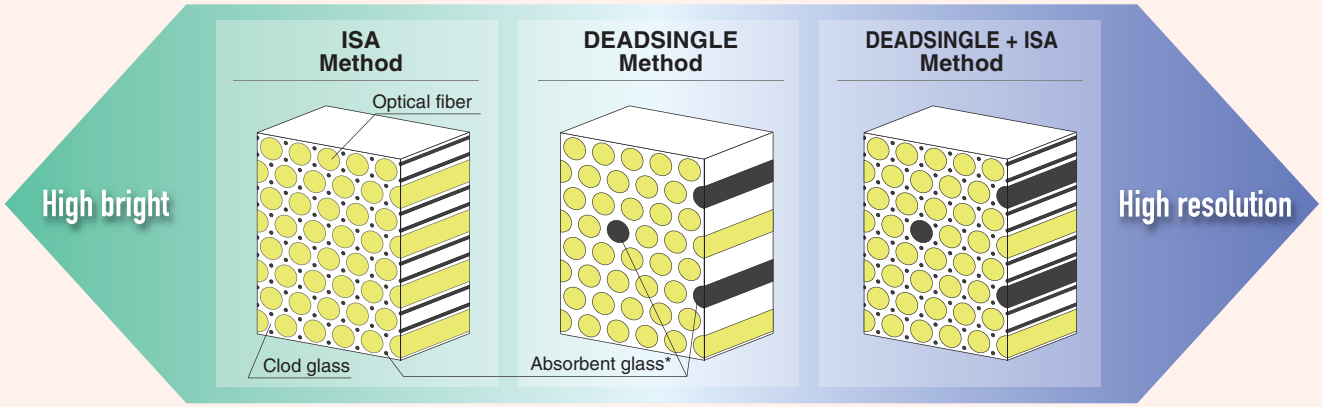
The reason is the "optical fiber structure".



Light is transmitted from one end to the other while repeating reflection.



Each optical fiber transfers light, so the image (letter "A") appears to be floating.



* This glass absorbs any whatever light that was not reflected.

Method	Avilable in dimension			Fiber diameter	Numerical aperture
	Effective area (mm)		Thickness (mm)		
	Max.	Min.	Min.	(µm)	(N.A)
ISA	100 × 100	10 × 10	0.8	6	1
	150 × 150	100 × 100	1.0		
DEAD SINGLE	100 × 100	10 × 10	0.8	6	
	150 × 150	100 × 100	1.0		
DEAD SINGLE + ISA	300 × 300	150 × 150	2.0	8	

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MAR. 2020 IP