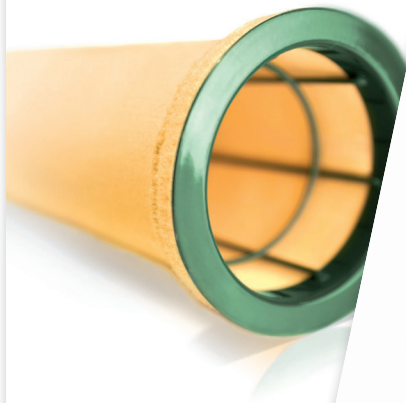




P84

Unique Performance in Filtration Efficiency

P84® Polyimide Fibres for High Temperature Filtration



P84® Polyimide Fibres
PROPERTIES, TECHNICAL DATA AND PRODUCT RANGE

P84



THE COMPANY



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EVONIK FIBRES GMBH – THE P84® POLYIMIDE FIBRE PRODUCER

Evonik Fibres GmbH is the sole producer of the polyimide fibre known under the trade name of P84®. With its unique melt-spun cross-section and high thermal, chemical resistance to a variety of operating conditions, P84® has become a popular choice in hot gas filtration used in Cement, Iron, Waste to Energy, Power and Metallurgy industrial applications. The unique melt-spun cross-section of P84® offers the highest filtration efficiency providing significant energy in the operation of an industrial flue gas treatment system. The growing presence of operators to energy saving also makes P84® the ideal choice in low temperature process fibres where it is used in combination with all other available filtration fibres (PET, PAN, PPS, etc.) in a mixed bed.

Worldwide more than 500 plants are covered with P84® filter bags. Based on the energy saving resulting from the use of P84® fibre media, these reference plants of Evonik reduce CO₂ emission by approximately 120,000 tons per year.

Evonik Fibres GmbH is part of Evonik Industries AG, a private industrial group based in Germany having obtained global leadership in specialty chemicals.

P84® fibres are also applied in reduction products, protective clothing and technical wearing products.

In addition, Evonik Fibres GmbH offers polyimide powder under the brand name P84PET in the market. This powder is used for processing

stamped parts and stock shapes in applications where low-friction wear parts (e.g. bearings, bushings) with high thermal stability are needed. The powder can be blended with graphite, PTFE or other functional fibres to address specific requirements. For very challenging applications, this type P84PET with even increased temperature resistance is recommended.

The younger member of the P84® family are our high-selective polyimide based filter fibre membranes which are used for different gas separation applications like nitrogen generation or natural gas treatment. The membranes are marketed under the brand name Superair®.

P84® APPLICATIONS IN DRY FILTRATION



CEMENT

Changing flue gas conditions are caused by using a variety of fuels, as well as washing dust in filter fibres. Also, direct mode to compound mode, High CO₂ and Variable Organic Compound (VOC) values can be generated by the conversion of secondary fuels in the production. The purity reduction due to a residual parameter for the filter media is a source of dissatisfaction. Because of the high alkaline content, the bypass filter is a real challenge for the filter media.

WASTE TO ENERGY

Increased dust emissions are an absolute danger for a WTE plant. Although process dust quantity requires a highly flexible flue gas treatment system, including the big filter bag being the barrier for all solid substances. Due to its filtration performance, P84® based filter bags are used in all common process variations of flue gas treatment systems of WTE plants.

The main benefit is a low and stable residual pressure drop and long lifetime cycles. This combination efficiency is achieved for filter particles alone. This ensures low emissions and an efficiency of the absorber.

POWER

Flue gas treatment systems are a necessary component of energy plants. In order to keep the overall performance high, the energy consumption of the FGD plant has to be low. P84® based media filters are known to ensure low emissions and a stable pressure drop of the filter plant.

When using biomass, the operation load of the plant varies in a wide range. Operation at low boiler load sometimes causes high values of sulphur/hydrochloric acid and temperature fluctuations.

PROCESS FILTER

A wide range of operating temperatures and the presence of explosive environments are the characteristics of flue gases in the steel industry. Cooling temperature peaks up to 200 °C and having a limiting temperature of 80 °C, P84® is capable to deal with sparks, varying oxygen contents and high temperatures.

The glass transition temperature of 215 °C ensures the physical integrity of the fibre, even when the temperature peaks are exceeded. Major fibres change due to the discontinuous operation of many processes. P84® prevents from dust penetration into A/C motor fan due to dust-trap peak values.

Metalurgical Processing

Various filtration processes are realized at elevated temperatures. P84® is a viable option. Due to a combination of physical and chemical performance, P84® is the superior fibre for a wide range of applications. Furthermore, P84® is the ideal partner in blends with other fibres, whenever another fibre material is used for technical or operational reasons.

FUNCTIONAL CHARACTERISTICS OF P84® FOR DRY FILTRATION



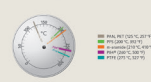
SERVICE TEMPERATURES

The service conditions ensure temperature stability over a wide range of operating conditions. The peak temperature for the P84® fibre is limited to 240 °C. This is well below the glass transition temperature of 215 °C.

Chemical decomposition starts beyond 400 °C without formation of significant amounts of harmful substances.

The acceptable average temperature in the actual application depends on the composition of the environment and the expected service life.

Max. Service Temperatures of Different Fibre Materials

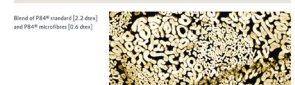


CHEMICAL ENVIRONMENT

P84® polyimide fibres can be used in a wide range of chemical environments. Due to its chemical composition P84® polyimide fibres are a preferred material in dry filtration processes.

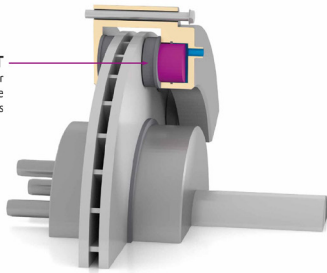
SPECIFIC SURFACE AREA

Specific surface of different fibre materials in function of the fibre fineness.





P84®UHT
polyimide piston for
functionable
brake systems



Corrosion-free brake systems with P84®UHT polyimide parts or P84® coatings

**P84®UHT polyimide offers
unique properties:**

- High mechanical stability
- Low friction coefficient
- Excellent chemical stability against fluids
- High temperature resistance up to 300 °C



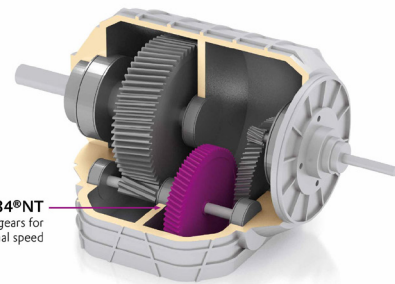
**Outstanding benefits for pistons,
guiding pins and calipers:**

- Less corrosion to avoid seizures
- High safety due to optimum function
- Significant weight reduction
- Sinter technologies for economic mass production

www.p84nt.com



P84®NT
polyimide gears for
high rotational speed



High rotational speed transmissions P84®NT polyimide gears replacing metal gear wheels

**P84®NT polyimide offers
unique properties:**

- Excellent mechanical stability at high loads
- High pv limits reachable
- Unique chemical stability against fluids
- High temperature resistance up to 300 °C



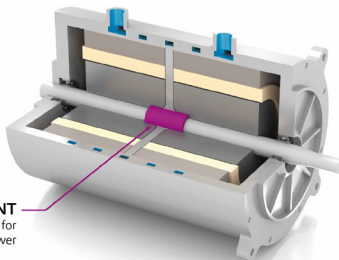
**Outstanding benefits for
polyimide gear wheels:**

- Highest rotational speeds to achieve
- Higher loads compared to other plastic gears
- Lowest noise and friction behaviour
- Low moment of inertia
- Precise parts by using direct forming process

www.p84nt.com



P84®NT
polyimide bearings for
higher engine power



High engine performance by using P84®NT polyimide bearings

**P84®NT polyimide offers
unique properties:**

- Excellent mechanical stability at high loads
- Low friction coefficient
- Low density and moment of inertia
- High temperature resistance up to 300 °C



**Outstanding benefits for
dry lubricated bearings:**

- Stabilization of drive shaft allows higher rotational speeds
- Improved engine performance and efficiency
- No need of lubrication system
- To avoid damages of main bearings
- Precise parts by using direct forming process

www.P84NT.com



Outstanding in Chemicals
Procon™ PPS Fibres for High Temperature Filtration

Unique Performance in Filtration Efficiency
P84® Polyimide Fibres for High Temperature Filtration

EVONIK INDUSTRIES

PROCON

P84

Evonik. Power to create.

Unique Performance in Cement Plants
Filter bags out of P84® Polyimide Fibres offer Highest Filtration Efficiency.

EVONIK INDUSTRIES

Flexibility for changing operating conditions:
When changing from normal operation at temperatures up to 240 °C to compound mode at 140 °C the dust load is increased 10 - 15 times! Even at dust loads above 500 g/Nm³ P84 material ensures maximum efficiency and keeps emission levels far below environmental standards. No CO shut-downs.

Secondary fuels require chemical resistant filter material:
P84 material can be used within a wide pH range of 2 - 12 making it the preferred material when flue gas conditions vary due to different fuels.

In summary P84 material offers:
good chemical and mechanical stability
high temperature resistance up to 260 °C
suitability for high λ/ν ratios up to 1.5 m/min
superior filtration efficiency

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Evonik. Power to create.

Performance and Efficiency for Clean Power Generation.
P84® and Procon™ fibre blends for superior filtration efficiency.

EVONIK INDUSTRIES

P84 and Procon blends for filter bags:
Procon fibres with excellent chemical stability offer maximum flexibility when changing coal qualities. Combined with the outstanding filtration efficiency of P84 fibres the material offers long service life and low maintenance cost.

Filtration efficiency:
The unique multilobed profile of P84 fibres ensures that even fine particles are collected and no dust can penetrate the needle felt even at very high dust loads. In combination with initial Procon fibres the filter material will show low pressure drop during the entire bag life.

High temperature resistance:
P84 polyimide fibres and Procon PPS fibres can withstand high temperatures and show chemical resistance over a wide range of pH.

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Unique Performance in Waste to Energy Plants
Filter bags out of P84® Polyimide Fibres offer Highest Filtration Efficiency.

EVONIK INDUSTRIES

P84 for filter fabrics:
P84 polyimide fibres allow maximum flexibility whether burning household waste or industrial waste. Filter bags out of P84 will give you long service life and low maintenance cost.

Filtration efficiency:
The unique multilobed profile of P84 fibres ensures that even fine particles will be collected. The extremely high surface area prevents particles from penetrating the felt, resulting in low pressure drop during the entire bag life.

High temperature resistance:
P84 polyimide fibres can withstand peak temperatures up to 260 °C, they don't burn or melt and are capable of withstanding a wide pH range.

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Invitation

9th Conference on High Temperature Filtration

Hotel Gut Brandlhof**s**
September 24th - 26th, 2008
Saalfelden, Austria

Evonik. Power to create.

Convincing facts - P84 references
Collection efficiency for cement plants.

Feasibility for changing operating conditions:
When a long-term (one-shift) operation at temperatures up to 280 °C is interrupted (e.g. 140 °C for 24 hours) and increased to 280 °C immediately, Evonik P84 filters do not lose their 99.99% collection efficiency and keep working for many years without any need for replacement. No CO₂ emissions.

Secondary Leaking capture (please request your samples)

EVONIK
INDUSTRIES

Convincing facts - P84 references
Superior performance in waste incinerators.

P84 for filter fabric:
P84 polyimide fibers allow maximum flexibility when handling hazardous waste or industrial waste. The low level of P84 cost gives you long service life and low maintenance cost for every year.

Filtration efficiency:
The unique molecular profile of P84 fibers provides a larger specific surface area and smaller voids, ensuring that even fine particles will be retained. The extremely high surface area prevents particles from penetrating the filter, resulting in low pressure drop during the entire bag life.

High temperature resistance:
P84 polyimide fibers can withstand peak temperatures up to 280 °C without losing their physical strength, they glow brown in ash and are capable of withstanding a multiple-prime high temperature around the globe and around all seasons.

More successful installations under P84.com

EVONIK
INDUSTRIES

9th Conference on High Temperature Filtration
September, 24th - 26th, 2008
Hotel Gut Brandlhof****s
Saalfelden, Austria

The Conference will deal with the main topic:
Coal, Biomass and Alternative Fuels - Challenges and Solutions.

The fast growing demand on electrical energy in countries like China and India plus the need of urgent measures against global warming have created a situation that requires environmental protection at the highest technical standard possible.

Therefore high tech filter materials combined with up-to-date process control play a leading role when it comes to achieving the goals of the Kyoto protocol as well as national standards.

As always at our conferences a truly international audience and presentations of the leading companies will give an overview of the current situation and discuss up-to-date solutions.

Don't miss this event and sign up today to meet and discuss with the global experts during this conference.

For speaker summaries and preliminary information about participating companies please check our website www.P84.com/conference

The charming and unique scenery of the country side of Salzburg and in particular the lovely and elegant atmosphere of the Gut Brandlhof are responsible for our decision to choose this location again for the 9th International Conference on High Temperature Filtration.

In case you always wanted to go skiing in Austria the glacier at Zell am See is only one hour's drive away from the hotel and offers 12 months skiing in one of the most scenic mountain areas in Austria.

Location:
Hotel Gut Brandlhof****s
Saalfelden, Austria

Start of Conference:
Wednesday, September 24th, 6.00 p.m.

End of Conference:
Friday, September 26th, 2.00 p.m.

Conference Fee:
€ 1.300,- includes 2 overnight stays, meals and conference papers.

Special arrangement:
For private accompanying person € 350,-

Special Fee for companies:
1st participant € 1.300,-
2nd participant € 1.050,-
3rd participant € 850,-
4th participant € 700,-

Registration:
Upon request we are happy to make arrangements for extended stays. Please use the attached form for sending your reservation as soon as possible.

You can also sign up via e-Mail on our website: www.P84.com/conference



www.lum.at



Einladung

zur Eröffnung der neuen Evonik Fibres Produktionsstätte 17. Juni 2010, ab 16:00 Uhr in Schörfling am Attersee



Eröffnungsfeier am 17. Juni 2010, ab 16:00 Uhr in Schörfling, Gewerbepark 4

Die Evonik Fibres GmbH ist auf die Entwicklung, Herstellung und den Vertrieb von P84® Polyimid Produkten spezialisiert. Im Rahmen einer Betriebsweiterziehung wurde ein neues Verarbeitungs- und Produktionsgebäude in Schörfling errichtet.

Als Partner für die Realisierung dieses neuen Standortes fungierte die P+M Projektentwicklung und Management Holding GmbH.

Wir möchten die Fertigstellung zum Anlass nehmen um Sie herzlich zur Eröffnungsfeier einzuladen.



Wir freuen uns schon jetzt auf einen gemeinsamen Abend und werden Sie musikalisch und kulinarisch verwöhnen. Durch das Programm führt Sie unser Moderator Herr Michael Thala.

Als Ehrengäste werden erwartet:

Dr. Josef Pühlinger
Landeshauptmann Oberösterreich

Kommr Viktor Sigl
Wirtschaftsbund Oberösterreich

Dr. Rudolf Trauner
Präsident WKO Oberösterreich

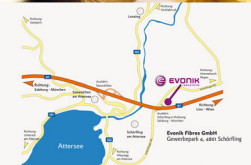
W. Hofrat Dr. Peter Salinger
Bezirkshauptmann Vöcklabruck

Gerhard Gründl
Bürgermeister Schörfling



Wir ersuchen Sie um Ihre Antwort mit beigelegten Formular bis 08. Juni 2010.

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Gewerbe- und Industrieobjekte nach individuellem Bedarf.

INNOVATION IST UNSER ANSPRUCH.

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Evonik Fibres GmbH



Technology at work

www.P84.com



Evonik Fibres GmbH



Fibres and more

www.P84.com



P+M Projekt-Entwicklung und Management Holding GmbH fungierte als Bauträger für das neue Firmengebäude von Evonik Fibres. Im Zuge der Eröffnungsfeierlichkeiten zeichnete L&M Marketing für die begleitenden Eventmaßnahmen verantwortlich. Im Rahmen einer eindrucksvollen Abendgala wurde den über 200 Gästen aus Politik und Wirtschaft ein abwechslungsreiches Rahmenprogramm geboten.