



Pyrotex® KE
The candle element for hot gas filtration

BWF Envirotec.
Leaders in industrial filtration.

More than 40 years of experience
More than 900 standard products
Locations in Germany, China, the
USA, Italy, India, Turkey, Russia,
the Czech Republic and Australia
ISO 9001, ISO 14001,
BS OHSAS 18001

BWF Envirotec is the world's leading manufacturer of filter media for industrial dedusting. We take advantage of 40 years of experience from research, development and use in order to optimize our customers' dedusting processes. In doing so, we guarantee compliance with the statutory dust limit values, thereby contributing to minimizing the energy consumption of filtration systems and extending service lives.

Our applications engineers determine the individual conditions of use and ensure an optimum filtration solution through a customized offer.

Service benefits such as training, candle element installation, leakage tests, candle element monitoring and preventive maintenance of filtration systems complete our all-inclusive package for industrial filtration.

<p>CONSULTANCY</p> <p>The right Pyrotex® KE candle element for every application – with emission values of < 1 mg/Nm³</p>	<p>ANALYSIS</p> <p>Laboratory and filter analyses in our R&D competence center</p>	<p>DEVELOPMENT</p> <p>Ongoing further development of the product portfolio</p>
<p>DISTRIBUTION</p> <p>Allround carefree packages for hot gas filtration</p>	<p>SERVICE</p> <p>Training, inspection, installation</p>	

Pyrotex® KE

Pyrotex® candle elements – or Pyrotex® KE for short, as the german for candle elements is “Kerzenelemente” - have represented excellent filtration performances for decades.

Based on these five fundamentals, we have precisely tailored our unique service portfolio around Pyrotex® KE candle elements to our customers' requirements.

Pyrotex® KE

The candle element for hot gas filtration.

Innovative candle elements to meet challenges in hot gas filtration

Use of hot gas candle elements is associated with special requirements. In addition to the utmost in quality and a long service life, excellent filtration properties are the most important criterion for an effective dedusting process.

Pyrotex® KE candle elements represent extremely high chemical resistance. Gases containing sulfur or chlorine, such as those present during hot gas filtration, are separated by adsorption using an admixture of appropriate additives. Fine dust can be separated using Pyrotex® KE, even at high temperatures and with corrosive gases.

Resistance up to 1000 °C peak temperature

Conventional filter media are only temperature resistant to a certain degree. Pyrotex® KE can be used without difficulty in filtration processes up to a constant temperature of 850 °C. They are 100 % spark-repellant and nonflammable – at peak temperatures of 1000 °C.



Conical collar or T-shaped collar – the right filter head plate for every candle element

Owing to the different versions, Pyrotex® KE candle elements are versatile in use and are suitable both for retrofitting and new equipment of your filtration system. You can therefore not only benefit from highest quality but also from a wide range of installation options.

Applications of Pyrotex® KE candle elements

- Cement industry
- Glass industry
- Biomass and waste utilization plants
- Gasification processes of materials such as wood, or pyrolysis of contaminated soil
- Smelting processes
- Calcium carbide industry
- Chemical industry (precious metals, catalyzers)
- Recycling of radioactive materials



BWF Envirotec can assist you in customized **planning of your dedusting system** with Pyrotex® KE – regardless of whether a new system or retrofit is involved – for **more effective, more economical and more environment-friendly industrial filtration**. We will be pleased to send you further information: service@bwf-envirotec.de

Less NO_x owing to KAT

Pyrotex® KE are also available in a version with a KAT catalyzer. The NO_x content in the exhaust gas flow is markedly reduced by means of selective catalytic reduction, SCR. International limit values for nitrogen oxides, which are becoming increasingly stricter can be achieved more easily.

Pyrotex® KE KAT – the product line with a catalyzer. The special extra for new systems and retrofits.

KAT catalyzer for less NO_x and new possibilities for energy recovery

Many industrial applications at high process temperatures such as smelting, furnaces and calcination systems generate high NO_x concentrations in the flue gas and exhaust gas. The NO_x contents sometimes attain values of more than 1000 mg/Nm³.

NO_x reduction (deNO_x) is usually achieved by means of SNCR and/or SCR. In the case of an SCR, the raw gas should be dedusted beforehand for optimized operation. In many applications however, the flue gas or exhaust gas needs to be reheated in a further process stage to allow the catalyzer to function effectively.

Combined mechanism of action

Pyrotex® KE KAT catalytically equipped candle elements **have a dual action even at high temperatures.**

Consequently,

- dedusting and
- denitrification (deNO_x)

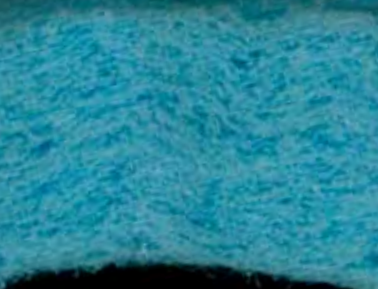
can be simultaneously performed in a single process stage. This saves energy and renders a second process stage for heating the gas superfluous.

Dedusting and deNO_x are performed in an aggregate - in a combined filter with Pyrotex® KE KAT candle elements as the central component of the filtration process. This combined process stage can be conducted at filter house temperatures of up to 400 °C. Hence, dust and NO_x-depleted flue gas or exhaust gas leaves the combined filter, thereby offering **new possibilities for the process in terms of process engineering.**

These possibilities may for example involve energy utilization pathways in order **to generate electric power and district heating** directly in the system. Pyrotex® KE KAT can therefore facilitate efficient energy management by means of filtration – a special bonus for plant operators in times of increasing energy costs.



Pyrotex® KE are available in a length of up to 3 m



High porosity with emission values of $< 1 \text{ mg/Nm}^3$

Pyrotex® KE

Added value through air permeability, weight and occupational safety.

Air permeability – reduction in costs right from the outset

Pyrotex® KE have **high air permeability** with **higher porosity**. Dust particles in the raw gas are separated on the surface of the filter medium. In many applications, a low Δp -behavior is achieved during filtration with Pyrotex® KE. This reduces the energy requirements of the system.

- reduced energy costs
- lower Δp -behavior

Lightweight construction – less weight on the filter head plate

Pyrotex® KE are **extremely lightweight**. A practical example proves this: 1000 Pyrotex® KE candle elements (150 x 3,000 mm) weigh 6,000 kg less than conventional candle elements. The weight on the filter head plate is markedly reduced. Mounting and dismantling by the assembly personnel can be performed rapidly and with ease.

- simple handling and simple installation
- reduced weight on the filter head plate

Occupational and environmental protection – Pyrotex® KE as a guarantee

We have attached great importance to **environment-friendliness** and a **raw material harmless to health** in developing Pyrotex® KE. Pyrotex® KE is manufactured from a calcium-magnesium-silicate high-temperature fiberglass that is harmless to your personnel. At the same time, the candle elements can be disposed of in the same way as routine domestic waste. Therefore no costs arise for special waste or special protective clothing.

- harmless to health
- biodegradable as stipulated by EU standard Q67/69/EC
- simple disposal

Our pledge to you – quality right from the outset

Pyrotex® KE candle elements mean excellent filtration performances and the utmost in quality. In order to fulfill our high demands in terms of product quality, we subject Pyrotex® KE to an extensive quality control during manufacture. Each candle element is assigned an individual ID number and is extremely closely inspected. For only perfect candle elements leave our production facility.

We test:

- strictest dimensional accuracy (OD/ID, wall thickness of filter body and flange, centering of the filter candle interior and perfect perpendicular angle of the T-shaped collar)
- air permeability based on EN ISO 9237
- basis weight
- supplementary material testing: mechanical strength by C ring test ASTM C 1323-10



Pyrotex® KE – all the advantages at a glance

- permanent temperature resistance up to 850 °C
- peak temperature resistance up to 1000 °C
- emission values of $< 1 \text{ mg/Nm}^3$
- nonflammable
- 100 % spark-resistant
- extremely lightweight
- high air permeability
- outstanding chemical resistance
- version with T-shaped collar or conical collar
- all versions available with and without KAT
- harmless to health
- biodegradable
- for new systems and retrofits



Gasket systems: for 100 % safety in the filter head plate clamping system.

Pyrotex® KE candle elements, filter head plate and clamping system are only transformed into a unit by the optimally coordinated gasket system. Only this ensures that a perfect seal is made at all connection points. We have specially configured gasket systems for each construction type.

- high temperature-resistant
- nonflammable
- flexible
- vibration absorbing



Gasket system for Pyrotex® KE with T-shaped collar



Gasket system for Pyrotex® KE with conical collar (with or without dovetail)

Technical service.



BWF Envirotec offers more, which is why we as a system supplier provide you an allround carefree package. Our range of services extends from product development, including

manufacture to installation of Pyrotex® KE candle elements. We will also be pleased to answer inquiries in connection with planning and realization of retrofit projects.

Technical product and application consultancy

Control tests on the Pyrotex® KE filter elements throughout the entire lifecycle




Filter element analyses in our R&D competence center

Training: on-site and in-house technical training units

Pyrotex® KE

Standard dimensions for conical and T-shaped candle elements with and without KAT.

The right candle element
for every application

Standard dimensions		Pyrotex®								
		KE 60 x		KE 150 x						
		935	1515	1080	1280	1480/ 1530	1820	2000	2200	3000
Outer diameter	$\varnothing d_o$ [mm]	60		150						
Inner diameter	$\varnothing d_i$ [mm]	42		110						
Overall length L	[mm]	935	1515	1080	1280	1480/ 1530	1820	2000	2200	3000
Collar length L_1	[mm]									
Conical collar				80	80	80/130	100	80	80	80
T-shaped collar		10		20, 30	20, 30	20, 30	20, 30	20, 30	20, 30	20, 30
Collar shape										
Wall thickness	[mm]	9		20						
Air permeability	[l/(dm² min)] @ 200 Pa	~ 150		~ 80–100						
Filter area/element	[m²]	0,17	0,28	0,47	0,57	0,66	0,81	0,90	0,99	1,40

Extract from our Pyrotex® KE standard product portfolio. Other dimensions are available on request.

Overview of versions

T-shaped collar

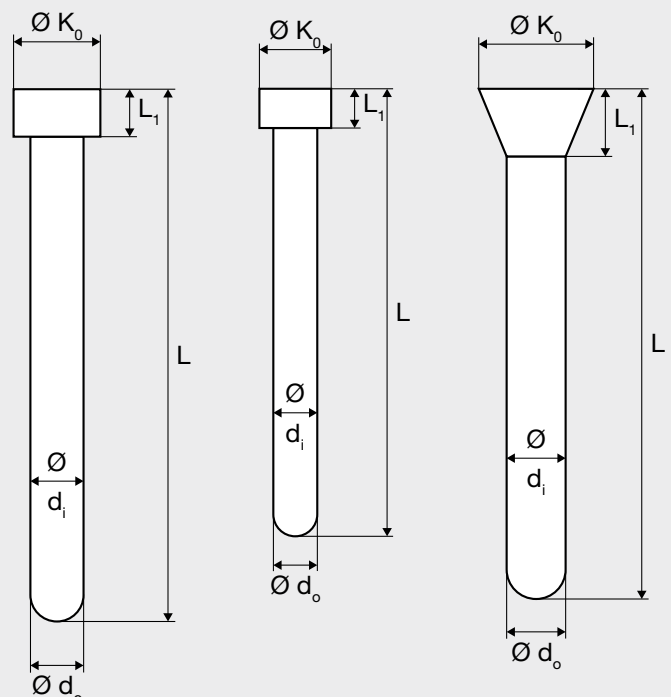
- Candle element outer diameter $\varnothing d_o$: 150 mm
- Candle element length L: up to 3.00 m
- Collar outer diameter $\varnothing K_0$: 190 mm

T-shaped collar

- Candle element outer diameter $\varnothing d_o$: 60 mm
- Candle element length L: up to 1.515 m
- Collar outer diameter $\varnothing K_0$: 80 mm

Conical collar

- Candle element outer diameter $\varnothing d_o$: 150 mm
- Candle element length L: up to 3.00 m
- Collar outer diameter $\varnothing K_0$: 208 mm



BWF Tec GmbH & Co. KG

Bahnhofstraße 20

89362 Offingen

Germany

Telephone +49-82 24-71-0

Fax +49-82 24-71-21 44

info@bwf-envirotec.de

www.bwf-envirotec.com