



Filter Elements

For Hot Gas Filters

High Temperature Performance Materials

Innovative Hot Gas Filtration Systems

Tenmat FIREFLY Hot Gas Filter Elements are designed to remove particulates, heavy metals, furans, nitrogen oxides, acids and dioxins from gasses at temperatures and efficiencies higher than those achievable with any conventional system.

The filter elements are manufactured from unique non-ceramic refractory materials and inorganic bonds, enabling them to be used at temperatures up to 1000°C.

CS1150F and CS1255F Filter Elements

FIREFLY Hot Gas Filter elements are self-supporting surface filters specially developed for operating temperatures of up to 1000°C, far in excess of those achievable by existing fabric filters.

Tenmat candle filters are lightweight and strong. They do not require metal cages, and this allows their usage in corrosive environments.

Tenmat materials have been shown to be significantly stronger than a number of competitive products, particularly at operating temperatures.

Typical particulate emission levels are lower than 1mg/m³, better than current legislation requires. They capture particles less than 1 micron in diameter. These are generally levels unattainable with other technologies.

Tenmat filters are A1 incombustible, are highly resistant to thermal shock and can be used with a wide range of common reagents and sorbents to collect furans, dioxins, heavy metals and acids.

Typical applications include atmospheric pollution control (APC) and in line equipment protection (ILEP) operations.

Key Features

- Elements do not tear
- Superior Resistance up to 1000°C
- Rated A1 Non-combustible
- 100% spark-proof
- >99.99% Filtration Efficiency
- Cleaner Emissions
- Unique Microstructure
- High Chemical Resistance



Principles of Operation

The filter elements are located in the cell plate of the filter house which separates the clean from the dirty side plenum.

Dust laden hot gas enters the filter house on the dirty side and is drawn through the filter elements by means of an external fan.

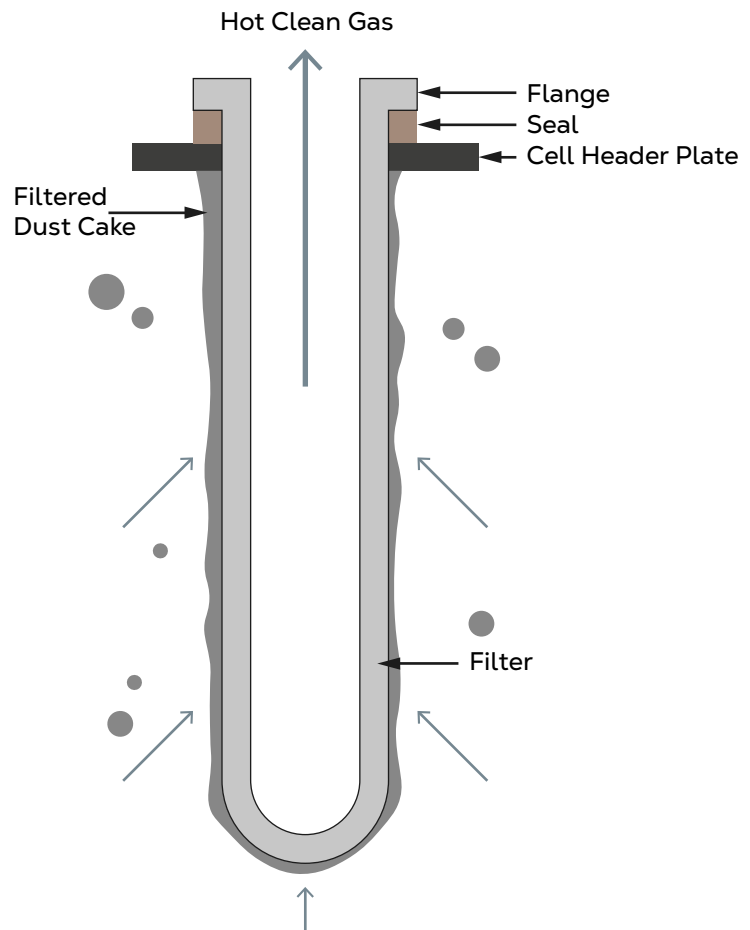
The dust particles and sorbents, if used, are collected on the outer surface of the element, while the filtered gas passes through the wall to exit from the mouth of the the flange to the clean side.

The particulate matter retained upon the filter's surface assists in the filtration of further dust particles from the hot flue gas. The dust cake is allowed to build up until the filter house pressure drop reaches design level which initiates the cleaning or regenerative cycle.

The accumulated dust cake is removed from the filter element by reverse jet cleaning typically using compressed air. A pressure drop sensor or electronic timing device activates a pilot valve which in turn opens a diaphragm valve allowing a short pulse of the compressed gas into the blow tube.

The pulse of gas enters the mouth of the filter element via a venturi nozzle. The momentary reversal of the gas flow and pressure results in the removal of the required amount of the dust cake from the outer surface of the filter element.

The dust cake is released in lumps rather than a fine dust and is a phenomenon identified as 'patchy cleaning'. The lumps of dust fall into the hopper section and into a bin or other removal devices. The filter element is then ready for the next dust collection phase.



Applications

The current applications for FIREFLY Hot Gas Filter Elements are many and diverse. They can be listed under the two main headings: Atmospheric Pollution Control (APC) and In Line Equipment Protection (ILEP).

APC

- Incineration of industrial, municipal, chemical and nuclear waste
- Incineration of clinical and animal waste
- Vitrification of incinerated waste
- Metallurgical processing - ferrous and non-ferrous
- Precious metal recovery
- Soil remediation and reclamation
- Coal derivative manufacture
- Wood waste burning
- Glass, brick and cement industries



ILEP

- Gasification and pyrolytic processes
- Catalyst poisoning reduction
- Waste to energy plants



Availability

FIREFLY Hot Gas Filter elements are available in closed end tubes of various sizes.

The standard elements have T flanges and are available in two broad size ranges.

The smaller Candle filter elements (CS1150F) are 60 mm diameter and are popular for relatively low gas volumes.

The much larger 'BIG TUBE' elements (CS1255F) are able to filter much greater gas volumes and are able to replace bag filters. They are nominally 150 mm external diameter with various lengths.

Sizes

	Candle Filters				Big Tube Filters			
External Diameter mm	60	60	60	60	150	150	150	150
Internal Diameter mm	40	40	40	40	110	110	110	110
Length mm	305	1000	1250	1500	1800	2400	3000	5600
Flange Diameter mm	80	80	80	80	190	190	190	190
Surface Area m ²	0.057	0.19	0.23	0.28	0.83	1.11	1.40	2.58

Suitable seals and venturi are available upon request.

- 305mm long: based on same world-wide used 1.0m, 1.25m and 1.5m models, but sized to fit in small mobile systems, or to be installed vertically even inside low ceiling buildings.
- 5.6m long: two half filters to be assembled on site, aiming at replacing long fabric filters in large plants, where filter failures are caused by incandescent particles and/or mechanical wear & tear.

Technical Data

Property	Units	CS1150F	CS1255F
Density	kg/m ³	480	450
Pressure Drop (of Virgin Filter)	mm water at face velocity	28 (velocity = 28 mm/s)	35 (velocity = 12.6 mm/s)
Loss on Ignition	% @ 70 °C	5.4	6.3
Filtration Efficiency	%	Typically 99.99	Typically 99.99
Typical Air Permeability	[l / dm ² · min] @ 200 Pa	8	8
Filtration Capability	Particle size (micron)	<1	<1
Output Emissions	mg / m ³	<1	<1
Temperature Capability	°C	≤ 1000	≤ 1000

The information contained in this data sheet is presented in good faith. They are typical test results tested generally in accordance with BS 2782 and ASTM test methods and should not be used for specifications.

Tenmat does not warrant the conformity of its materials to the listed properties or their suitability for any particular purpose.

For further information please contact our Technical Sales Department on +44 161 872 2181.



Filter Elements

For Hot Gas Filters

ARCLEX

FEROFORM

FIREFLY

NITRASIL

REFEL

**REFRACTORY
PRODUCTS**

REFRAVER

CORPORATE HQ

Tenmat Ltd.
Ashburton Rd West
Trafford Park
Manchester M17 1TD
England

+44(0)161 872 2181
htsales@tenmat.com
www.tenmat.com

ITALY

Tenmat
Via Dante, 2/48
16121 Genova
Italy

+39 (0) 10 5451343
info@tenmat.it
www.tenmat.it

FRANCE

Tenmat
56 Avenue Foch
77370 Nangis
France

+33 (0) 1 60 585656
info@tenmat.fr
www.tenmat.fr

NORTH AMERICA

Tenmat Inc.
23 Copper Drive
Newport, DE 19804
USA

+1 302-633-6600
info@tenmatus.com
www.tenmatus.com

SCANDINAVIA

+46 (0) 8 612 68 50
info@tenmat.com
www.tenmat.com

GERMANY

Tenmat
Ziegeleiweg 3 ·
38835 Osterwieck

+49 (0) 7151 1338468
info@tenmat.de
www.tenmat.de

CZECH REPUBLIC

diamorph hob certec,
s.r.o.
Tovarni 739, 330 12
Horní Bříza, Czechia

+420 378 010 910