

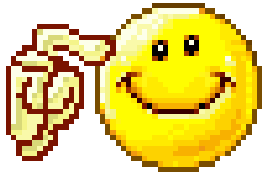
بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# *Dark Room 4*

## *Radiographic Films*



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*Sohag University*



# Historical View

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- 1889 William Rontgen discover X ray
- Glass was the main material of films till **W.W.II**
- Then **cellulose nitrate**
- Until become of current shape

# X ray Film Layers

- **7 Layers**

- **2 main components :**

**Base** "قاعدة" المادة الأساسية

**Emulsion** المادة الحساسة

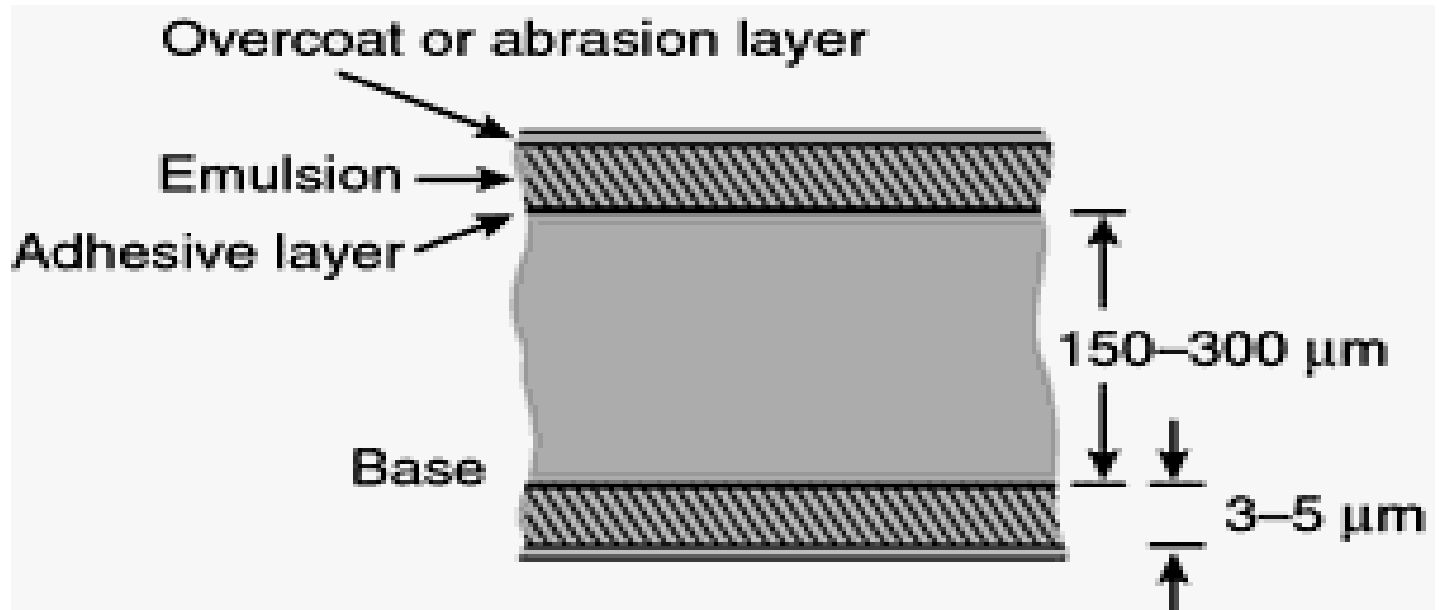
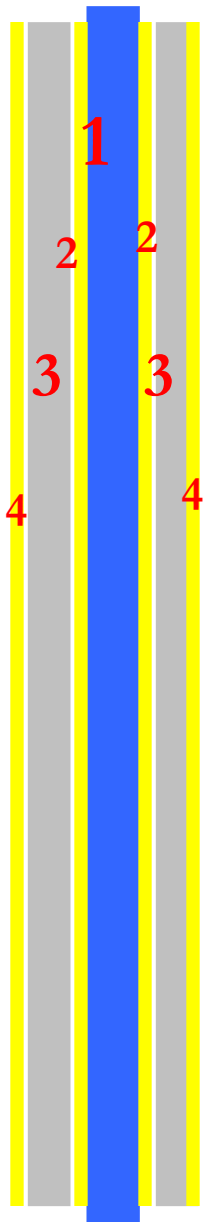
*2 other components :*

- *Adhesive material*
- *Super coating layer*

# Diagram of film component :

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# 1- Base

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- **Transparent**
- **Light blue** ← مريح للعين
- **Flexible**
- **Fixed Dimensions**
- **non inflammable**
- **Water proof** “

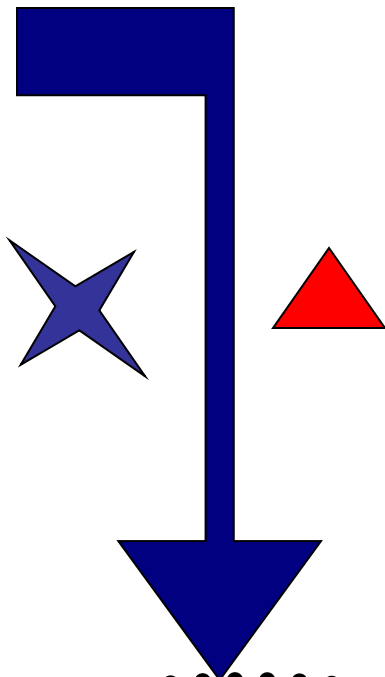
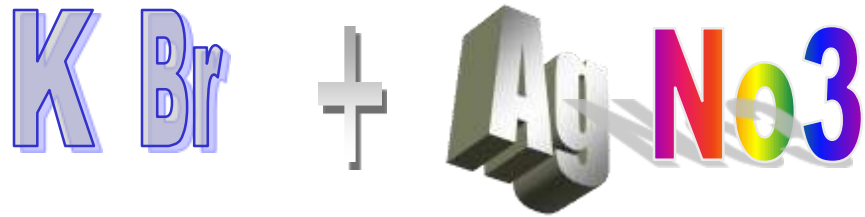


## 2- Sensitive emulsion

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Silver Iodide - Silver bromide

- Sensitive material , when exposed to **light** & **Xray** →  
Form image .
- On both sides of Film
- Fixed by **adherent** layer
- Protected by **protective** layer



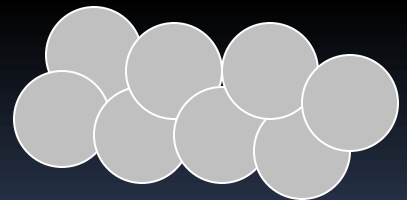
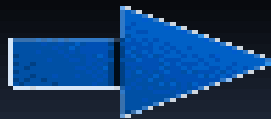
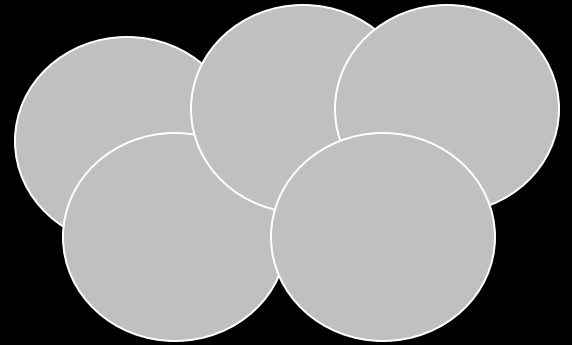
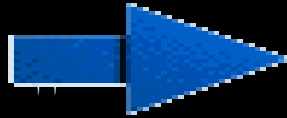
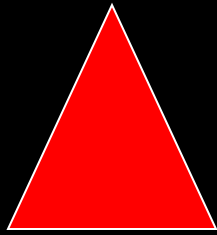
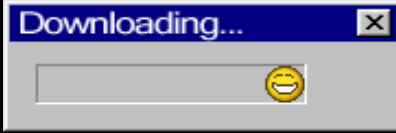
Exclusive



# Sensitive material Grains

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- ▶ Fine grains حبيبات رقيقة
- ▶ Larger grains حبيبات سميقة
- ▶ According to temperature & mix velocity
  - Rapid mixing & low temp. → Fine grains
  - Slow mixing & high temp. → Larger grains.



- ***Sensitive material is composed of***

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- ▶ AgBr 90 : 99 %

- ▶ AgI. 10 : 1 %

**→ WHY ?**

Mix is more sensitive .



## *Difference between Fine & coarse Grains?*

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- ▶ More mix → **More film sensitivity.**
- ▶ Use of one type → less sensitivity .

# *How to deal with X ray*

- **Film boxes**

- ▶ inside **plastic bags**
- water proof
- Light proof





# Film Storing :

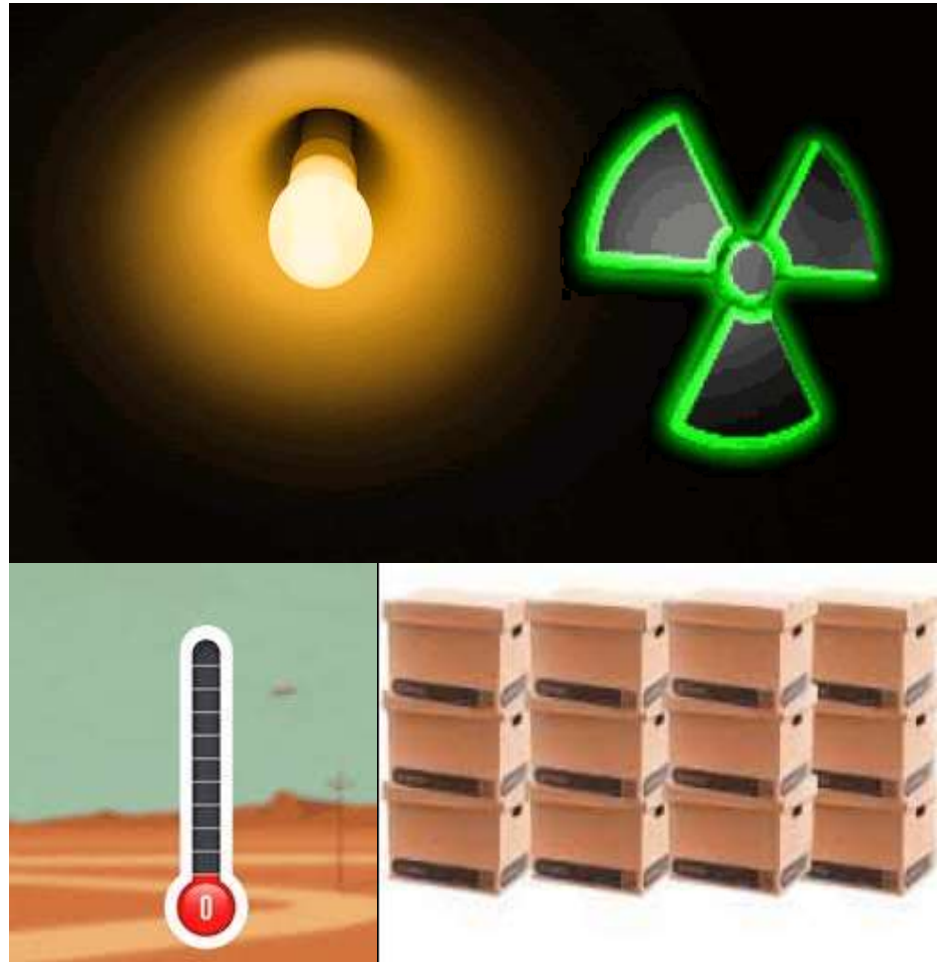
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- ▶ Sensitivity lost by time
- ▶ Good storing = **longer life**
- ▶ Avoid harmful factors, which are

# Avoid exposing stored films to :

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- ▶ Light
- ▶ Radiation
- ▶ Temperature
- ▶ Weight



# ***Ideal Storage Factors :***

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- ✓ Temp < 20 c
- ✓ Humidity 50 : 60 , cool & dry
- ✓ Away from any source of radiation
- ✓ Boxes in a vertical manner
- ✓ Clearly visualized expiration date

# Size of Films

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## → In cm :

13 x 18 x 24 x 30 x 40 cm

35 X 35 X 35 X 43

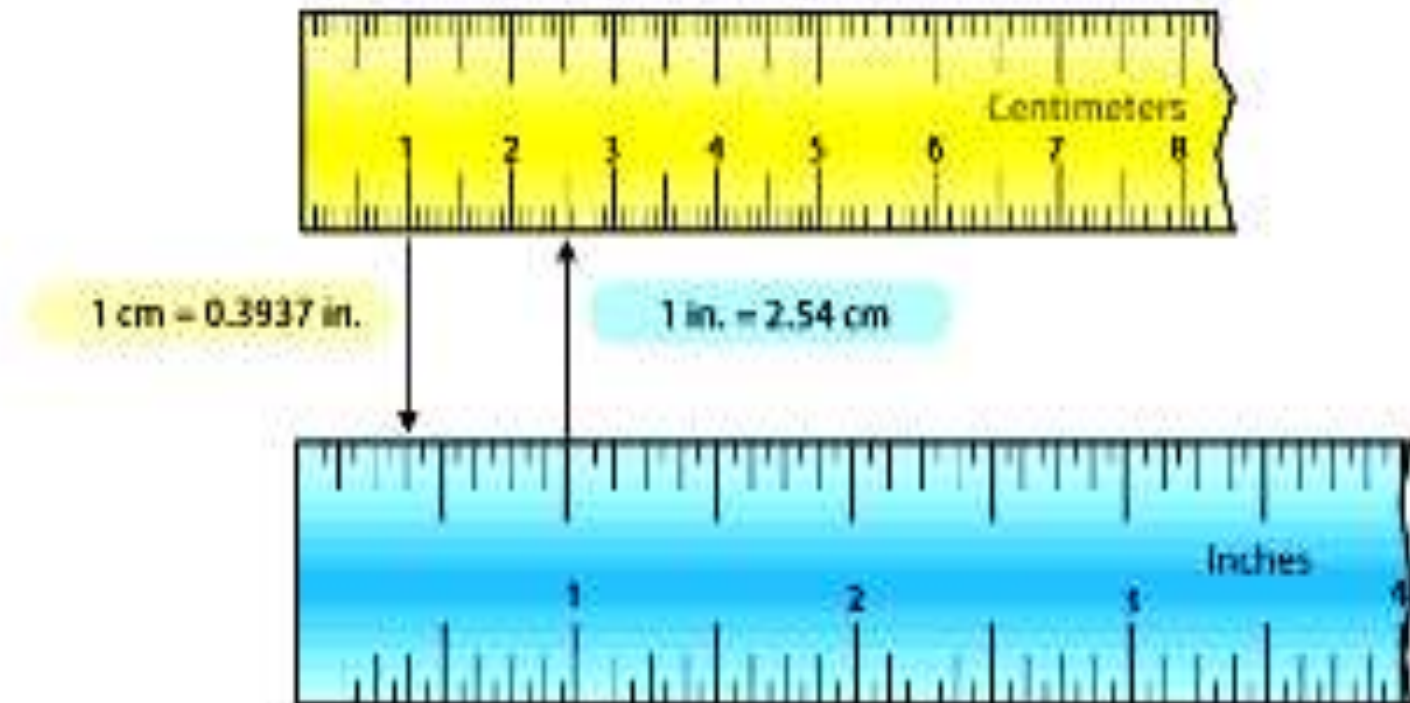
## → In inches :

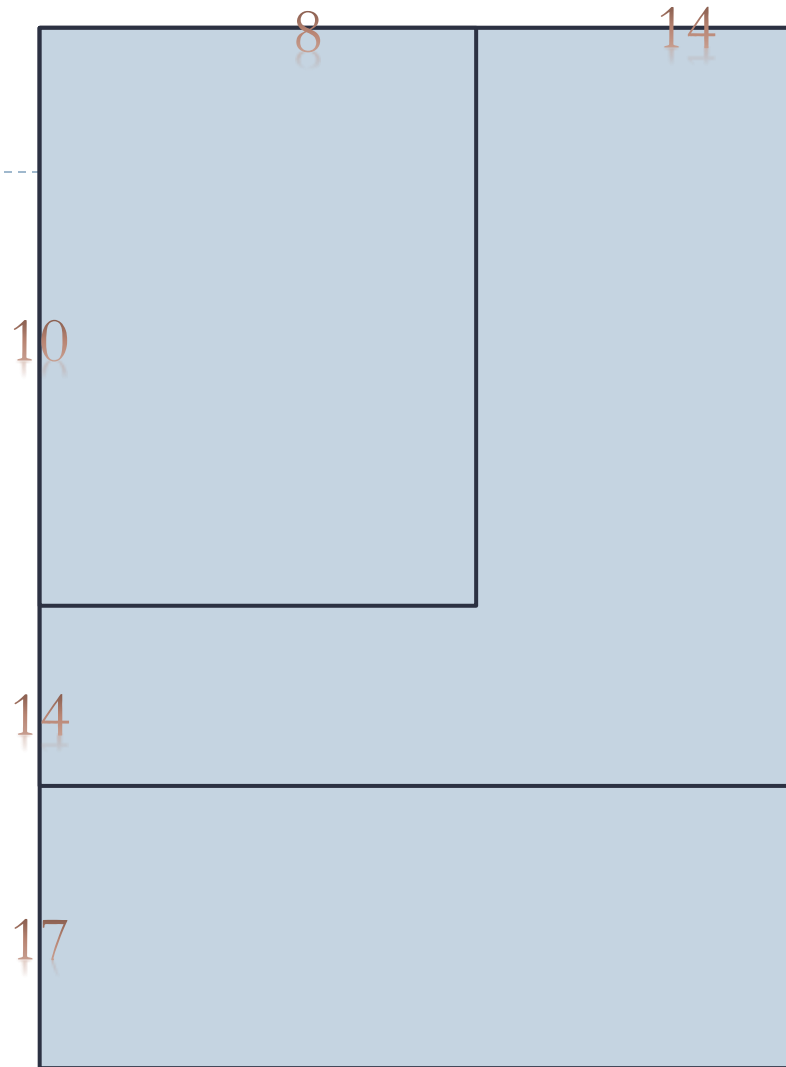
8 x 10 x 12 x 15

14 X 14 x 17



## RELATION BETWEEN INCH AND CENTIMETERS





**FOR EASY REMEMBER**

**ADD SIZES TO ONE FILM**



# ***Data must be on Film***

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1. Name of Dr of Hospital
2. Patient name & number
3. Examination date
4. Site & type of exam
5. Timing of sequence scan eg, IVU

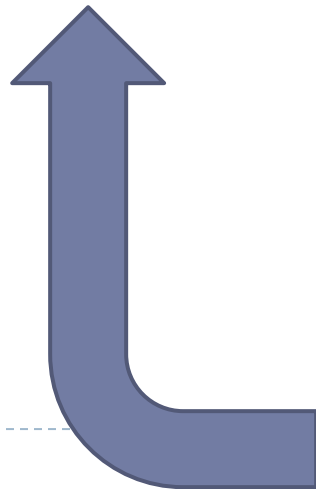
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**Sohag University Hospital**

Mr. / Mrs. (Patient Name) -973

**Date : 6 Oct 2021**

**IVU – 10 min**



# Types of Films

## According to Sensitivity :

- Blue Sensitive Films
- Green Sensitive Films
- Panchromatic Films

## According to Screens Used :

- Non Screen Films  
*(Direct Exposure ..as dental)*
- Screen Films :
  - Single Screen
  - Double Screen

## According to Coating :

- Single Emulsion
- Double Emulsion

# ***X ray Films Types***

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- ▶ **Screen Films**
- ▶ **Non screen Films**



# Screen Films

## ١- افلام تستخدم مع اللوحات المقوية

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- Sensitive for light & X ray
- **2 Types**
  - Manual & Automatic Processing
  - Rapid Automatic



# ***Non screen Films*** أفلام تستخدم بدون اللوحات المقوية

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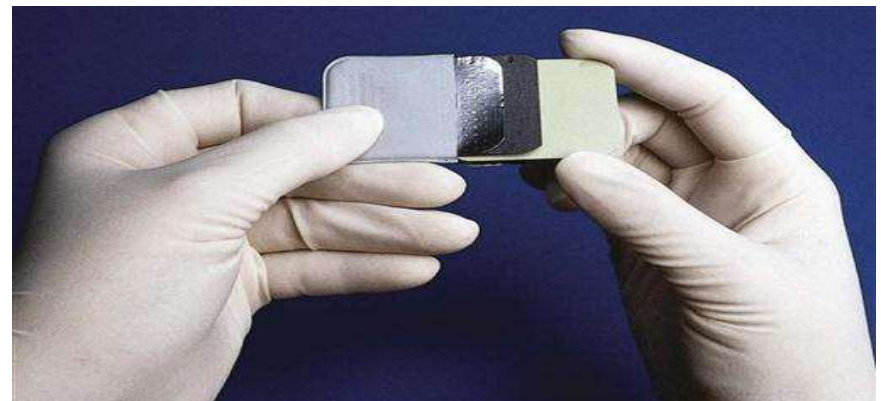
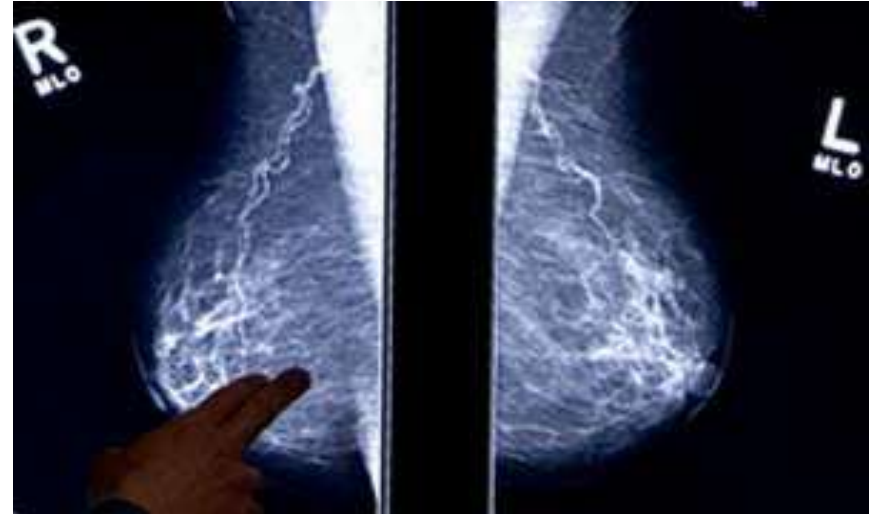
- Sensitive for **X-ray only**
- Manual & Automatic Processing
- **More Thick** sensitive layer
- Need **more fixation** time
- More detailed image → used in **mammography**  
& bone imaging

# *Special Types of X ray films*

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Practically The most important

- ✓ **Mammography Films**
- ✓ **Dental radiography Films**

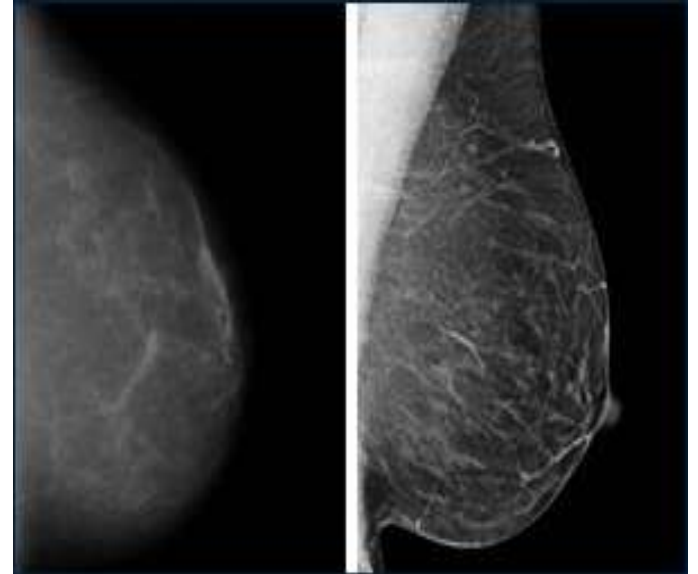


# Mammography Films

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- ▶ For breast imaging
- ▶ One side covered by sensitive layer.
- ▶ Very fine grains → More detailed image
- ▶ With out intens. Screens
- ▶ 18x24 & 24x30 cm
- ▶ Manual or automatic processing





# Dental Films افلام الاسنان

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- ▶ Very small sized
- ▶ Used with its cover



# New Types of Dental Films

- ▶ Processing Fluids are located with in a separate bucket with the film.
- ▶ After exposure , **squeezed** → mix with film → image processing



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▶ We discussed Films used in Dark room

..... But many Other types of films are present , as :

➤ Laser Prints Films



# Further Reading & Sources :

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- ▶ <https://radiopaedia.org/articles/x-ray-film>
- ▶ <https://www.nde-ed.org/NDETechniques/Radiography/EquipmentMaterials/isotopesources.xhtml>
- ▶

# LECTURE VIDEO

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<https://www.youtube.com/watch?v=GZANdVij1dw&list=PLqU6GNJJ8xwmsD8MSYWdmUQwdpT8D4Ndq&index=2>

(ARABIC)



# Next Session

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- **Intensifying screens**



***GOOD LUCK***

*Dr. Ahmad Mokhtar Abodahab*  
*Oct 2025*

