



# Radiographic Film Systems



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**Waygate  
Technologies**

a Baker Hughes business

**A global leader  
in technology-driven  
inspection solutions  
that deliver productivity,  
quality and safety  
to our customers.**

## Industry Focus with Broad Experience

**No matter what  
your inspection or  
testing challenge  
is, we can help.**

At Waygate Technologies, we are proud to continue the long legacy of leadership and innovation that we inherit as a member of the Baker Hughes family of companies. Waygate Technologies is known around the world for its excellence, innovation and imagination. Its rich heritage includes the development of non-destructive testing (NDT) and inspection technologies.

Our focus covers a broad range of industries and applications. So, whether it's simple or highly complex, we are the world's proven, reliable resource for NDT.

We are setting best practices today and are constantly exploring the next generation of NDT solutions, all in an effort to keep our customers at the front edge of quality, safety and inspection productivity.



# End-To-End NDT Solutions

## Based On Fully Compatible Components

Whether you are an inspection services provider or the manufacturer of the thousands of products that undergo non-destructive testing – and wherever you are in the world – you can trust Waygate Technologies for advanced NDT solutions, consistent performance and unsurpassed service.

### Film Systems

Waygate Technologies is the sole supplier of STRUCTURIX industrial radiographic films from Agfa. Agfa's renowned product quality leads the industry in superior image quality. Their proven performance ensures reliable, consistent rugged behavior. Ongoing R&D ensures the innovation that means you're using products at the forefront of the industry. Waygate Technologies is your guarantee of compliance to the strictest standards worldwide.

### Processing

Waygate Technologies offers you a complete line of film processing solutions including both manual and automatic options.

### Chemicals

Dedicated STRUCTURIX chemicals assure optimal performance in the processing of the radiographic films. We bring you the full line of advanced, high quality chemicals uniquely designed for industrial X-ray applications.

### Processors

These products have a proven record and are enhanced by the technology, applications knowledge and global resources available through Waygate Technologies.

# STRUCTURIX Film Systems

Waygate Technologies exclusively offers a solution with all components designed to work together seamlessly, start to finish.

In bringing you integrated film systems, we're assuring you improved quality and safety, greater ease, savings in time and costs and the peace of mind that comes with a proven, end-to-end solution. In offering you renowned STRUCTURIX film systems, we're providing you the films and solutions most widely used in industrial radiography.

## Image Quality

Agfa was a pioneer in recognizing the importance of monitoring film systems, ensuring better image quality performance. The result is higher quality and safety of the inspected equipment and components.

## Proven Track Record

STRUCTURIX film systems are proven in the very demanding field of non-destructive testing. Our customers worldwide are enthusiastic about our extensive assortment of products featuring superior reliability and guaranteed intrinsic quality.

## Compliance

Our film systems are fully compliant with standards issued by the independent German Federal Institute for Materials Research and Testing, BAM. This designation proves STRUCTURIX capability to not only produce consistently but also to invest in quality systems which control and measure system parameters. This assures compliance with the Industrial Film Systems Classification Standards.

## Investment in Innovation

Due to continuous investments in R&D, STRUCTURIX film systems enjoy an excellent reputation. Improvement of the NDT film Systems meets your economical and environmental needs better than ever before. An example of our commitment is the introduction of our STRUCTURIX ECO Film Systems, rendering less chemistry consumption, higher film throughput and lower energy usage. The system has been awarded certification by BAM.

## Approach to Environmental Policy

The STRUCTURIX ECO System combines both economy in use and ecological responsibility. This advanced film system minimizes its impact on the environment with less chemistry consumption, higher film throughput and lower energy usage.



# STRUCTURIX Films – Advantages

The STRUCTURIX film family has two key advantages of great importance in non-destructive testing – image quality and consistent rugged behavior. Both result from Agfa’s advanced emulsion technology and ultramodern high-tech coating processes.

## Optimum Image Quality

All STRUCTURIX films benefit from an Agfa emulsion breakthrough that provides increased contrast and maximum detail perceptibility. In fact, it results in the highest intrinsic defect recognition for each speed range. Even the smallest details can be interpreted with ease. The finished X-ray film has a high quality with a brilliant surface, and the image has a pleasant blue tint.

## Protective Coating

An important feature of the STRUCTURIX films is a special protective top coating resulting directly from Agfa’s Split Antistress Layer (SAL) technology. This top coat gives the films unique high resistance to pressure, scratching and creasing.

Another advantage of the top coat is that surface roughness has been optimized for problem free processing in automatic feeders such as the FEEDER.

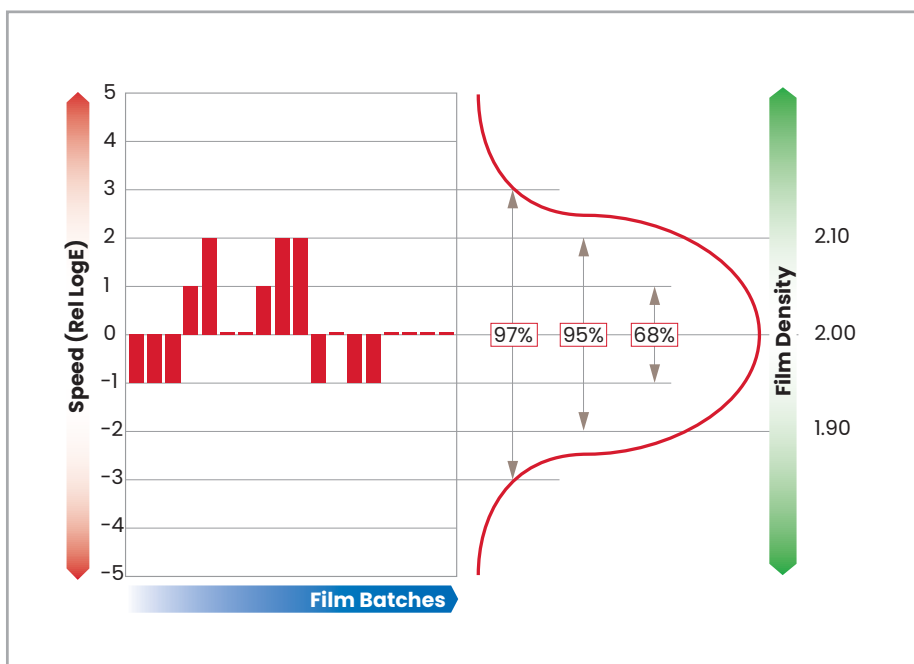
## Consistent Production Quality

STRUCTURIX films are manufactured in large quantities. To ensure they meet the most rigorous worldwide quality standards, they are produced at a single facility under tightly controlled conditions in an ultramodern coating room.

Agfa’s Total Quality Management approach, certified by the ISO9001-2015 label, is the foundation of the system leading to this exceptional performance in production consistency. People, production equipment, and organization all become one system, geared to consistency and continuous improvement.

It’s what we call the “moving target” quality philosophy. Moving target means that to meet the increasing needs of our customers, quality has to be built into our products, not by additional testing, but by design. Agfa’s emulsion technology, for example, helps to provide a highly homogeneous emulsion over the total coating area.

Not only do the STRUCTURIX films have outstanding quality, they also have an exceptionally high level of batch to batch uniformity.





### Consistent Processing Quality

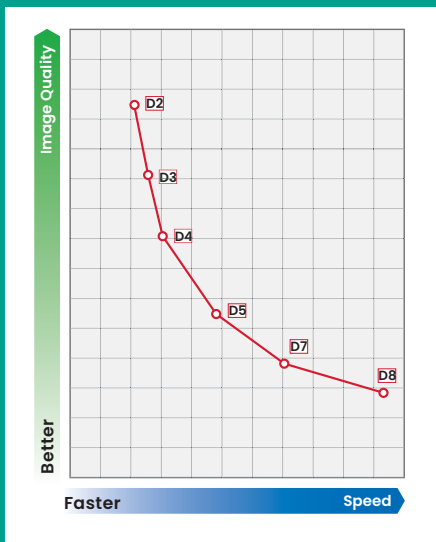
STRUCTURIX films have a reputation for providing consistent and excellent results over a wide range of operating conditions. The Cubic Grain Plus technology is at the base of this consistent stable behavior. The extremely narrow grain size distribution, in combination

with the cubic shape, assures that all exposed grains (latent image) will simultaneously develop the same density over a wide range of processing conditions. Moreover, they will do so rendering the very high contrast that is responsible for the high image quality

### Darkroom Light Sensitivity

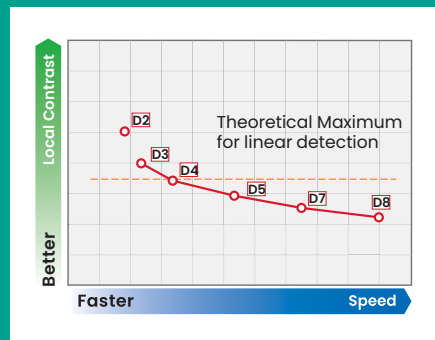
STRUCTURIX films may be exposed to darkroom safelight conditions longer without sensitometric fogging (ANSI PH 2.22). This means that brighter safelight illumination can be used, resulting in more ergonomic and efficient working conditions.

### Technological Axis of STRUCTURIX D family



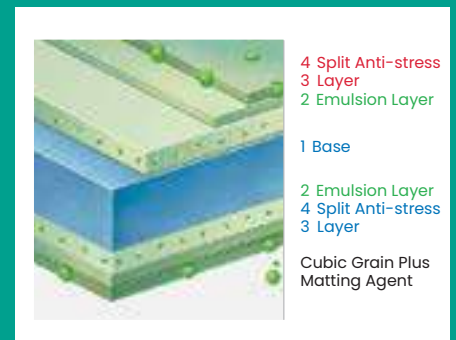
High image quality and perceptibility through optimization of "the signal to noise ratio" for every STRUCTURIX film.

### Optimization of Contrast



Contrast (signal) of all films is optimized to approach the maximum contrast for a linear detector (industrial X-ray Film), thereby optimizing image quality and perceptibility. An exception to the rule is D2, a super linear detector, where image quality is optimized through more than linear (extremely high) contrast in combination with very low noise.

### STRUCTURIX Quality... Rugged performance



The emulsion coatings are covered by two separate antistress layers (3 + 4). To achieve a rugged surface, the top layer has received the matting agent.

# Image Quality and Film System Classifications

Every application and every object require a specific class of industrial radiographic film or film system class which includes complementary film and film processing.

## A New Film System Classification

The introduction of the Industrial Film Systems Classification Standards ASTM E-1815, ISO 11699-1 and JIS-K7627 provides an important means to assign film systems to the appropriate film system class.

These standards identify the various types of industrial X-ray film systems and classify them based on objectively quantified parameters that are the foundation of film imaging performance.

The standards for control of film processing and ISO 11699-2 provide the means to control the processing at the processor user level. The objective is to make sure that a classified system will produce the expected capabilities in daily use. As a result of being able to objectively determine the

performance of a specific Film System (Film + Chemistry + Processing), film radiography remains the number one and most widely used NDT technique.

The classification system classifies a film inclusive of film processing (type and chemicals). This illustrates the importance of processing in relation to imaging.

The parameters are:

G2 (contrast) Net density: D = 2

G4 (contrast) Net density: D = 4

D (noise) Net density: D = 2

G/σD Net density: D = 2

These parameters are selected based on the insight into imaging theory applied to the industrial X-ray film systems. G is a measure of the signal gain factor and σD indicates the noise, so that G/σd represents the signal /noise ratio.

In the context of growing quality awareness, the new perception of film system classification, described in ASTM 1815, ISO 11699 and JIS-K7627, gradually became norm for the industry.

## Technical Specifications

A/Automatic			Gradient G		σD	G/σd	ISO SPEED	Dose mGy
Type	ASTM E 1815	ISO 11699-1	DENS=2	DENS=4	DENS=2	DENS=2	S	D=2
D2	special	C1	5.5	9.9	0.018	371	32	22.3
D3	I	C2	5.4	9.7	0.020	294	64	14.0
D4	I	C3	4.7	9.0	0.023	232	100	8.7
D5	I	C4	4.6	8.0	0.028	169	200	4.6
D7	II	C5	4.5	7.1	0.032	142	320	3.2
D8	III	C6	4.4	7.0	0.039	114	400	2.2

Chemicals G 135/G 335 - development immersion time : 100 sec.  
Developing temperature: 28° C

Image Quality & Film System Classes			
Type	ASTM E 1815	ISO 11699-1	JIS-K7627
D2	special	C1	T1
D3	I	C2	T1
D4	I	C3	T2
D5	I	C4	T2
D7	II	C5	T3
D8	III	C6	T4

B/Manual			Gradient G		σD	G/σd	ISO SPEED	Dose mGy
Type	ASTM E 1815	ISO 11699-1	DENS=2	DENS=4	DENS=2	DENS=2	S	D=2
D2	special	C1	5.1	9.0	0.013	392	32	23.5
D3	I	C2	4.8	8.4	0.016	303	64	14.0
D4	I	C3	4.6	8.0	0.020	232	100	8.7
D5	I	C4	4.6	8.0	0.026	177	200	4.4
D7	II	C5	4.6	8.0	0.032	144	320	3.2
D8	III	C6	4.1	6.8	0.035	117	400	2.2

Chemicals G 128/G 328 - development immersion time : 300 sec.  
Developing temperature: 20° C

## BAM Certification

**Agfa was the first company in the world that can boast certification by BAM, the German Federal Institute for Materials Research and Testing.**

In addition to semi-annual product testing (design approval) and round robin tests recognizing the competence of the Agfa film lab, the certification process involves a quarterly production monitoring and an annual audit at the Agfa plant. The results are recorded in the corresponding certificates.

The most commonly used STRUCTURIX film systems based on the film types D3, D4, D5 and D7 combined with G135 developer and G335 fixer are BAM certified. The German Federal Institute BAM conducted a thorough study and awarded the STRUCTURIX ECO Film System (5 min. cycle) the certificate of compliance to International Film System Classification Standards.

## ISO Certification

**Waygate Technologies' approach to quality control in the NDT industry**

At Waygate Technologies, we contend that obtaining an ISO certificate is only the beginning. Agfa was the first radiographic film manufacturer to achieve ISO certification for its STRUCTURIX films in 1990. Since then, we have continued the legacy of quality, assuring you that our entire film system – films, chemistry and equipment – is produced under a strict Quality Management System approved to ISO 9000. It's your guarantee of the superior quality of Waygate Technologies' Measurement & Control products.



# Characteristics and Applications

## ■ STRUCTURIX D2

Extremely fine grain film with very high contrast. Ideal for exposures requiring the finest possible detail rendering.

- Electronic components
- Composite materials
- Castings (light metals and alloys)
- Multiple film techniques

## ■ STRUCTURIX D3

Ultra fine grain film with very high contrast. This film obtains a very high detail perceptibility, which meets the requirements of the most critical NDT applications. For exposure with lead screens, using either X-ray, gamma rays or radiation from megavolt equipment.

- Electronic components
- Composite materials
- Castings
- Very high quality welds
- Nuclear quality
- Aerospace and aircraft industry
- Multiple film techniques

## ■ STRUCTURIX D4

Ultra fine grain film with very high contrast. Suitable for a wide variety of critical applications. For exposure with lead screens, using either X-ray, gamma rays or radiation from megavolt equipment.

- Electronic components
- Composite materials
- Castings
- Very high quality welds
- Defense and nuclear industry
- Aerospace and aerospace industry
- Multiple film techniques

## ■ STRUCTURIX D5

Very fine grain film with high contrast. Excellent for visualization of discontinuities. This film is intended for use with lead screens, using either X-ray or gamma rays.

- Welding
- Castings
- Shipbuilding
- Aerospace and aircraft industry
- Multiple film techniques

## ■ STRUCTURIX D7

Fine grain film with high contrast and high speed. Designed for direct exposure or with lead screens. For exposure with lead screens, using either X-ray or gamma rays.

- Welding
- Castings
- Shipbuilding
- Aerospace and aircraft industry
- Multiple film techniques

## ■ STRUCTURIX D8

Medium grain film with high contrast and very high speed. Suitable for a variety of applications. This film can be used for direct exposure or with lead screens. It gives good image quality with short exposure times. If even higher speed is required, fluorescent screens, in combination with F8 (not D8), should be used.

- Welding and casting
- Defense industry
- Aerospace and aircraft industry
- Composite materials
- Multiple film techniques

## ■ STRUCTURIX WIDE LATITUDE FILMS

The wide latitude films are specially designed for in-house radiography and to inspect wide range thickness objects such as castings.

- Concrete and heavy construction work
- Castings
- Multiple film techniques

## ■ STRUCTURIX D4W

An extra fine grain film with medium contrast and very high speed. The film can be used for direct exposure techniques or with lead screens.

- Castings and other multi-thickness objects
- Ferrous and non ferrous castings
- Non-critical welds
- All non-classified materials inspection

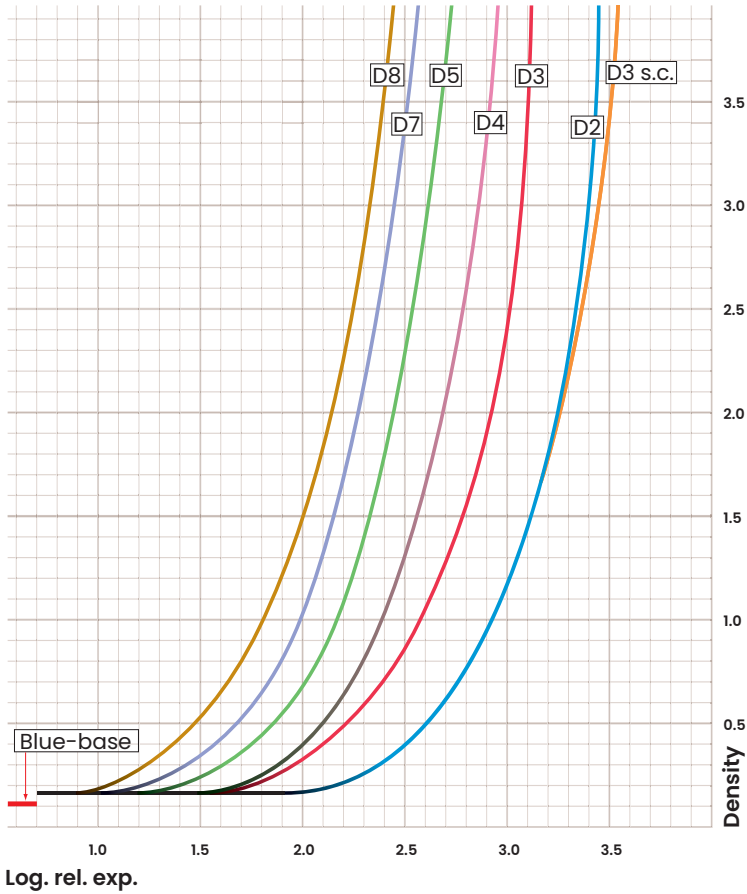
## ■ STRUCTURIX D6W

A high contrast, fine grain film with medium contrast combining good image quality and wide latitude.

- Castings and other multi-thickness objects
- Ferrous and non ferrous castings
- Non-critical welds
- All non-classified materials inspection

# Performance Characteristics

## Sensitometric Curves



STRUCTURIX D2, D3 s.c., D3, D4, D5, D7, D8 Exposure and processing parameters:  
200 kV, Pb screens, autom. proc., 8 min. cycle, devel G 135, 28°C

Relative Exposure Factors								
Type	100kV	200kV	Se75	Ir192	Co 60	Linac/8MeV	Contrast	
STX D2	9.0	7.0	6.4	8.0	9.0	9.0	6.0	
STX D3 s.c.	9.5	8.0					5.3	
STX D3	4.1	4.3	3.6	5.0	5.0	5.1	5.5	
STX D4	3.0	2.7	2.4	3.0	3.0	3.1	5.4	
STX D5	1.7	1.5	1.4	1.5	1.5	1.5	5.4	
STX D7	1.0	1.0	1.0	1.0	1.0	1.0	5.4	
STX D8	0.6	0.65	0.6	0.6	0.6	0.6	4.3	

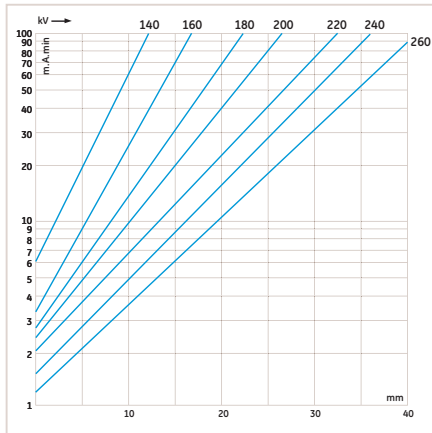
# Exposure Diagrams

Exposure diagrams can be very useful for setting the correct exposure. The diagrams shown here are meant only as a guide, as the correct exposure will mainly depend on the variations of the object, the exposure equipment used and on the processing conditions.

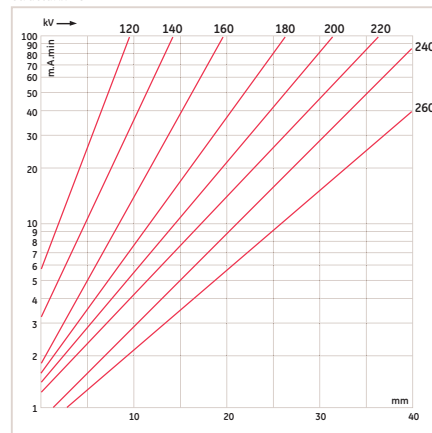
## Steel (Fe)

- Type of X-ray tube: constant potential
- Pb-screens
- Density: 2
- FFD: 1 m
- Autom. proc.: 8 min. cycle, G 135, 28°C

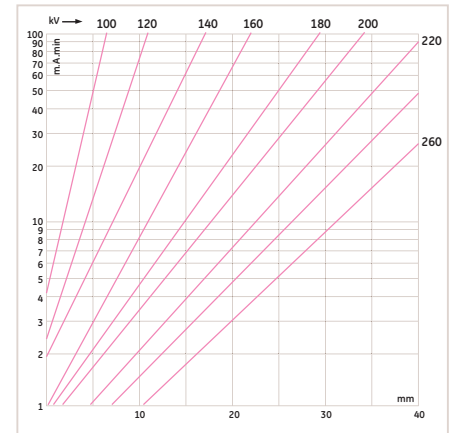
Structurix D2



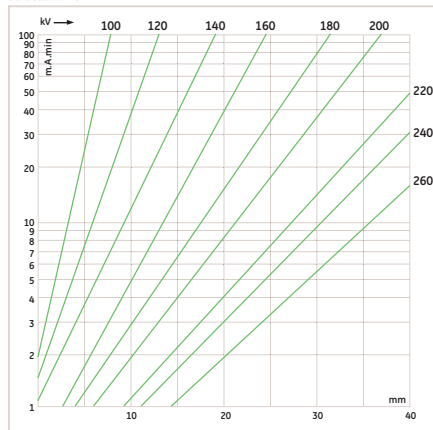
Structurix D3



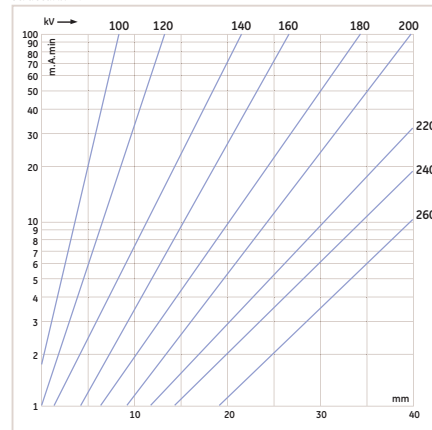
Structurix D4



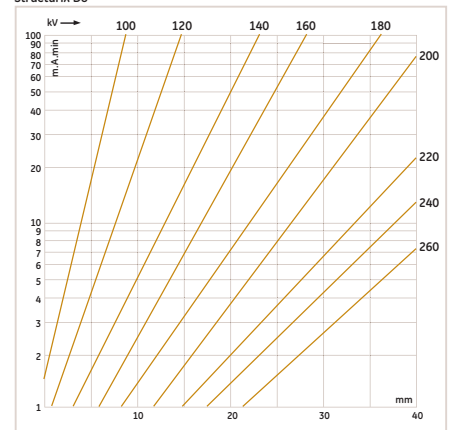
Structurix D5



Structurix D7



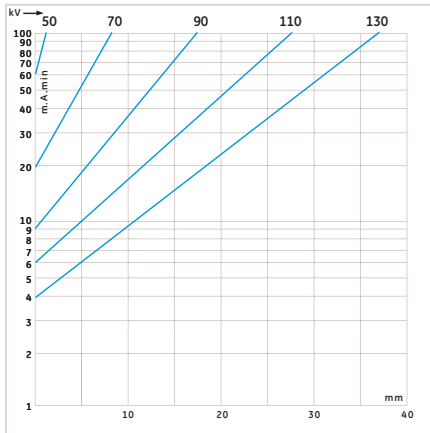
Structurix D8



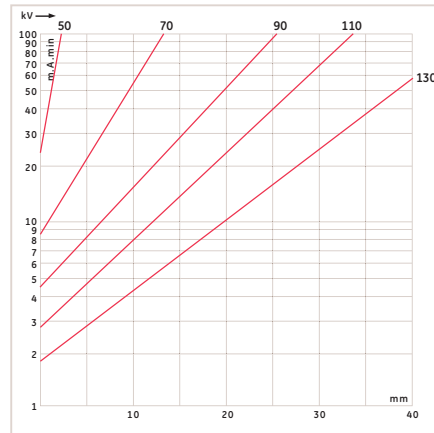
## Aluminum (Al)

- Type of X-ray tube: constant potential
- Density: 2
- FFD: 1 m
- Autom. proc.: 8 min. cycle, G 135, 28°C

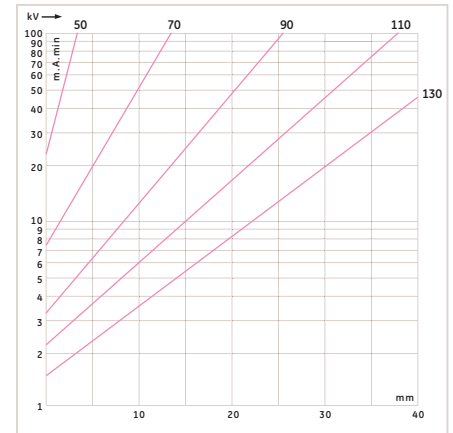
Structurix D2



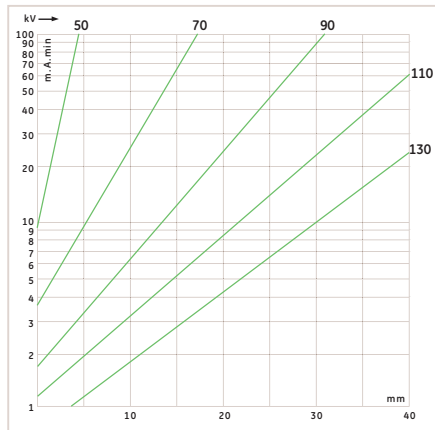
Structurix D3



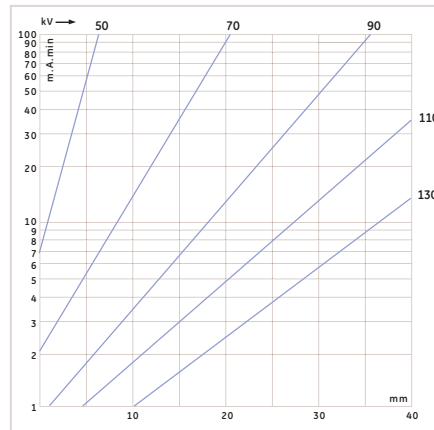
Structurix D4



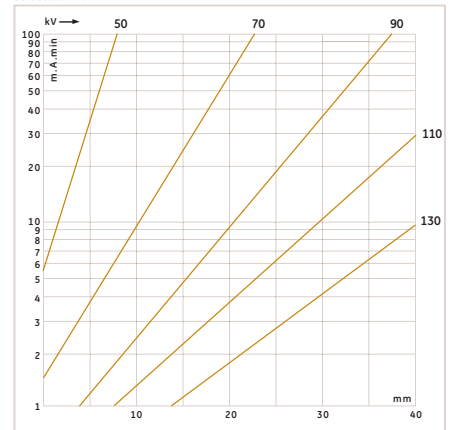
Structurix D5



Structurix D7

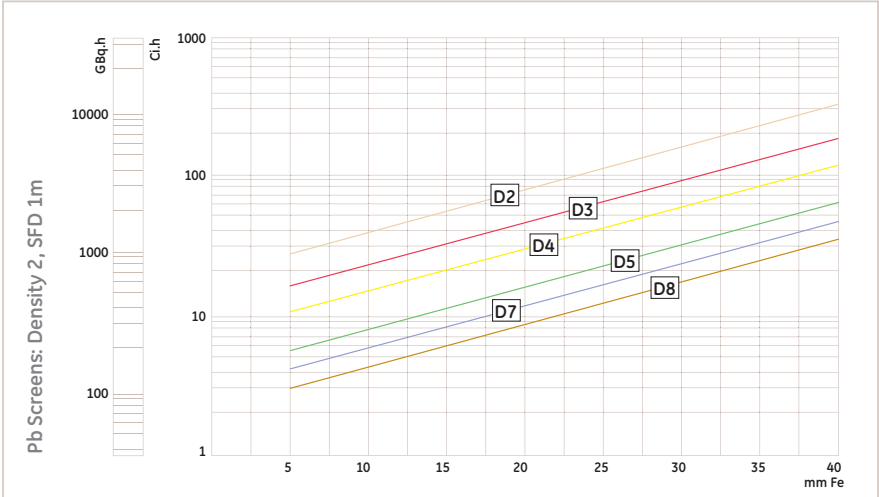


Structurix D8

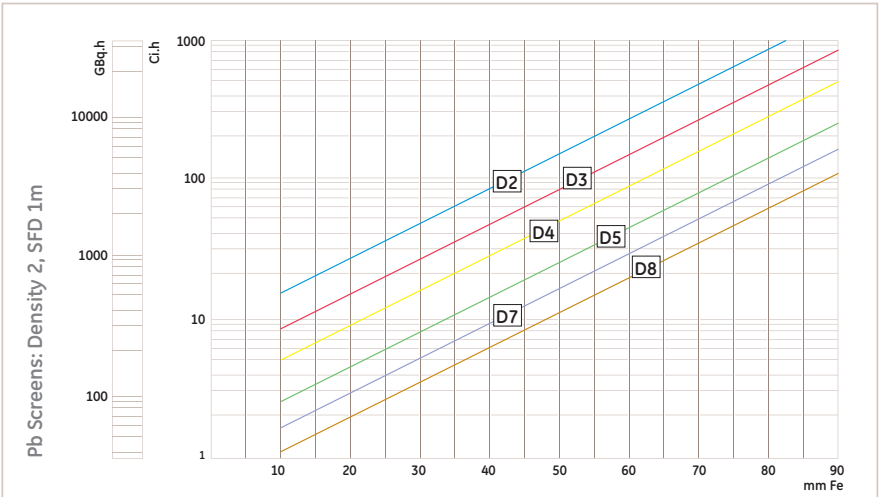


# Exposure Diagrams

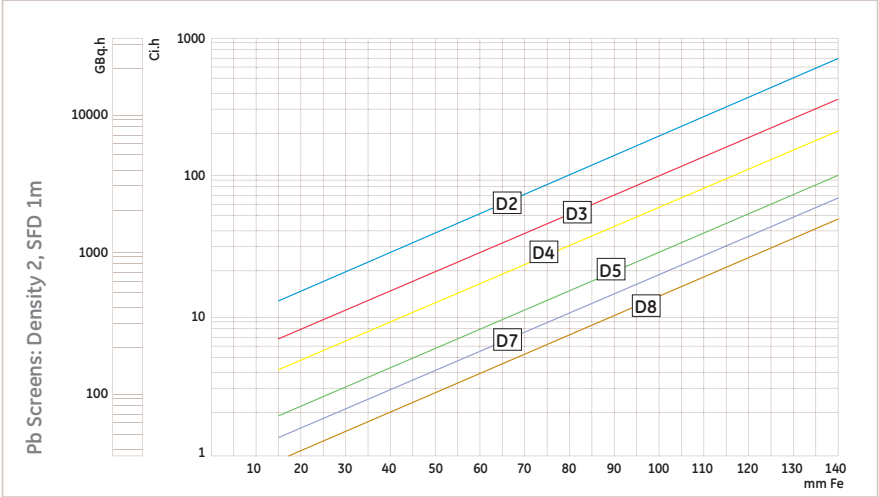
Selenium 75



Iridium 192



Cobalt 60







# Special Applications

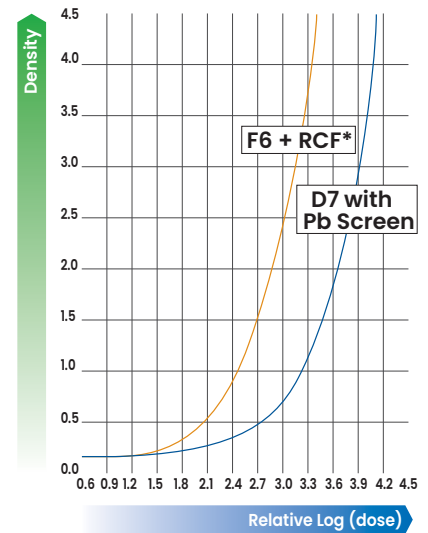
## STRUCTURIX F6

As a result of further improvements in its core business of radiographic film for all applications, Agfa introduced a better product for rapid access radiography.

STRUCTURIX F6 is specially designed for offshore pipelines or similar applications. Such areas need short exposure time through the use of fluorometallic screens and fast processing cycles. This F6 film type is mainly blue sensitive. All UV and blue-emitting screens can be used, but for industrial use, fluorometallic screens (cfr. STRUCTURIX RCF) based on CaWO4 provide good quality.

Manual processing can be used but without the advantage of consistent rapid processing. This should only be used as an emergency solution.

**Sensitometric curves with RCF fluorometallic screens (300 kV)**



## STRUCTURIX F6

Medium speed, high contrast fine grain film, preferably suited for use in combination with fluorometallic (RCF) or similar fluorescent screens. To be preferably processed in short cycle (90 sec.). If needed standard 8 min. cycle can be used alternatively for:

- Offshore pipelines
- Fast processing requirements

STRUCTURIX F6 Film System	Relative Exposure		Image Quality	
	200 kV	Ir 192	Wire IQI (En 462-3)	Double Wire IQI (EN 462-5)
STX F6 + RCF Screens, 90 sec., Dry to Dry, G 135, 36°C	0.1	0.2	13	9
STX D7 Pb Screens*, 8 min., Dry to Dry, G 135, 28°C	1.0	1.0	13.5	12

\*D7 is considered not sensitive for fluorescent screens (no significant gain in exposure time)

## STRUCTURIX F8

Designed as a high quality film for fluorometallic (RCF) screen exposure when the speed obtainable with Pb screen system is insufficient or radiation safety is of prime importance.

Sensitive to all UV and blue-emitting screens. Calcium tungstate with lead or lead oxide backing, so called fluorometallic screens (STRUCTURIX RCF Screens), are most suited for industrial applications.

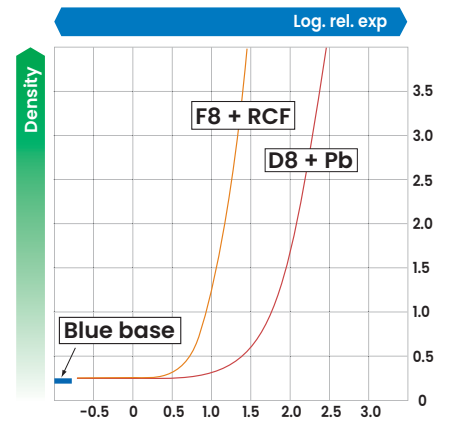
F8 with fluorescent screens is used in a variety of heavy construction applications, concrete, on stream examination of processing piping where X-ray energy has to be limited, flash radiography and microfocus enlargement techniques.

Relative exposure factor with fluorometallic screens depends on:

- temperature
- radiation energy
- exposure time

When maximum speed is important the use of very fast screens such as the STRUCTURIX 1200 screen can further reduce the exposure time by a factor of three to six compared to RCF screens. F8 is the ideal fast, high contrast, high definition film for fluorescent screen applications. When higher sharpness is required we advise the use of D8 with Pb screens.

## Sensitometric curves with RCF fluorometallic screens ( 200 kV)



## STRUCTURIX F8

High speed, high contrast fine grain film, for exposures in combination with RCF fluorometallic screens or fluorescent screens.

- High system speed is main requirement
- On stream corrosion/erosion radiography
- Concrete and heavy constructions
- Low dosage output, e.g. microfocus



# STRUCTURIX

## Intensifying Screens

The STRUCTURIX range offers two intensifying screens: the RCF fluorometallic screen and the high speed 1200 fluorescent screen.

### Advantages

The STRUCTURIX RCF fluorometallic and fluorescent 1200 screens, based on the conventional phosphor material calcium tungsten ( $\text{CaWO}_4$ ), diminish radiation exposure and/or the necessary level of radiation energy. They enable the radiographic penetration of thick objects.

A more productive and effective testing method, the STRUCTURIX RCF and 1200 screens reduce the exposure equipment load. The flexible screens enable radiography of curved objects.

### Features

When excited by X-rays or gamma-rays, the STRUCTURIX RCF fluorometallic screen becomes blue emitting. The screen has an incorporated filter of lead oxide for scattered radiation. The emission spectrum is matched to the spectral sensitivity of the STRUCTURIX F type films. The strong fluorescent RCF screen offers the ideal compromise between detail perceptibility and working efficiency. The extra strong Electron-Beam-Cured (EBC) protective coating and the polyester support make the screen particularly durable.

One of the most important applications of the STRUCTURIX RCF screens lies in the inspection of offshore pipelines. Combining the screen sensitivity and rapid processing of the STRUCTURIX F6 film provides an ideal film-screen system. In the on-stream as well, the use of the RCF-screen, in combination with the F8 film, leads to considerable time savings.

The blue emitting STRUCTURIX 1200 fluorescent screen has an extremely high absorption and conversion efficiency, together with acceptable detail perceptibility. Combined with a STRUCTURIX F8 or even a F6 film, this film-screen system becomes convenient for high-energy applications, such as the non-destructive testing of heavy construction and the examination of large concrete structures (bridges and buildings). The STRUCTURIX 1200 screen can also be a solution for flash radiography in which exposure times are extremely short and for microfocus-enlargement techniques in which radiation doses are very low.

### Treatment of STRUCTURIX intensifying screens

The STRUCTURIX screens should be protected from moisture, heat and ultra-violet radiation. Dust and marks should be removed from the screen immediately, using an approved screen cleaner. In addition to cleaning the screen, the Agfa Screen Cleaner contains an anti-static element, which prevents dirt and dust caused by static electricity from adhering to the screen.

# STRUCTURIX Intensifying Screens

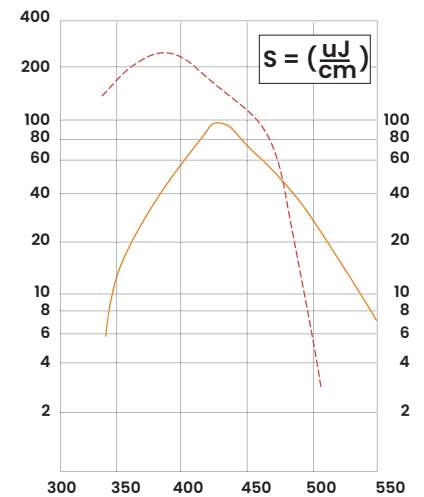
## Relative exposure factor

When making exposures with fluorescent screens, it is important to understand the potential impact of variables such as temperature, exposure energy and exposure time:

- Intensifying screens fluoresce more brilliantly at low temperature. Therefore, the screen efficiency will drop with increasing temperature
- With increasing energy, the absorption of fluorescent screens is reduced and, as a result, the intensifying effect is diminished
- Due to the "reciprocity effect" with fluorescent screen systems, the gain in exposure time compared to lead screen systems, diminishes with increasing exposure length

Relative Exposure		F8	F6	D7
100 kV	NDT 1200	0.010	0.049	
	RCF	0.030	0.174	
	No screen			1.000
300 kV	NDT 1200 + Pb	0.008	0.042	
	RCF	0.022	0.132	
	Pb			1.000
Ir 192	NDT 1200 + Pb	0.007	0.63	
	RCF	0.035	0.389	
	Pb			1.000
Co 60	NDT 1200 + Pb	0.006	0.096	
	RCF	0.040	0.562	
	Pb			1.000

## Spectrogram



--- Spectral sensitivity of Agfa Structurix F6 (for density 1.0 above fog)

— Relative emission spectrum of intensifying screens

# The Right Packaging for Every STRUCTURIX Film

Waygate Technologies offers different forms of packaging. Whatever the application of industrial radiography, there is a right STRUCTURIX film available, in the right packaging. No object is too large or too small.

An X-ray film of the appropriate size is available for every exposure. STRUCTURIX films are supplied in all standard sheet and roll sizes (special sizes on demand) and in darkroom or daylight packaging.

## Practical Daylight Packaging

### Time saving

STRUCTURIX film are packed on ultramodern packaging machines. This ready-to-use packaging can be placed directly on the object to be X-rayed, which saves valuable time that would otherwise be used to manually place the film in cassettes in the darkroom.

### Improved quality

To guarantee optimal packaging quality, all films are packed automatically in an ISO9001-2015 environment, using new lead screens for each. By excluding all so-called film faults, such as dust in the packaging and faults caused by the lead, the need for reshoots is eliminated, saving you time and money.

### More economical

Ease of use, both during exposure and in the darkroom, and the avoidance of reshoots combine to provide maximum productivity.

### Easy identification

The film type is clearly marked on all daylight film packages. "Pb" means the film is sandwiched between lead screens (0.027 mm). Daylight packed sheets have a center cross on the envelope to allow for easy positioning. Sheets are provided in a strong and easy-to-use, flip-top box. Rolls come in a rigid dispenser box.



## Sheet Film in Daylight Packaging



## Pb VACUPAC

Completely light-tight, airtight and moisture proof Pb VACUPAC is the perfect daylight packaging. The STRUCTURIX X-ray films with Pb screens have a standard thickness of 0.027 mm and are vacuum-packed in a completely light tight, airtight and moisture proof foil complex. The foil, a spin off from space technology, is a metallic polymer involving the deposition of vaporized aluminum under vacuum. The synthetic foil ensures that VACUPAC can be used under extremely dirty and damp conditions. Pb VACUPAC is ideal for applications with energies higher than 100 kV.

### Optimal image quality

The vacuum between the STRUCTURIX film and the lead screens guarantees optimal image definition. Film/screen contact is retained fully, even when VACUPAC is placed around a spherical or curved work piece.



### Easy to use

Either side of the wrapper can be placed on the object to be tested. A center cross on the envelope allows easy positioning. In addition, VACUPAC can be opened in one simple movement, thanks to the easy peel-off feature.

Extra vacuum protection. Each pack of 100 sheets is supplied "in vacuo" to preserve the vacuum well beyond the expiration date.

# The Right Packaging for Every STRUCTURIX Film

## Pb ETE (Edge-To-Edge)

Edge-to-edge Pb versions are available for sheet sizes for that lack a VACUPAC version. A specific advantage of the edge-to-edge is its double-sided edge. This feature makes it possible to place the film against or between elements of a work piece easily and accurately.

Opening the edge-to-edge packaging is as simple as tearing open the wrapper using the thread included for this purpose, then removing the film via the long side. The Pb edge-to-edge version is designed for exposures with energies higher than 100 kV and isotopes.

## DW ETE (Edge-To-Edge)

This light-tight, moisture proof and greaseproof packaging without Pb screen is ideal for exposures using radiation energy lower than 100 kV. The envelopes can be cut easily and taped for use with odd-shaped angles and corners. The envelopes are also easy to tape to the work piece.



## Rolls in Daylight Packaging

Whether you X-ray pipelines, pressure vessels, airplanes or storage tanks, with roll film packaging you can determine the length of film yourself so that your radiographs can be made in one piece.

### Easy to use

Cassettes are unnecessary with ROLLPAC packaging. The film is packed in accordance with the edge-to-edge system. ROLLPAC can be placed accurately on the object to be tested (i.e., a long weld) or right into the corner of a flange. ROLLPAC is placed around the object and attached with adhesive tape. Identification of the exposure needs to occur only once. This time saving ROLLPAC packaging is supplied in a practical dispenser box.

### Opens quickly and easily

The special design of the ROLLPAC wrapper allows quick and easy opening. The film is removed by taking the non-printed wrapper, together with the lead screen and the film in one hand and the printed wrapper and the other lead screen in the other. In this way, the film can be stripped easily from the packaging. ROLLPAC in wider formats (>10cm) has a tear strip on either side of the wrapper. This enables the film to be removed from the packaging easily and quickly.

### Length indication on the wrapper

This feature allows you to easily determine where to cut the film and also to see how much film is left. The film can be cut to any length. Cutting should be done in the darkroom.





For testing at higher radiation energy levels (>100 kV), i.e., welding in boilers, storage tanks and pipelines, Pb ROLLPAC is used.

## Pb ROLLPAC

### Light-tight, moisture proof and greaseproof

The film is sandwiched between two 0.027 mm lead screens. ROLLPAC packaging is completely light-tight. The packaging is resistant to moisture and grease.

### Optimal image quality

Our unique packaging ROLLPAC ensures that excellent contact between the film and lead foil is retained when the media is applied to spherical or tubular objects, even those with a small diameter. Because the screens are only used once, optimal results are guaranteed.

## DW ROLLPAC

DW ROLLPAC packaging is specifically intended for material testing using low to very low radiation energy (<100 kV). Widths up to 35 cm are available.



## ROLLPAC PRECUT

### Highly economical

Films in ROLLPAC packaging can be supplied in precut lengths from 70 cm by special order only. This exclusive form of packaging is ideal for pipeline projects, which generally consist of large series of pipes of the same diameter. We can supply ROLLPAC precut in the length required for your project, saving you a considerable amount of time and money.



# The Right Packaging for Every STRUCTURIX Film

## Sheet Film in Darkroom Packaging

**These films are for use with reloadable metal or plastic cassettes and exposure holders. The high level of darkroom lighting tolerated by STRUCTURIX D films allows more comfortable loading and unloading conditions.**

Because of its low cost, darkroom packaging appears to be the most economical solution for certain applications. However, the total radiography cost must be considered. For example, film handling costs in the darkroom and the cost of reshoots are important factors in figuring your investment. The added expense of cassettes and screens should also be taken into consideration. Local conditions must be considered and, most importantly, the cost of quality (the “you get what you pay for” theory). Simply put, low cost does not always equate to your best decision or best value. VACUPAC image quality cannot be obtained with the standard cassette system.

## NIF (Non Interleaved Films)

This is the most economical way to buy sheet film. The intrinsic film quality is the same as that of pre-packed film. Sheets of film are packed per 100 (except extremely large sizes) in a paalpo bag inside a cardboard box. The paalpo bags allow for easy film removal and re-closure.



## FW (Folder Wrapped)

Each film is wrapped in a paper folder to prevent handling faults in the darkroom. The paper folders make it easy to store and protect the films after processing. Folder wrapped packaging is an ideal solution for boxes that, after opening, remain in use for a period of time in areas of high humidity and temperature, as the folder prevents the films from sticking together. Sheets of film are packed per 100 in a sealed bag and placed in a strong cardboard box.



## Rolls in Darkroom Packaging

### BLR (Bulk Load Roll)

BLR is packaging with bare film on a cardboard core. This film can be cut to any length and loaded with or without lead screens in reloadable cassettes in the darkroom. Available in a standard width of 70 mm and in lengths of 167.75 m (550 ft.) and 305 m (1,000 ft.).





## Tailor Made Packaging

In addition to our standard products, special orders are available. These can include non-standard sheet sizes and other forms of packaging, such as Bi and Tri Packs. For special orders, please contact your Agfa agent. Bipack is an ETE daylight packaging containing two films. Tripack contains three films in one envelope. Combinations with lead screens are possible. Bipacks can also be supplied in DW ROLLPAC packaging.

## Optimal Storage of STRUCTURIX Films

Handling and storage of X-ray film is an important aspect of the radiographical process. Guidelines are given in several international standards, i.e., ASTM E1254-97. Following are the recommendations for unexposed X-ray film.

First, storage facilities for unexposed X-ray films should provide adequate protection from any penetrating radiation. If the films are stored for longer than three months, background radiation may not exceed 90 nGy/h ( $18 \times 10^{-10}$  C/Kg/h). Films in containers sealed by the manufacturer

should be stored with the films on edge, whenever possible. Storage temperature should be between 4.4°C and 23.8°C at a relative humidity range of 30 to 60 percent.

As higher temperatures accelerate certain physicochemical processes in the emulsion, STRUCTURIX films should always be stored in a cool place (within the above mentioned temperature range).

While films in opened packages are also affected by humidity, it is advisable to ensure that the relative humidity in the storage room remains under 60 percent. It is also recommended that the films are not stored in the immediate vicinity of X-ray chemicals.

If STRUCTURIX films are handled and stored in accordance with the directions noted above, we guarantee their good quality at least until the expiration date on the box.

# STRUCTURIX Processing Equipment

**Our systems approach means your film processing options are fully compatible with STRUCTURIX chemicals and equipment.**

After being X-rayed, each radiographic film needs to be processed before examining the film results. Depending on the place, situation and application, processing of the industrial X-rays films is carried out by manual or automatic processing. Waygate Technologies provides the full STRUCTURIX Film Systems product line.

Thus, complete solutions are available to choose the best way of processing your films in combination with STRUCTURIX chemicals and equipment. All are perfectly suited to one another.

## Automatic Film Processing Equipment

Waygate Technologies' processing equipment is renowned for its unwavering reliability and robust design. All STRUCTURIX film processors feature:

### Perfect processing quality

The design of STRUCTURIX processors is based on several decades of experience and know-how in dedicated industrial X-ray film processor design and construction. This, together with the use of state-of-the-art technology, explains why we can guarantee high quality film processing.

### Minimum processing costs

The precise control of replenishment ensures accurate chemistry consumption. A very minimum volume of water (as little as 13 l/m<sup>2</sup> with our ECO processors) is used during processing, creating a low ecological impact. The consumption of electricity is also low, due to the infrared drying system and other design elements such as the automatic switch to standby.

### Low heat emission

All Waygate Technologies processors feature infrared drying, which not only guarantees uniform drying of films, but also reduces the energy consumption and helps keep darkroom temperatures down. As such, a comfortable working temperature in the darkroom is more easily maintained.

### Adjustable film receiving tray

The film receiving tray of all Waygate Technologies' processors can easily be adjusted to suit the kind of film size being processed, i.e., sheet film, welding formats or roll film. Processed films collect in the tray in the order of the film being inserted.

In addition, our equipment is designed to meet all required safety regulations and are EMC compliant. All film processors are supplied with the CE, TUV GS and NRTL label as well as the CE Declaration of Conformity and are manufactured to ISO 9001 standards. These designations are continued proof of our commitment to quality and reliability.



# Revolutionary 'ECO' or Cascade Fixing Processing Technology

The STRUCTURIX S ECO and M ECO are the future of ecologically responsible processing. These processing machines are designed to meet the strictest standards for silver content in wash water. Thanks to the unique cascade fixing system, the amount of silver in the wash water is 15 to 25 times lower than in a conventional processing system.

## Cascade fixing

The 'ECO' or cascade fixing system is an entirely new concept for processing X-ray films. The STRUCTURIX S ECO and M ECO processors are built with two successive fixing tanks replenished on the counter flow principle.

The result is nothing less than revolutionary in terms of the amount of silver in the wash water. The cascade fixing principle is very simple: the exposed film is first developed in the developer tank, then washed in the intermediate wash tank.

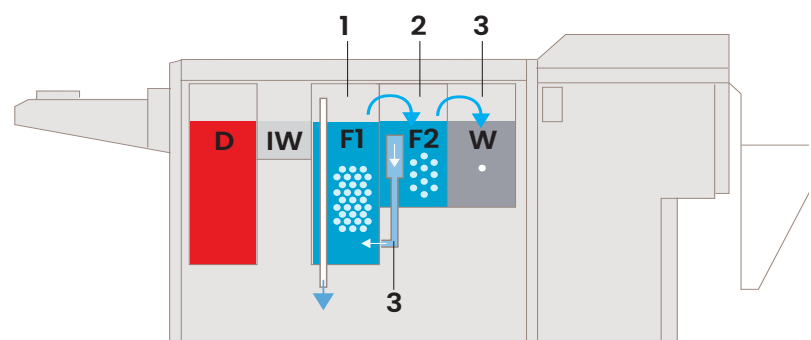
The intermediate washing system ensures that there is hardly any carry-over of developer into the fixing tanks, thus keeping the fixer bath in optimal condition. The intermediate washing also prevents development faults occurring on the film. The film is then 100 percent fixed in the first fixer tank and rinsed in the second fixer tank.

Since fixer replenishment is carried out in the second fixer tank, the concentration of silver in this tank remains very low. There is also very little carry-over of silver into the water tank, so that the waste water complies with the most stringent standards. Fixer replenishment works on the counter flow principle, with the first fixer tank being replenished from the overflow of the second fixer tank. An added advantage of this is that nearly all of the silver released in the fixing stage ends up in the overflow from the first fixing tank. This ensures optimum silver recovery.

The "cascade fixing" system ensures that the amount of silver in the wash water remains within the limit of  $<50 \text{ mg/m}^2$ .

With the STRUCTURIX S ECO and M ECO, ecology goes hand in hand with economy.

- D Developer tank
- IW Intermediate wash tank
- F1 Fixer tank 1
- F2 Fixer tank 2
- W Final wash tank
- 1 Overflow F1
- 2 Transfer of residues
- 3 Link between F1 and F2 in the direction of F1



## STRUCTURIX S ECO

In addition to the unique advantages of the 'ECO' processing technology, the STRUCTURIX S ECO guarantees several other features. These include a large capacity, superior image quality, precise replenishment and minimum processing costs.

### Large capacity

STRUCTURIX SECO can be set to either a 5 or an 8 minute cycle. In both cases, the throughput of the SECO is sufficient to meet the needs of large film users or companies with high production peaks. When set to the 5 minute cycle, the STRUCTURIX S ECO processes no less than 51 cm of film per minute or 78 films per hour of 35 x 43 cm. In this 5 minute cycle, the processor forms the basis for the "ECO Film System". In such a system, the STRUCTURIX film, chemistry and processor are all carefully matched to ensure the best possible ECOlogical results in terms of silver in the wash water while ensuring the lowest chemistry consumption and waste.

### Superior image quality

STRUCTURIX S ECO is perfectly suited to applications that demand the highest image quality. The technology in terms of rack construction and roller configurations has proved its worth in previous processors. A microprocessor provides "smart" control of all process functions. This results in perfect, even drying of your films in all ambient conditions.

### Precise replenishment

The surface area of the film is measured accurately on entry by 11 detection rollers. This unique method of scanning actually controls the replenishment far more precisely than a length only measurement, thus keeping replenishment usage to an efficient minimum.



### Anti-crystallization cycle

The STRUCTURIX S ECO has a "drive cycle" or "anti-crystallization" cycle, which in stand-by mode activates the roller transport mechanism sporadically for short periods of time. This cycle keeps the energy consumption to an absolute minimum, while avoiding crystallization of chemicals on the rollers and, therefore, increases the life of the processor considerably.

### Processing cycles

The microprocessor has seven pre-programmed processing cycles varying between 1.5 to 12 minutes. These standard cycles can be set quickly and easily. Simply select the required cycle time on the display, and the other processing parameters such as development temperature, dryer level, fixing temperature and replenishment rates adjust automatically.

### Customized processing

This feature allows you to manually adjust the processing speed from five to 12.5 minutes in steps of 30 seconds. Processing parameters can be locked and protected by a special password.

### Reliable electronics

The STRUCTURIX S ECO is equipped with highly reliable electronics, designed to give security of operation. All processing parameters, including temperature, speed, replenishment quantities and drying capacity, are controlled by a microprocessor.

# User Comfort

## Multifunctional drainage system

The STRUCTURIX S ECO is equipped with threeway drainage valves. This makes it simple to direct photo-chemicals and cleaning chemicals to the correct collection tank. The valves also prevent the formation of toxic fumes in the waste chemical collection tank.

## Easy maintenance

STRUCTURIX S ECO needs only an absolute minimum of maintenance. The top parts of the racks are easily removed and cleaned without having to take the racks out of the tanks. The STRUCTURIX S ECO is designed and built to facilitate regular cleaning of the film sensor rollers on the feed tray. The rollers can be reached easily by removing the feed tray. In order to prevent algae growth, the wash water is automatically drained when the machine is switched to "off".

## Intuitive operating panel

The operating panel provides visual information about the processing parameters, including the current processing temperature, cycle time, dryer setting, replenishment quantities, the OK indication for film input and the remaining cycle time. As befits such a universal machine, there is a choice of 12 languages for the display messages. The temperature of the developer and dryer can be adjusted incrementally on the control panel to suit the processing program chosen.

## Unique daylight system

When combined with the STRUCTURIX FEEDER, the S ECO becomes a unique and practical daylight system. The feeder automatically follows the film processing speed of the S ECO processor, even when the speed is altered. In cases where the STRUCTURIX S ECO is used without a feeder, an optional light-tight cover can be ordered.

## Accessories

- Light-tight cover
- Darkroom panel
- Two replenishment tanks of 30 litres with level sensor
- Water filter with cartridge

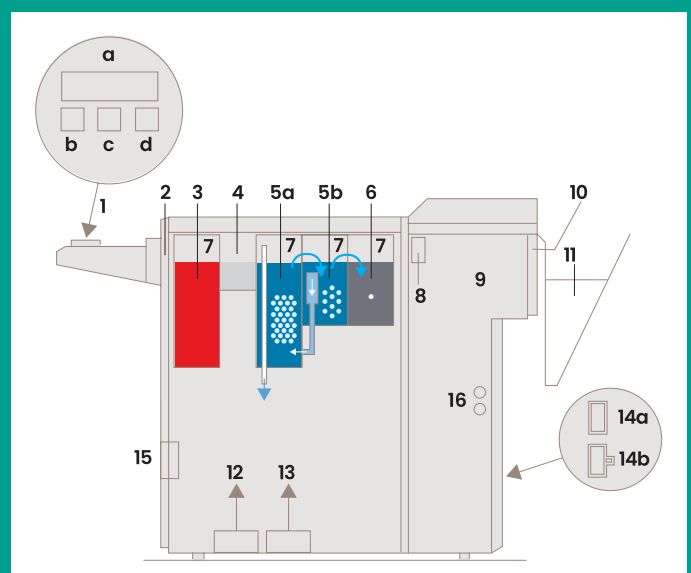
## Peripheral equipment

- STRUCTURIX MIXER (50 Hz)
- STRUCTURIX FEEDER combined with a Flip-top magazine

The STRUCTURIX S ECO has been awarded by DIBT (Deutsches Institut für Bautechnik) for its overall quality and performance, a certificate numbered z-77,41-3.

## Operating diagram:

- |  |  |
|--|--|
| 1 Film feed table<br>a LCD display<br>b Menu selection<br>c Increase setting<br>d Decrease setting | 10 Film output   |
| 2 Film area scanning   | 11 Film receiving tray                                       |
| 3 Developer tank   | 12 Replenishment pump for developer                          |
| 4 Intermediate wash tank   | 13 Replenishment pump for fixer                              |
| 5 a Fixer tank F1<br>b Fixer tank F2   | 14 a On/off switch<br>b Earth leakage circuit breaker (ELCB) |
| 6 Final wash tank  | 15 Three-way valves for draining the machine tanks           |
| 7 Removable top rack parts   | 16 Overheating protectors for developer and fixer            |
| 8 Distribution rollers   |  |
| 9 Infrared dryer   |  |



# STRUCTURIX M ECO

## Compact and ecological

The STRUCTURIX M ECO is the most compact processor of the STRUCTURIX Eco Film Systems, suited to applications that demand the highest image quality while being ecologically responsible. The secret lies in the double fixing tank, the cascade fixing system – a unique concept in the tabletop processors range.

The ease of use and the problemfree maintenance make the STRUCTURIX M ECO an extremely user-friendly and reliable processor. It has been designed for consumers of small and medium quantity of film.

### ECOLOGICAL DESIGN

The STRUCTURIX M ECO lives up to expectations ecologically with:

- Revolutionary **cascade fixing** system which reduces the amount of silver in the waste water by a factor of 5 to 10.
- **Reduction of fixer replenishment** if the STRUCTURIX ecoFix is used.
- **Economical water and electricity consumption.**
- **Infrared drying** reducing the amount of heat produced in the darkroom to a minimum.
- **Optimal replenishment** system as a result of film surface scanning.
- **Intermediate washing** which ensures that there is hardly any carry-over of developer, keeping the fixer bath in optimum condition. This system also prevents development faults occurring on the film.
- **Design for Recycling**  
Extra attention has been given to the selection of the materials in order to improve the recyclability. Materials or components which can disrupt the recycling process are easy removable. A Recycling-Passport (RP) and Equipment Information Sheet (EIS) are available.

### Exact Replenishment

The surface area of the film is measured accurately on entry by 5 detector rollers. This unique film area scanning ensures a precise economic, ecologic replenishment operation and reduced replenishment rates.



### Minimal Running Costs

The accurate replenishment, as described above, implies low chemical consumption. In addition, during film processing only an ecologically justified volume of water is used and the consumption of electricity is particularly low due to the infrared drying system.

### Accessories

- Table support
- Replenishment tanks of 30 litres
- Water filter with cartridge

### Peripheral equipment

- STRUCTURIX MIXER (50 Hz)

### A Smart Choice for Excellent Film Output

The STRUCTURIX M ECO is a compact film processor that occupies a minimal amount of space in your darkroom. The M ECO processor is versatile, in the laboratory or transportable in a mobile site darkroom. It processes sheet film as well as roll film up to any length.

This processor appeals to environment-conscious companies of every size and activity where film image quality is of prime importance.

The M ECO is ideal for:

- on-site testing even with multiple processors which are easy to transport and use
- customers switching from manual processing to an automated system
- serving as a back-up system to provide flexibility in film solutions and to complement digital solutions
- situations where space is limited



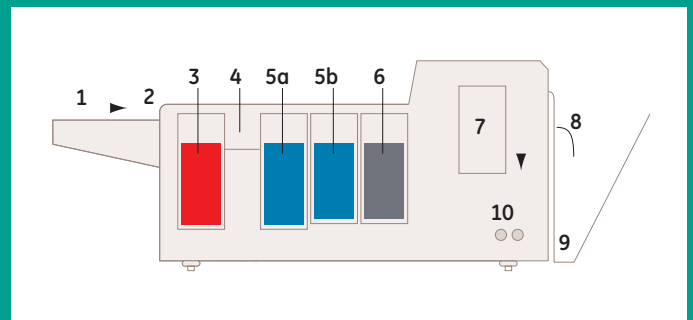


## Customized Features

- Compact size**  
 Takes up only 0.56 m<sup>2</sup> of floor space.
- Well-conceived, lightweight construction**  
 Constructed of stainless steel, aluminum and PVC to be corrosion resistant strong, lightweight and durable.
- Easy to use**  
 Built with an automatic start/stop function. Film detection with five scanning rollers allow intelligent and economic replenishment depending on the processed film surface. The detachable control display provides visual reference of all process parameters (temperature, dryer settings). An OK light indicates when the next film can be inserted.
- Easy to service**  
 Lightweight aluminum side covers enable fast access to the machine. Circulating pumps and racks are easy to remove, clean and service. The external water and chemical connections assure an efficient and separate drainage of the liquids.
- Light-tight cover**  
 The standard light-tight cover allows the operator to perform other tasks while film feeding into the STRUCTURIX M ECO film processor is ongoing. It also prevents dust particles from entering the processor to help avoid scratches on the film.
- Globally adaptable**  
 Comes with state-of-the-art electronics. Worldwide "plug and play" feature allows you to adapt it to any standard outlet, accommodating all voltages globally.

## Operating diagram:

- |                          |   |
|--------------------------|---|
| 1 Film feed table        | 6 Final wash tank                                 |
| 2 Film area scanning     | 7 Infrared dryer                                  |
| 3 Developer tank         | 8 Film output                                     |
| 4 Intermediate wash area | 9 Film receiving tray                             |
| 5 a Fixer tank F1        | 10 Overheating protectors for developer and fixer |
| b Fixer tank F2          |   |



# STRUCTURIX U

## Universal Reliability

The high reliability of our processors and years of practical experience led to the development of this unique processor. Ease of use, ease of maintenance and the fact that it is suitable for almost every application combine to be the main advantages of the STRUCTURIX U.

### Universal use

With the STRUCTURIX U, you have at your disposal the most universal processor from our selection. STRUCTURIX U combines simplicity, reliability and universal use in one processor. It is specially designed for customers who use medium-sized quantities of film. The STRUCTURIX U is very versatile and processes sheet film as well as roll film.

### Offshore use

In response to conditions and the demanding requirements with regard to access time, an offshore version of the U processor is available. This STRUCTURIX U offshore version suits the specific offshore conditions and satisfies the demands with regard to processing time (90 sec.) and reliability. Easy trouble shooting and repair make this processor especially suitable for use on remote sites. Moreover, the built-in developer cooler allows operation in warm climates.

### Reliable

The STRUCTURIX U is a dependable processor, no matter where installed. Built with solid components, the construction uses only simple and modern techniques.



### User-friendly

Thanks to its functional design, the processor operation is easy to control. An audio and visual signal indicate when the next film can be fed into the processor. The dryer level and the developer temperature level can be set using simple steps.

### Perfect processing quality

Three infrared drying units ensure uniform drying, in accordance with the principle of direct heat absorption. The fixer has its own heater element, which reduces the fixer warm up time considerably. This temperature control guarantees the film archival quality.

### Selectable processing cycles

Upon delivery, the STRUCTURIX U is set at the cycle time of 8 minutes. An optional cycle time from 1.5 to 12 min. can be set quickly and simply by an approved service engineer.

### Replenishment by area

Forward of the film feed slot five rollers accurately measure the surface area of the film. This unique film area scanning ensures a more precise economic and ecologic replenishment operation than if the film were only scanned lengthwise.

## Automatic daylight feeding

The STRUCTURIX U can easily be fitted with the STRUCTURIX FEEDER. Just remove the film feeding tray in a few seconds and connect the film feeding system in its place. With the feeder, you convert the STRUCTURIX U into a practical, automatic daylight film feeding system.

## Accessories

- Darkroom panel
- Feed tray cover (light-tight)
- Two replenishment tanks of 30 litres with level sensor
- Feeder speed connection adaptor
- Water filter with cartridge

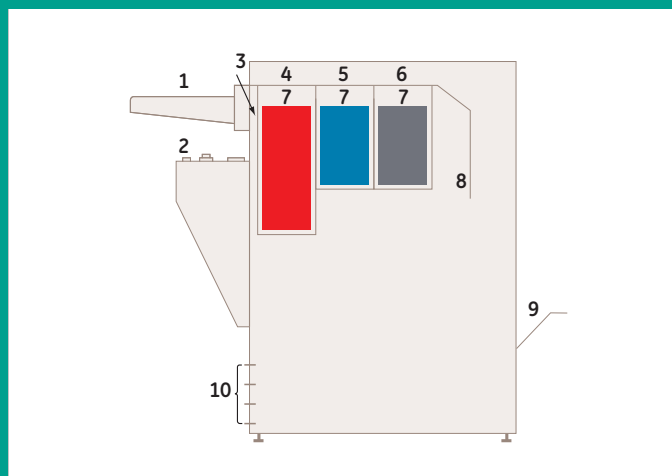
## Peripherals

- STRUCTURIX MIXER (50 Hz)
- STRUCTURIX FEEDER (50/60 Hz) with flip-top magazine

Features	Advantages
<ul style="list-style-type: none"> <li>• Mainly electro-mechanical functions</li> </ul>	<ul style="list-style-type: none"> <li>• High functional reliability</li> <li>• Not sensitive to voltage fluctuations (which can occur in an industrial environment)</li> </ul>
<ul style="list-style-type: none"> <li>• Processing cycle time: choice between 5/6/7/8/9/10/11/12 min.</li> </ul>	<ul style="list-style-type: none"> <li>• Choice of development time while keeping the required image quality</li> </ul>
<b>For offshore applications</b> choice between 1.5/2.5 min.	
<ul style="list-style-type: none"> <li>• Lower liquid level in the processor tanks</li> <li>• Double liquid overflow (on both sides of each processing tank)</li> </ul>	<ul style="list-style-type: none"> <li>• Prevents the liquids from overflowing out of the tank</li> <li>• Sufficient drainage for abnormal sea states or large movements</li> </ul>
<ul style="list-style-type: none"> <li>• Extra floor closing plate and air filter</li> </ul>	<ul style="list-style-type: none"> <li>• Optimal protection from the intrusion of so-called offshore dust in the processor</li> </ul>

## Operating diagram:

- 1 Film feed table
- 2 Control panel
- 3 Film area scanning
- 4 Developer tank
- 5 Fixer tank
- 6 Wash tank
- 7 Removable upper racks
- 8 Infrared dryer
- 9 Film receiving tray
- 10 Processor drain



# STRUCTURIX NOVA

## Compact Film Processor

The STRUCTURIX NOVA is a processor designed and built specifically for the industrial NDT testing environment. It is smart, robust, economical and automatic, and fills the gap in the market for a compact processor that can perform rugged NDT testing, while providing the quality of STRUCTURIX Film Systems and the features that users need.

### Compact and portable

The NOVA is a tabletop processor that takes up just 0.40 m<sup>2</sup> of space and has been designed to be extremely light and transportable. Its stainless steel, aluminium and PVC construction minimise weight (80 kg for the basic model) and maximise corrosion resistance.

### Versatile and economical

No matter what your field, the NOVA provides the ideal solution. For inspection companies which conduct on-site testing with multiple teams, the NOVA's compact size and light weight make it the natural choice. It offers manufacturing or testing labs a way to automate their manual processing at an affordable price. It also offers an excellent solution to companies which process 10 to 50 films per day. Finally, for companies who need the flexibility of a back-up processor which can complement their digital solutions, the NOVA is an ideal choice. The intelligent power management system ensures low power consumption (a maximum of 1,700 watts) and therefore significant cost savings over the processor's lifetime.

### Adaptable and easy to use

The NOVA comes in one standard model with state-of-the-art electronics, and the worldwide 'plug and play' feature allows you to adapt it to any conventional outlet which accommodates any standard global voltage. The NOVA has an automatic stop/start function. Film detection with five scanning rollers means that replenishment can be carried out economically and intelligently depending on the amount of film scanned. The control display gives the operator a visual reference of the processing parameters and an 'OK' light indicates when the next film can be inserted. The NOVA has been tested with the full range of STRUCTURIX films and chemicals so you can be confident of the optimum results in all conditions. The standard light-tight cover allows the operator to perform other tasks while film is being fed into the NOVA and also prevents dust particles from scratching the film.



### Easy to service and upgrade

Lightweight aluminium side covers give easy access to the machine and the racks are easy to remove, clean and service. The circulating pumps are also easy to access and can be changed easily by the operator. Remote monitoring and diagnostics allow the service technician to connect the NOVA to his PC directly or remotely and to transfer all data quickly and reliably.

The optional package of product add-ons, the NOVA Comfort Kit, allows you to upgrade its performance quickly and easily. A water saving solenoid valve and replenishment pump permits the amount of wash water supplied to be linked to the surface area of the film entering the wash section. A water filter with cartridge filters particles out of the incoming water, thus guaranteeing excellent film quality. Two 30-litre replenishment tanks can be sited under the table, to save darkroom space.

The STRUCTURIX NOVA offers you a unique combination of portability and performance.

### **NOVA Comfort Kit**

- Water saving solenoid valve
- Water circulation pump
- Water Filter with Cartridge
- Two Replenishment Tanks of 30 Liters

### **Accessories**

- Table Stand
- Two Replenishment Tanks of 30 Liters
- Water Filter with Cartridge

### **Peripherals**

- STRUCTURIX MIXER

# STRUCTURIX FEEDER

## Automatic Film Feeding Daylight System

**Compact and time saving, the STRUCTURIX FEEDER converts the processors S ECO and U into a unique and practical daylight system. With the STRUCTURIX FEEDER, you can save time and expense in the darkroom. At the press of a button, you can feed up to 240 films an hour automatically!**



### Complete daylight system

The STRUCTURIX FEEDER acts as a perfect miniature darkroom, so that all further activities can take place in daylight, while automatically feeding film into the processor.

### Reliable

When the feeder is switched to "on", it carries out a self-diagnosis. While in operation, built-in electronic checking functions guarantee high reliability. In this way, for example, a double film is detected, returned and fed in again separately, without intervention from the user.

### Simple installation

Thanks to the easy detachable film feeding tables of the STRUCTURIX processors and the simple mounting system of the feeder, the processors S ECO and U are quickly and easily converted.

### Multiple film sizes

Grouped per size and per project or work piece, our films can be loaded easily in any darkroom. All film sizes from 6 to 43 cm wide and from 12 to 48 cm long can be accommodated. The handy film magazine, in which up to four film lanes can be set up, makes the STRUCTURIX FEEDER ideal for processing films of welds. Up to 240 films per magazine (four times 60 films/lane max.) can be loaded!

### Film magazine

The FLIP-TOP magazine is best for highvolume processing of the same film size. Films from 6 x 18 cm up to 43 x 48 cm can be loaded without removing the FLIP-TOP magazine. This avoids repeated manipulation of the magazine, prevents wear and tear of the equipment and simplifies the operator's job.

Technical Specifications		
	Without Film Magazine	With Film Magazine
Length	32/42 cm	63/78 cm
Width	53.5 cm	53.5 cm
Height	27.4 cm	27.4 cm
Weight	22 kg	25 kg
Power Supply	110 V-240 V, 50/60 Hz (Separate Mains Connection)	
Magazine Types		FLIP-TOP
Film Sizes		Min. 6 x 12 cm*, Max. 43 x 48 cm
Loading Capacity		60 Films/Stack, Max. 4 Lanes
Priority Film Loading		Easy, Fast
Use		Loading on the feeder, Non transportable

\* from 18 cm length on, loading without removing the magazine

# STRUCTURIX MIXER

## Timesaving and Standardized Chemical Mixing

The STRUCTURIX MIXER is a fully independent unit that relieves you of mixing chemicals. To use the STRUCTURIX MIXER, simply place the bottles on top of the mixer. The rest occurs automatically to save you time.



### Compact and solid

The compact design of the STRUCTURIX MIXER means it requires very little space. The materials used in construction of the mixer have been chosen for greater strength and enhanced resistance to chemicals.

### Reliable and user-friendly

With the STRUCTURIX MIXER, you can count on your chemistry being mixed in a consistent manner, time after time. The mixer provides both an audible and visible signal when the next chemicals should be prepared. You never come in contact with the chemicals, thanks to the bottles of concentrate having a safety seal which is only pierced when the bottles are set in position on the mixing machine.

The STRUCTURIX MIXER has a handy pumping system for transferring the chemicals from the mixer into the processor, for example, to refill the processor after maintenance. The STRUCTURIX MIXER connects easily to your processor replenishment system in order to act as a replenishment tank.

### Easy to clean

The templates are easy to clean with water. When the bottles of concentrate are emptied, two covers can be used to close the tanks. In brief, the STRUCTURIX MIXER is a reliable and simple mixing unit that ensures optimal mixing of the developer and fixer solutions. It is a valuable acquisition for anyone seeking consistent, high-quality film processing results.

Technical Specifications		
Dimensions	Length	71 cm
	Width	45 cm
	Height	73 cm
Weight	Empty	35 kg (With Storage Tanks Filled: 88 Kg)
Developer Tank Capacity		20 l
Fixing Tank Capacity		20 l
Signal When Tank is Almost Empty		Audible and Visual Signal at 6.5 l
Filling Time		(max.) 15 Minutes
Cold Water Connection		Yes
Tap Water		5 - 30°C, Connection
Water Pressure		Min. 1.5 bar, Max. 3 bar
Power Supply		230 - 240 V / 50 Hz

# STRUCTURIX DRYER

## Fast and efficient film drying

The STRUCTURIX DRYER is an instrument that helps customers who process films manually.



### Fast and efficient film drying

With the new STRUCTURIX DRYER, films dry more rapidly than in conventional drying cabinets. The drying process immediately starts with no warm-up time needed.

The unit is compact and takes up little space in either the stationary darkroom or mobile lab. The lightweight of the STRUCTURIX DRYER makes it easy to move or transport.

The new STRUCTURIX DRYER consists of state-of-the-art electronics that makes it easy to operate and service. The new dryer carries the CE label, GS and USA/Canada NRTL sign.

### Easy to operate

The new dryer can be used worldwide. No matter where you plan your operations, the "plug and play" feature allows you to adapt it to any standard outlet, accommodating all voltages globally.

Drying temperature and processing time of the STRUCTURIX DRYER can easily be set and adapted to any circumstance. The introduction of step-less speed control enables an even better fine-tuning.






### Excellent results

The manually and thoroughly processed film first passes through the wetting tank. The water comes from a 2.5 liter water bottle.

Most water is removed from the film by means of squeegee rollers prior to the drying section. The film is then hot air dried on both sides and collected in the adjustable film tray.

Technical Specifications		
Dimensions	Length	60 cm
	Length With Extended Receiving Tray	83 cm
	Width	63 cm
	Height	35 cm
	Height With Bottle	45,5 cm
	Weight Empty	35 kg
Weight	Weight With Storage Tank Filled	88 kg
	Empty	24 kg
	Full (With Bottle)	27,5 kg
Power	Volts	200-240 V / 100-120 V
	Ampère	5,0-6,0 A / 10,0-12,0 A
Frequency	Hertz	50 Hz / 60 Hz
Consumption	Watts	1600 W
Maximum Film Width		37 cm



<b>STRUCTURIX NDT Processors</b>		<b>STRUCTURIX si</b>	<b>STRUCTURIX S ECO/Si</b>	<b>STRUCTURIX U</b>	<b>STRUCTURIX M ECO</b>	<b>STRUCTURIX NOVA</b>
						
Preprogrammed Cycles		7	7	1	1	1
Optional Cycles		1.5 up to 12 min. (per 30 sec.)	1.5 up to 12 min. (per 30 sec.)	3 up to 12 min. (per 1 min.) OS-cycles: 1.5/2/2.5	1.5 up to 12 min. (per 1 min.)	1.5 up to 12 min. (per 1 min.)
Standard Processing Cycle		8 min.	8 min.	8 min.	8 min.	8 min.
Developer Immersion Time		100 sec.	100 sec.	100 sec.	100 sec.	100 sec.
<b>Capacity (8 min. Cycle)</b>	10 cm x 48 cm (4 Films Side by Side)	300 films/hour	148 films/hour	106 films/hour	92 films/hour	92 films/hour
		75 films/hour	48 films/hour	34 films/hour	30 films/hour	30 films/hour
<b>Transport Speed</b>		50 cm/min.	32 cm/min.	23 cm/min.	20 cm/min.	20 cm/min.
<b>Film Sizes</b>	Format min.	6 x 12 cm	6 x 12 cm	6 x 12 cm	6 x 12 cm	6 x 12 cm
	Width min.	3.5 cm	3.5 cm	3.5 cm	3.5 cm	3.5 cm
	Width max.	43 cm	43 cm	43 cm	43 cm	43 cm
	Length min.	12 cm	12 cm	12 cm	12 cm	12 cm
<b>Dimensions</b>	Length	162 cm	162 cm	120 cm	142 cm	119 cm
	Bottom	111 cm	111 cm	75 cm	86 cm	63 cm
	Width	71 cm	71 cm	68 cm	68 cm	68 cm
	Height	123 cm	123 cm	105 cm	59 cm	57 cm
	Surface on Floor	0.79 m <sup>2</sup>	0.79 m <sup>2</sup>	0.50 m <sup>2</sup>	0.56 m <sup>2</sup>	0.40 m <sup>2</sup>
<b>Weight</b>	Empty	298 kg	285 kg	160 kg	104 kg	80 kg
	With Chemicals	426 kg	426 kg	250 kg	134 kg	110 kg
<b>Power Supply</b>	Amperage	16 A	16 A	16 A	16 A	8.5 / 7.5 / 6.5 / 7.3 A
	Frequency	50 Hz / 60 Hz	50 Hz / 60 Hz	50 Hz / 60 Hz	50 Hz / 60 Hz	50 Hz / 60 Hz
	Voltage	208 / 230-240 V	208 / 230-240 V	200 V / 240 V	100 V / 120 V / 200-208 V / 230-240 V	100 V / 120 V / 200-208 V / 230-240 V
<b>Tank Capacities</b>	Developer Tank	37 l	41.5 l	24 l	10 l	10 l
	Fixing Tank F1	37 l	41.5 l	20 l	10 l	10 l
	Fixing Tank F2	27 l	29 l		9 l	
	Final Wash Tank	27 l	29 l	20 l	9 l	10 l
<b>Standard Consumption</b>	G135 Developer	900 ml/m <sup>2</sup>	900 ml/m <sup>2</sup>	900 ml/m <sup>2</sup>	900 ml/m <sup>2</sup>	900 ml/m <sup>2</sup>
	G335 Fixer	700 - 1200 ml/m <sup>2</sup>	1200 ml/m <sup>2</sup>	1200 ml/m <sup>2</sup>	1200 ml/m <sup>2</sup>	1200 ml/m <sup>2</sup>
	Water	13 l/m <sup>2</sup>	13 l/m <sup>2</sup>	13 l/m <sup>2</sup>	13 l/m <sup>2</sup>	13 l/m <sup>2</sup>
<b>Developing Temperature</b>		28° C	28° C	28° C	28° C	28° C

## ECO Film System at Standard (ECO) Cycle

ECO Cycle			8 (5) min.		8 min.	
Developer Immersion Time			100 (62.5) sec.		100 sec.	
Capacity	10 cm x 48 cm (4 Films Side by Side)		148 (300) films/hour		92 films/hour	
	35 x 43 cm		48 (75) films/hour		30 films/hour	
Transport Speed			32 (50) cm/min.		20 cm/min.	
EcoDEV Developer			900 (550) ml/m <sup>2</sup>		900 ml/m <sup>2</sup>	
EcoFIX Fixer			700 (700) ml/m <sup>2</sup>		700 ml/m <sup>2</sup>	
Water			13 l/m <sup>2</sup>		13 l/m <sup>2</sup>	
Developing Temperature			27 (29)° C		27° C	

Table above shows standard values at standard processing cycle unless differently indicated (modifications possible)



# STRUCTURIX Chemicals

**Strategically designed to be compatible with our films and processing equipment, STRUCTURIX chemicals guarantee perfect film development.**

The chemistry involved in the processing of radiographic film is a crucial part of the total cycle. Because the goal in processing is to control all factors that influence the intrinsic quality of the industrial X-ray film, the use of optimal chemicals is essential. Waygate Technologies is the exclusive provider of the complete line of advanced, high-quality STRUCTURIX processing chemicals. Specially designed for industrial X-ray applications, STRUCTURIX chemicals are an integral part of our total system approach. They are compatible with STRUCTURIX film types and equipment to guarantee perfect development every time.

## Suited for all processors

All types of processors can be combined with STRUCTURIX chemicals. Best results, however, are obtained with the dedicated films and processors as they are designed to work together.

## Handy packaging

STRUCTURIX chemicals come in shipping cartons made from 60 percent recycled cardboard. Where possible, the cartons are fitted with handles for easy tilting and transportation. The use of color is restricted and used only where the color is part of the product information. All boxes are color-coded with colored adhesive tape so that contents are easily identifiable. Red is used for boxes containing developer, blue for boxes containing fixer and brown for all other chemicals.

## Uniform PE material use for easier recycling of bottles

STRUCTURIX chemicals are supplied in translucent bottles made from 100 percent polyethylene (PE). Labels on the bottles are made of polyethylene material and have a white background to make the printed text easier to read. To ensure each bottle is easily PE-recyclable, the colored components are only the screw cap and a stripe in the label for identification purposes (red for developer, blue for fixer and natural for other chemicals).

## Safety seal for easy automatic mixing

All bottles feature a safety seal. This seal occurs during production. It is welded to the bottle by induction heating to form a perfectly airtight closure. When you remove the screw cap, a skin of polyethylene remains on the neck of the bottle. The skin allows the bottle to be placed upside down on a mixer. This feature is also one of our many environmentally safe practices.

## Guaranteed quantity

STRUCTURIX chemicals are marked with an “e” sign on the front label after the quantity indication. This “e” marking guarantees that STRUCTURIX chemicals are delivered with the correct, authorized quantity limits according to EU legislation.

## Expiration date

STRUCTURIX chemicals are marked with an “exp. date”, indicating product shelf life. The “exp date” is inkjet printed and includes the year and the month of expiration. The expiration information also appears on each shipping carton and each part of the concentrate bottles.

## Safety measures

Information relating to safety, health and environmental aspects of the chemicals can be found in the Safety Data Sheets (SDS). We advise your careful adherence to all safety instructions provided for the use of our chemicals.

## Process room conditions

We advise you ensure a well-ventilated processing room. An air exchange of 10 times the room volume per hour is recommended to prevent the build-up of too high a concentration of chemical fumes in the air.

## A wide range of industrial X-ray chemicals for every application

- Manual Processing
- Automatic Processing
  - ECO' chemical range
  - Standard chemical range
- Cleaning Chemicals for Tanks and Racks

## Manual Processing Chemicals

### STRUCTURIX G 128 Developer

G 128 is a single part, liquid developer for manual processing of industrial X-ray films. Its main advantages include:

- Excellent stability during storage as concentrate
- Robust performance in high temperature and high humidity conditions
- Resistance to oxidation in normal use
- Excellent speed
- Exceptional contrast characteristics

The G 128 manual developer is available in boxes containing four sets of 5 litre bottles of concentrate. Each 4 x 5 litres box will make four sets of 25 litres of ready-for-use solution.

The recommended replenishment rate depends on the manual processing system used:

- 600 ml/m<sup>2</sup> or 90 ml/film of 35 x 43 cm is the average rate to preserve good processing condition (reference: STRUCTURIX D7 film with an average density of 2.50)  
The standard developing temperature is 20°C for five minutes developing time.
- 400 ml/m<sup>2</sup> with channel type hangers
- 300 ml/m<sup>2</sup> with clip type hangers

To obtain best results, the G 128 developer should be used in conjunction with the STRUCTURIX G 328 fixer.

### STRUCTURIX G 328 Fixer

G 328 fixer is a single part, liquid fixer for manual processing of industrial X-ray films. The G 328 fixer contains no hardening agent.

It is available in shipping cartons containing four sets of 5 litres concentrate for four sets of 25 litres ready-for-use bath.

The recommended replenishment rate is independent of the used manual processing system and is applicable for both clip type hangers and channel type hangers:

- 600 ml/m<sup>2</sup> is the average rate or 90 ml/film of 35 x 43 cm
- Keep the solution level constant and replace after 1.5 m<sup>2</sup> film per litre original solution has been fixed

In the event an automatic dryer such as the dryer unit is used, a hardening fixer, preferably G 335 (part A & B) or ecoFIX (part A & B), is recommended. When using the STRUCTURIX G 328 fixer, we strongly advise you add a hardening agent to the G 328 fixer.



# Automatic Processing Chemicals

## The new STRUCTURIX ECO Chemicals are an important link in the total STRUCTURIX ECO Film System.

Thanks to the intelligent composition of the chemicals, ecoDEV and ecoFIX, it is possible to reduce chemistry consumption up to 60%, compared to the present reference levels while maintaining excellent sensitometric and physical characteristics. This significant reduction in chemistry consumption translates into cost savings, as the smaller volume of developer and fixer required leads to less waste volume and lower disposal costs.

The ECO chemicals, ecoDEV and ecoFIX, have the intrinsic qualities and benefits of standard STRUCTURIX chemicals and, therefore, provide excellent results in combination with any STRUCTURIX processor.

EcoDEV and ecoFIX have the same dilution as G 135 and G 335, allowing use of the current NDT MIXER without modification.



Recommended use of ecoSTART		
Processing Time	Immersion Time	Quantity To Be Added
5 min. cycle	62.5 sec.	25 ml per Litre Fresh ecoDEV Solution
8 min. cycle	100 sec.	20 ml per Litre Fresh ecoDEV Solution

Recommended use of ecoDEV			
Processing Time	Immersion Time	Temp. (°C)	Replenishment Rate
5 min. cycle	62.5 sec.	29° C	550 ml/m <sup>2</sup>
8 min. cycle	100 sec.	27° C	900 ml/m <sup>2</sup>

Recommended use of ecoFIX		
Processing Time	Processor	Replenishment Rate
5 min. cycle	S ECO	700 ml/m <sup>2</sup>
8 min. cycle	S ECO, M ECO	700 ml/m <sup>2</sup>
8 min. cycle	U, NOVA	1200 ml/m <sup>2</sup>

## STRUCTURIX ecoDEV

The STRUCTURIX ecoDEV is a new two-part developer suitable for standard processing in the 8 minute cycle but specifically designed for super fast 5 minute processing.

EcoDEV is glutaraldehyde-free and boron-free, reducing its impact on the environment. This is especially true when processing is in the 5 minute cycle in combination with the NDT S ECO processor. This combination has the lowest possible replenishment rate while delivering optimal developing capabilities.

EcoDEV is packed in a shipping carton containing two sets of part A (5 litres) and part B (0.5 liters) concentrate. One set is sufficient for preparing 20 litres of ready-to-use developer. Each carton contains four bottles.

The ecoDEV developer enables you to develop your films at a lower temperature in the standard 8 minute processing cycle, resulting in less evaporation of the chemicals.

## STRUCTURIX ecoSTART

STRUCTURIX ecoSTART is a new one-part starter solution to be added to ecoDEV ready-for-use solution. Whenever you replace the ecoDEV developer, we recommend use of ecoSTART starter solution to ensure film images with optimal sensitometric results right from the start. EcoSTART is packed in a shipping carton containing 4 sets of 1 litre bottles.

## STRUCTURIX ecoFIX

The STRUCTURIX ecoFIX is a new two-part fixer for universal use but specially designed for super fast processing, with the lowest possible replenishment rates while rendering improved archiving results.

EcoFIX is boron-free. Due to the lower level of aluminum sulfate, the risk of precipitation is reduced drastically, ensuring good film quality and consistent repeatability.

EcoFIX is packed in a shipping carton containing two sets of part A (5 litres bottle) and part B (1.25 litre bottle) concentrate. One set of part A & B is sufficient for preparing 20 liters of ready-for-use fixer.

STRUCTURIX ecoFIX can be used for manual processing. For manual usage, one set of concentrate is enough to prepare 25 litres of ready-for-use solution.

# Automatic Processing Chemicals

The standard STRUCTURIX chemicals are recognized worldwide and have been used successfully in industrial X-ray labs for years, thanks to their high quality.



## STRUCTURIX G 135 Developer

STRUCTURIX G 135 is a three-part developer for use with automatic processing.

STRUCTURIX G 135 is known for its stability, long shelf life and self-cleaning characteristics. The self-cleaning feature means that rather than leaving solids floating to the bottom of the processor tank, they sink through the drains. This feature keeps the chemistry very clean and results in better film quality.

STRUCTURIX is packed in a shipping carton containing two sets of part A (5 litres), part B & C (2x 0.5 litres) concentrate. One set is sufficient for preparing 20 litres of ready-for-use developer, if used for automatic processing.



## STRUCTURIX G 135 s Starter

STRUCTURIX G 135 s starter is a one-part, ready-for-use starter solution to be added to fresh G135 developer ready-for-use solution. G 135 s Starter is supplied in quantities of four sets of 1 litre bottles per box.

When preparing fresh G 135 developer, an additional quantity of 25 ml starter solution per litre ready-for-use developer is added in the processor tank. Thus, a bottle of 1 litre G 135 s Starter matches 40 litres of G 135 ready-for-use developer.

The use of starter solution is recommended whenever the developer is replaced, ensuring film images with optimal sensitometric results right from the start.

## STRUCTURIX G 335 Fixer

The STRUCTURIX G 335 Fixer is a two-part fixer for universal use. The G335 fixer is universally applicable for automatic and manual processing. G 335 is known for:

- excellent archival permanence
- low maintenance requirements
- minimal odor level

It is available in a box of two sets of 5 litres part A and 1.25 litres part B concentrate. One set of part A & B provides 20 litres of ready-for-use fixing bath for automatic processing. When using G 335 for manual processing, one set of concentrate should be diluted for up to 25 litres of ready-for-use solution.



## Cleaning Products

**State-of-the-art film system technology and regular maintenance of the film processor are the best guarantees of outstanding film image quality.**

Two innovative products help assure the intrinsic quality of the film processing. They are DEVCLEAN and FIXCLEAN, components of a universal cleaning solution for a clean processing system.

The use of DEVCLEAN and FIXCLEAN will:

- extend the useful life of the STRUCTURIX developer and fixer solutions
- improve the developer system performance and reliability
- ensure consistent, high quality images
- reduce costs by extending your maintenance interval

### STRUCTURIX DEVCLEAN

DEVCLEAN is a highly efficient, two-part maintenance product for the thorough cleaning of the developing area of both processors and tanks along with the accessories used for manual development. Silver deposits and sludge on all parts dissolve effortlessly, completely and rapidly.

#### DEVCLEAN

- is a one-step maintenance that needs no neutralizing
- rinses away easily and quickly

DEVCLEAN is offered as a one processor service set. Each box contains one set of 5 litres part A and 5 litres part B to be diluted to 30 litres ready-for-use cleaning solution.



### STRUCTURIX FIXCLEAN

FIXCLEAN is a one-part, liquid cleaning product for regular maintenance of fixer, intermediate rinsing and wash water areas of processors. It can also be used to clean fixer tanks of chemical mixers such as the NDT MIXER, as well as manual film processing systems.

The FIXCLEAN cleaning compound is based on sodium hydroxide. It is highly efficient and contains no chlorine based substances.

FIXCLEAN advantages include:

- speed and efficiency
- dissolves lime
- cleans all sediment and deposits

FIXCLEAN is conveniently delivered in a quantity appropriate for one processor service. Each box contains one cleaning set or one 5 litre bottle of concentrate to be diluted to 50 litres of ready-for-use solution. Most fixer and wash water areas can be cleaned with one set of FIXCLEAN.



# STRUCTURIX Eco Film System

The STRUCTURIX ECO Film System combines both economy in use and ecological responsibility. This advanced film system minimizes its impact on the environment with less chemistry consumption, higher film throughput and lower energy usage.

Choose from the STRUCTURIX Film System in 5 minute cycle (NDT S ECO) or the STRUCTURIX Film System in 8 minute cycle (NDT S ECO/M ECO).

Both are specially designed to meet the strictest standards for silver content in the wash water. The secret lies in the double fixing tank with which the system is equipped. This cascade fixing system ensures that the amount of silver in the wash water remains within the limit of  $<50 \text{ mg/m}^2$ . Additionally the STRUCTURIX S ECO allows significant reduction in the chemistry replenishment rate.

## STRUCTURIX Chemicals

Thanks to the intelligent composition of the chemicals, STRUCTURIX ecoDEV and ecoFIX, it is possible to reduce the chemistry consumption to less than 60 percent of the present reference levels while maintaining excellent sensitometric and physical characteristics. This drastic reduction in chemistry consumption translates into lower purchasing costs, while the smaller volume of developer and fixer waste leads to lower disposal costs. In fact, the higher concentration of silver in the fixer waste actually turns an expenditure item to an income item, thanks to silver recovery.

## STRUCTURIX ecoDEV

The ecoDEV is a new two-part developer for universal use but specially designed for super fast processing, with the lowest possible replenishment rates while maintaining optimum developing capabilities. The hardener-free and boron-free ecoDEV has a minimal impact on the environment.

Replenishment rate 5 min. cycle:  $550 \text{ ml/m}^2$  (S ECO)

Replenishment rate 8 min. cycle:  $900 \text{ ml/m}^2$  (S ECO/M ECO).

The use of the starter solution, ecoSTART, is highly recommended when filling the developer tank. In this way, optimal sensitometric results are ensured from the start.

## STRUCTURIX ecoFIX

The ecoFIX is a new boron-free, two-part fixer specially designed for super fast processing, with the lowest possible replenishment rates while rendering improved archiving results.

Replenishment rate:  $700 \text{ ml/m}^2$  (S ECO and M ECO).







Waygate Technologies provides safety and environment information on all film System products in your language and according to the legislation in your country. Safety Data Sheets (SDS) contain data about the composition of chemical substances and preparations and the relevant health, safety and environmental information. Article Information Sheets (AIS) contain data about STRUCTURIX Films. Equipment Information Sheets (EIS) contain relevant health, safety and environmental data about equipment. Recycling Passes (RP) give information to customers and specialized waste collectors about hazardous components and valuable materials in end-of-life equipment.



# STRUCTURIX Eco Film Systems

## The STRUCTURIX ECO Film System in 5 minute cycle

This STRUCTURIX ECO Film System has all possible economical advantages and features to minimize its impact on the environment, including:

- Up to 60 percent higher film throughput capacity
- Up to 40 percent less chemistry
- Up to 40 percent less chemistry and packaging waste
- A considerable decrease in wash water replenishment rates
- Lower silver freights in the wash water
- Less energy consumption

### A certified system

The STRUCTURIX ECO Film System is perfectly suited to applications that demand the highest image quality. It is certified according to the Industrial Film Systems Classification Standards ASTM E-1815, ISO 11699-1 and JIS-K7627. The German Federal Institute, BAM, awarded the STRUCTURIX ECO Film System in 5 minute cycle the certificate of compliance to International Classification Standards.

### STRUCTURIX films

The radiographic films D2, D3, D4, D5, D7, D8 can be used in this system. Adaptations have been made to harmonize the drying characteristics of this assortment.

### Outstanding performance

When set to the 5 minute cycle, the STRUCTURIX S ECO processes no less than 51 cm of film per minute or 78 films (35 x 43 cm) per hour! ecoDEV immersion time: 62.5 sec. (5 min. cycle) at temperature 29°C.

## The STRUCTURIX ECO Film System in 8 minute cycle

Compared to the STRUCTURIX ECO Film System with the S ECO installed in a 5 minute cycle, this system operates with the S ECO or M ECO in an 8 minute cycle.

This system also provides important ecological advantages, including:

- Reduction of the fixer replenishment
- Reduction of wash water
- Reduction of silver content in the waste water
- Less packaging waste
- Low energy consumption

### A certified system

This STRUCTURIX ECO Film System is perfectly suited to applications that demand the highest image quality. It is certified according to the Industrial Film Systems Classification Standards ASTM E-1815, ISO 11699-1 and JIS-K7627.

### STRUCTURIX films

The STRUCTURIX films D2, D3, D4, D5, D7, D8 can be used in this system.

### Superior performance

The STRUCTURIX ECO Film System in 8 minute cycle has a film throughput capacity of 32 cm/min., or 48 films (35 x 43 cm) per hour for the S ECO and 20 cm/min., or 30 films (35 x 43 cm) per hour for the M ECO.

## STRUCTURIX Eco Film Systems Versus STRUCTURIX Standard Film Systems

STRUCTURIX Eco Film Systems Versus STRUCTURIX Standard Film Systems		STRUCTURIX ECO Film Systems		STRUCTURIX Standard Film Systems
		5 Minute Cycle	8 Minute Cycle	8 Minute Cycle
STRUCTURIX Equipment		S ECO	S ECO, M ECO	U, NOVA
STRUCTURIX Films		All	All	All
Film Throughput	<ul style="list-style-type: none"> <li>• cm/min.</li> <li>• 35 x 43 cm Films/Hour</li> </ul>	51 78	32 (S ECO) / 20 (M ECO) 48 / 30	Depending on Processor Type Depending on Processor Type
STRUCTURIX Chemistry	<ul style="list-style-type: none"> <li>• cm/min. Developer Replenishment</li> <li>• Fixer Replenishment</li> <li>• Starter</li> </ul>	ecoDEV: 550 ml/m <sup>2</sup> ecoFIX: 700 ml/m <sup>2</sup> ecoSTART: 25 l/l*	ecoDEV: 900 ml/m <sup>2</sup> ecoFIX: 700 ml/m <sup>2</sup> ecoSTART: 20 ml/l*	G135: 900 ml/m <sup>2</sup> G335: 1200 ml/m <sup>2</sup> G135S: 25 ml/l*
Developer Immersion Time (sec)		62.5	100	100
Temperature (°C)		29°	27°	28°
Water Consumption Between		13 l/m <sup>2</sup>	13 l/m <sup>2</sup>	Depending on Processor Type 13 l/m <sup>2</sup> and more
Silver Freight**		< 50 mg/m <sup>2</sup>	< 50 mg/m <sup>2</sup>	300 - 600 mg/m <sup>2</sup>
Silver Concentration	<ul style="list-style-type: none"> <li>• At Fixer Rate 700 ml/m<sup>2</sup>.</li> <li>• At Fixer Rate 1200 ml/m<sup>2</sup></li> </ul>	4 ppm 1 ppm	4 ppm 1 ppm	Between 25 & 50 ppm

\* l ready to use \*\* Values based on average radiographic densities



# STRUCTURIX

## Quality Assurance Tools

### **Standard for control of film processing by means of reference values.**

To assist our customers in making sure the film systems render the expected capability in daily use, we refer to the standards for radiographic examination. EN444, ISO 5579, ASTM E94 and others specify that the user has to process the films in accordance with the conditions recommended by the manufacturer and pay special attention to monitor and control developing, fixing and washing.

ASTM E94 states: "To produce a satisfactory radiograph, the care used in making the exposure must be followed by equal care in processing. The most careful radiographic techniques can be nullified by incorrect or improper darkroom procedures."

Therefore ISO 11699 consists of two parts. ISO 11699-2 describes how the user should control his or her processing system. For instance, to guarantee the designed film system's performance, calibrated pre-exposed strips provided by the film manufacturer must be used.

We designed the STRUCTURIX Quality Assurance Tools, a set of practical, dedicated tools for the radiographer to control and prove compliance of his or her entire system.

# STRUCTURIX Certified PMC Strip (Process Monitoring Control)

The STRUCTURIX Certified PMC strip is a handy, fast and reliable tool for monitoring the quality of the film processing system and for proving compliance with existing standards on systems classifications.

## X-ray pre-exposed film strips

These X-ray pre-exposed film strips are produced under Agfa's Quality Management System (Q.M.S) conditions according to ISO9001-2015.

## Contents

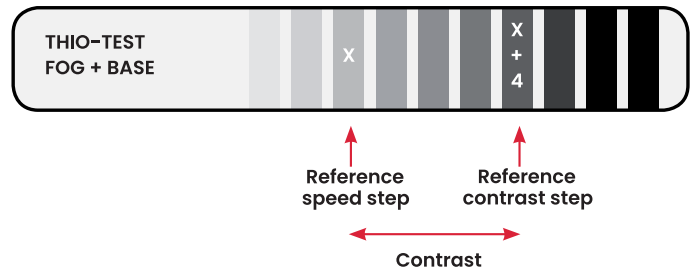
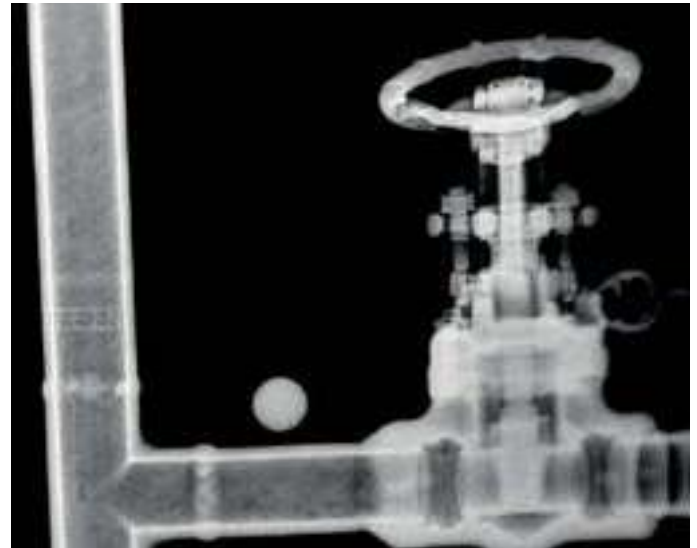
Every STRUCTURIX Certified PMC pack contains:

- 25 X-ray exposed, undeveloped PMC strips in individual daylight packaging. Each strip bears a unique serial (ID) number, even after processing
- A PMC chart to record test results showing compliance with the standards
- Detailed instructions for use
- A certificate for compliance with ISO 11699-2

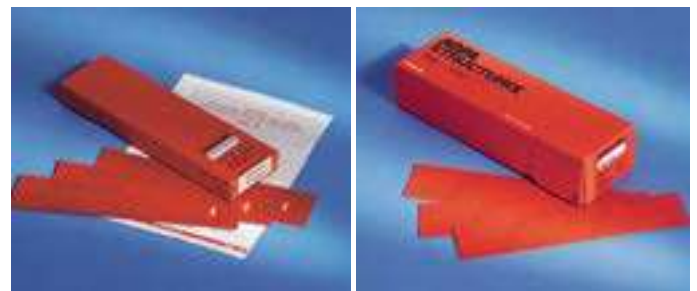
## Purpose

The purpose of these PMC strips is to:

- Demonstrate conformity with the certified STRUCTURIX standard film system, as defined in European standard ISO 11699-2
- Monitor the performance of the STRUCTURIX processing system, in order to guarantee consistent high quality
- Enable early corrective actions to be taken in case of deviations
- Be used on a day to day basis to provide control data as part of a quality management system (e.g. ISO9001-2015)



- Speed index  $S_x$ : average value of net densities of step X
- Contrast index  $C_x$ : positive difference of the average densities of step X and X + 4



STRUCTURIX PMC STRIPS without certificate that can be used to monitor the performance of the STRUCTURIX processing system in order to guarantee consistent quality. Every PMC pack contains:

- 50 X-ray exposed, undeveloped PMC strips in individual daylight packaging
- A PMC chart to record test results
- Instructions for use

## STRUCTURIX Certified DENSTEP

The STRUCTURIX CERTIFIED DENSTEP is a density step wedge film to verify the calibration of optical transmission densitometers used in the industrial X-ray field.

### Each STRUCTURIX CERTIFIED DENSTEP is:

- Packed in a light-tight waterproof package which protects it against moisture, dust, etc. Guaranteeing a shelf life of at least four years, 2 years from opening date of the first use (from date the package is opened)
- Provided with a calibration certificate and a copy of the BAM reference 8.3/8452
- The density values reported, cross referenced by serial number are traceable to BAM (Bundesanstalt für Materialforschung – und prüfung) through traceable calibrations of the instrumentation in accordance with ISO 5-2:2009 and ISO5-3:2009 approved Q.A. system. The calibration process is additionally verified by measurement of a BAM Film Step Tablet for diffuse optical Densities – BAM reference 8.3/8452



## STRUCTURIX THIO-Test

### Archivability check

The archivability of the processed film is evaluated by measuring the residual thiosulphate in the emulsion layers. The STRUCTURIX Thio-Test provides the means for performing the control of fixing and washing as described in ISO 11699-2.

### The STRUCTURIX Thio-Test kit consists of:

- the Thio-Test Color Stepwedge with four steps, which relate to the archivability expressed in number of years
- one dropper bottle of Thio-Test reagent, of 35 ml (about 1,000 drops)

The STRUCTURIX Thio-Test also correlates perfectly with other international standards (ISO/ ANSI) for determining the archival quality of industrial X-ray film. It is a quick and simple method to determine the “life expectancy” of processed films and warns of poorly fixed and/or washed films.





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