On the safe side

with DESAG RD 50® and DESAG RD 30 Radiation Shielding Glass

SCHOTT Special Flat Glass
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glass made of ideas

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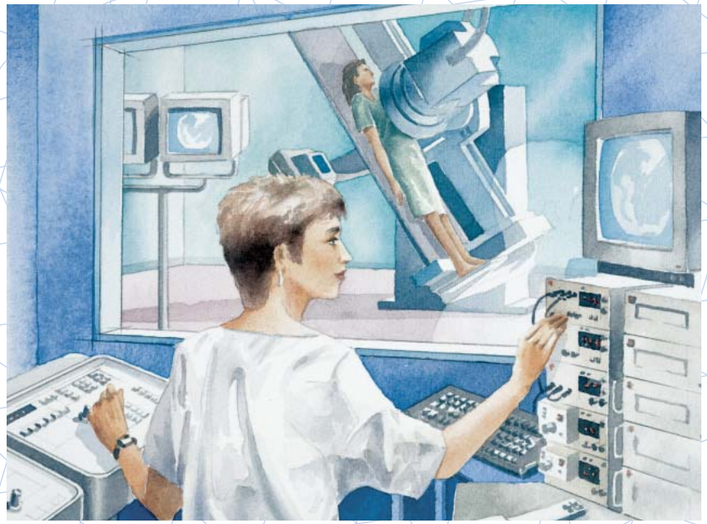
There are rays passing through everything …

They are produced in radioactive decay processes and when atomic nuclei strike the upper atmosphere. They may escape from earth or spring water or be produced in high voltage vacuum tubes. They can be highly dangerous but they can also save lives.

Their names are alpha or beta. Or gamma and röntgen – the best known types of radiation. They are used in technical and medical research. They are suitable for medical diagnostics and for medical long-term therapy. They can accelerate healing and permit making a more accurate and rapid diagnosis.



A large surface control window made from RD 50 radiation shielding glass enables the technician to monitor the X-ray examination.

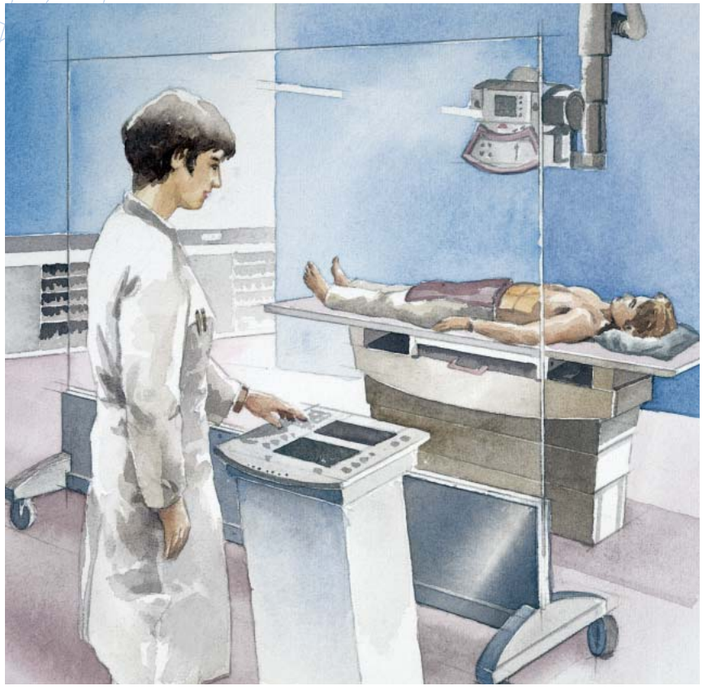
But if rays penetrate the human tissue, there is also the risk of damage to the tissue and organs. There are different risks of danger as a function of the type of radiation and the dose. People should be protected from exposure to radiation. This is why SCHOTT Spezialglas developed RD 50 and RD 30 radiation shielding glass.

… Radiation Shielding Glass prevents the rays from passing through.

The special composition of the radiation shielding glass from SCHOTT Spezialglas provides an optimum protection against X-rays and gamma rays in medical, technical and research work. The lead oxide content of RD 50 and RD 30 is more than 65 respectively 22 per cent by weight.

Therefore, a relatively thin sheet of glass can achieve the density necessary to absorb X-radiation. Radiation shielding glass RD 50 meets the requirements of IEC 61331-2 and DIN 6841.

Radiation shielding glass RD 30 has a neutral colour and meets the requirements of IEC 60601-2-45.



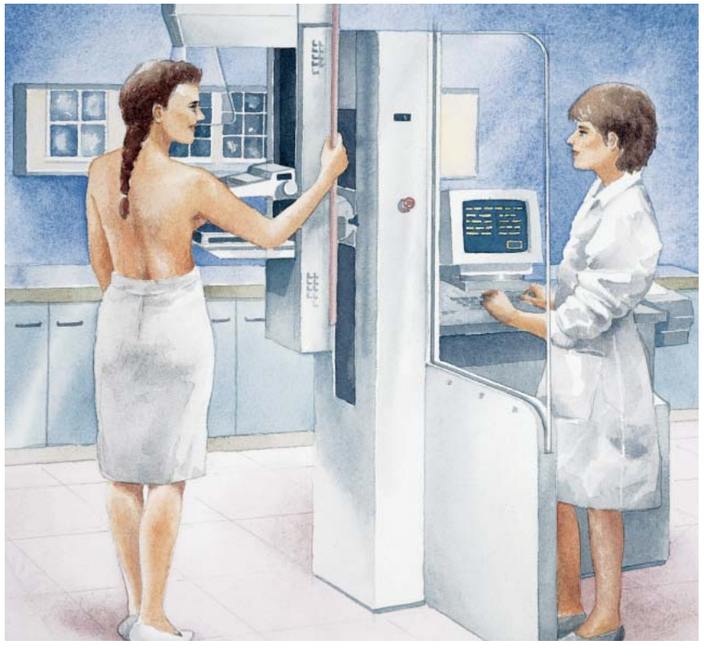
For quick and easy use:
a mobile protection wall of RD 50.

Additional advantages RD 50/RD 30:
Due to their low thickness both glass types appear attractive when framed. Glass is also more resistant to scratching against plastic/acrylic.

To use rays where they are useful

SCHOTT´s radiation shielding glasses are used where transparent protection against ionizing radiation is necessary. Our radiation shielding glass RD 50 is used in X-ray rooms, operating theatres, radiation therapy rooms, dental clinics, laboratories, and for materials testing. Applications include observation windows and intercommunication windows, door glazings, panoramic glazings, mobile protection walls, protective panels for check-up systems. RD 30 is used in mammography work stations. (Radiation shielding glass is also used in the nuclear field to a limited extent. Please contact us for details).

The glove-box allows the technician to work with radiant materials. Radiation shielding glass RD 50 provides protection.



In a mammography work station, a protection shield made from RD 30 enables the technician to be near to the patient

Radiation Shielding Glass tailored to your specific requirements

RD 50 and RD 30 can be supplied in virtually all geometric shape within the maximum sizes available. In addition, we offer the following services:

- Edge working, mitre joint
- Drilled holes, cutouts
- Lamination with epoxy resin or PVB interlayer
- Silk screen printing
- Assembly of insulated units for outer glazings
- Thermal toughening (tempered safety glass, RD 30 only)

Extra services:

We can assist you in locating manufacturers of suitable cleansing agents, sealing agents, profiles, accessoires, and rolled lead. Please contact us.

Now let's take the measurements:

Available sizes and lead equivalents in mm Pb* for RD 30

Tube voltage in kV	*56*	*80*	*100*	*120*	*max. available stock size in mm/inch** (Length x width)*	*max. weight per m^2 in kg*
Glass thickness in mm/inch						
6.0 ± 0.25/0.236 ± 0.010	*≥ 0.5 mm Pb*	*≥ 0.5 mm Pb*	*≥ 0.5 mm Pb*	*≥ 0.5 mm Pb*	*2400 x 1700/94.49 x 66.93****	*20*

** The tolerances in sizes are ±25 mm/0.98 inch in length and +100/–200 mm (+3.93/–7.87 inch) in width.
*** Other sizes on request.

Available sizes and lead equivalents in mm Pb* for RD 50

Tube voltage in kV	*80*	*110*	*200*	*max. available cut size in mm/inch (Length x width)*	*max. weight per m^2 in kg*
Glass thickness in mm/inch					
5.0 – 6.5/0.197 – 0.256	*1.5 mm Pb*	*1.5 mm Pb*	*1.4 mm Pb*	*1700 x 1000/66.93 x 39.37*	*33*
7.0 – 8.5/0.276 – 0.335	*2.1 mm Pb*	*2.2 mm Pb*	*2.0 mm Pb*	*2100 x 1050/82.68 x 41.34*	*43*
8.5 – 10.0/0.335 – 0.394	*2.6 mm Pb*	*2.6 mm Pb*	*2.4 mm Pb*	*2100 x 1050/82.68 x 41.34*	*51*
10.0 – 11.5/0.394 – 0.453	*3.1 mm Pb*	*3.1 mm Pb*	*2.9 mm Pb*	*2000 x 1000/78.74 x 39.37*	*59*
11.5 – 13.0/0.453 – 0.512	*3.6 mm Pb*	*3.6 mm Pb*	*3.3 mm Pb*	*2000 x 1000/78.74 x 39.37*	*66*
16.0 – 18.0/0.630 – 0.709	*5.0 mm Pb*	*5.0 mm Pb*	*4.6 mm Pb*	*1500 x 800/59.06 x 31.50*	*91*
20.0 – 22.0/0.787 – 0.866	*6.2 mm Pb*	*6.3 mm Pb*	*5.8 mm Pb*	*1500 x 800/59.06 x 31.50*	*112*

* The lead equivalent in mm Pb, defines the protective effect of the glass compared to a lead wall. Example: A glass with 1.6 mm Pb offers the same protective effect as a 1.6 mm thick lead wall.

Lead equivalents above 6.3 mm Pb can be reached by laminating several panels.

Technical data for RD 30
Optical properties:
Refractive index n_e at 20 °C (annealed at 40 °C/h) 1.579
Luminous transmittance (d = 6,0 mm) 90.5%
Chemical properties:
Hydrolytic class as per DIN ISO 719 ..... HGB 3
Lead oxide content (PbO) ..... ≥ 22%
Heavy metallic oxide content total ..... ≥ 23%
Mechanical properties:
Density in g/cm³ (condition as supplied) ..... ≥ 3.13
UV-Resistance:
Excellent. After continous UV exposure, virtually no transmission loss is measurable.

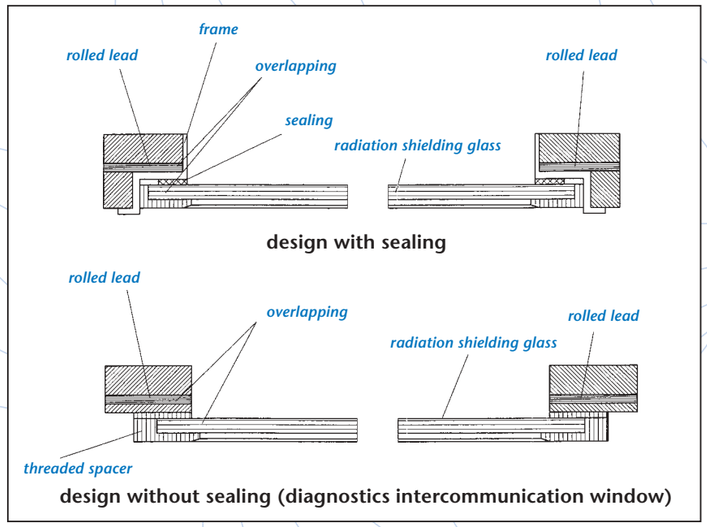
Technical data for RD 50
Optical properties:
Refractive index n_D at 20 °C 1.79
Luminous transmittance (d = 5,0 mm) 85%
Chemical properties:
Hydrolytic class as per DIN ISO 719 ..... HGB 1
Lead oxide content (PbO) ..... ≥ 65%
Heavy metallic oxide content total ..... ≥ 70%
Mechanical properties:
Density in g/cm³ (condition as supplied) ..... ≥ 5.05
UV-Resistance:
Very small loss in transmission after continous UV exposure, invisible to the eye ..... < 1%

Important notes:

Please take the following into consideration with regard to installation, cleaning, and disinfection of radiation shielding glass.

- In view of the lead oxide content the surfaces of RD 50 and RD 30 are susceptible to scratches and attack by acids and alkalis. Use only water, non-abrasive cleaning agents and soft cloth. In view of its low lead oxide contents the surface of the RD 30 glass is less susceptible compared to the surface of the RD 50 glass. Further advices will be given upon request.
- RD 50 and RD 30 can be disinfected by commercially available disinfectants approved by us. A disinfection by UV exposure (solarization) is also possible.
- Radiation shielding glass should not be exposed to humidity or temperature fluctuations or acid gases.
- When installing, care should be taken that the sealing agents do not contain any acid or alkaline substances (e.g. acetic acid, ammonia). Labels may cause staining on the glass surface by the reaction of the adhesive.
- Remove the protective film on RD 50 radiation shielding glass immediately before installing it. Do not use any sharp objects to remove.

Basic diagram for the installation of RD50/30 radiation shielding glass into window and door frames



Radiation shielding glass incorporated in windows and doors. (please note the building instructions as per DIN 6812). A sufficient overlapping of the radiation shielding glass should be secured.

Facts, facts, facts

The manufacturer and protective level are permanently marked on each radiation shielding glass RD 50 by SCHOTT.

Our identification.

A	DIN	4172	1.5 mm Pb	110 kV	S*
Manufacturer's mark (SCHOTT = A)		Serial number	Lead equivalent	Reference voltage	Protective quality

*BS-Quality (for direct radioscopy) also available
(correlates to protective glass plate type SC acc. to IEC 61331-2).

Product specification

Item ..... Radiation Shielding Glass RD 50 in compliance with IEC 61331-2 and DIN 6841 or relevant standards or Radiation Shielding Glass RD 30**.

Voltage of our equipment:	..... kV
Lead equivalent:	..... mm Pb
Glass thickness (approximate size in mm):	..... mm
Glass dimensions (in mm):	..... mm x ..... mm
Special requests (e.g. laminated):	.....
Others:	.....

** If not applicable, please delete