FILTER MEDIA FOR




STEEL WORKS AND FOUNDRIES

GAS AND LIQUID FILTRATION

testori®
TESTORI GROUP

Introduction

Testori has more than **30 years of experience** supplying filter bags and media to steel plants and foundries.

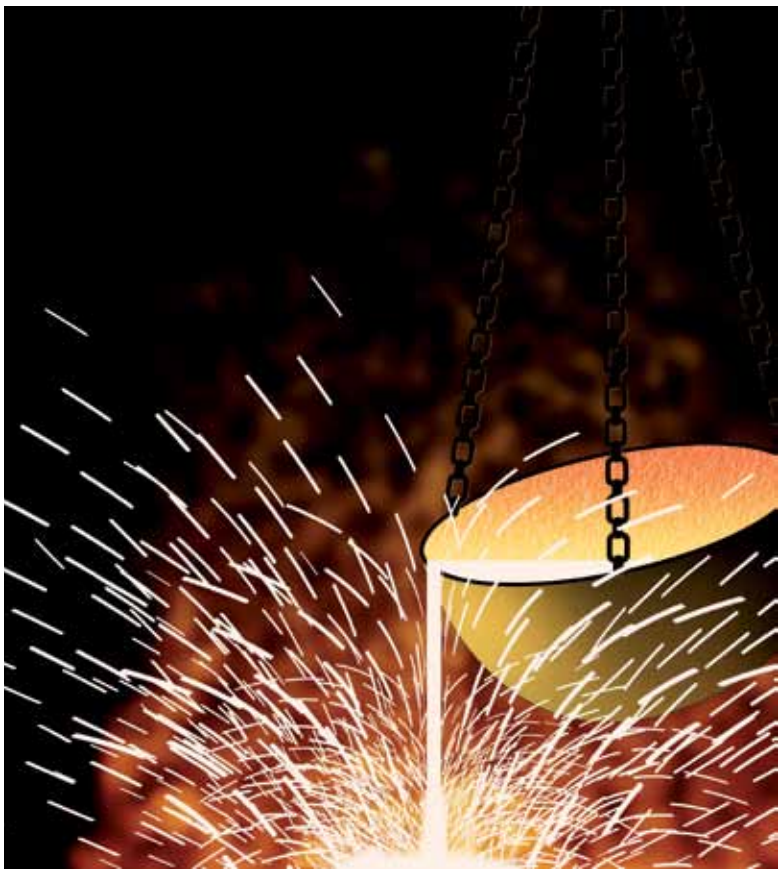
We provide high quality products **for dust collectors** and **customer service** beginning with the media selection and completing the process with filter bag operation and maintenance support.

Vertically integrated production, industry experience, high levels of customization and R&D give Testori the ideal position in these markets to meet the needs **of all customers**: engineers, dust collector OEMs and end users. We also supply felts (and woven fabrics) to dust bag and liquid filter cloth converters.

Testori always provides warranties for dust emissions meeting the most stringent environmental regulations as well as for bag life.

Steel production plant

Continuous casting



Melting detail

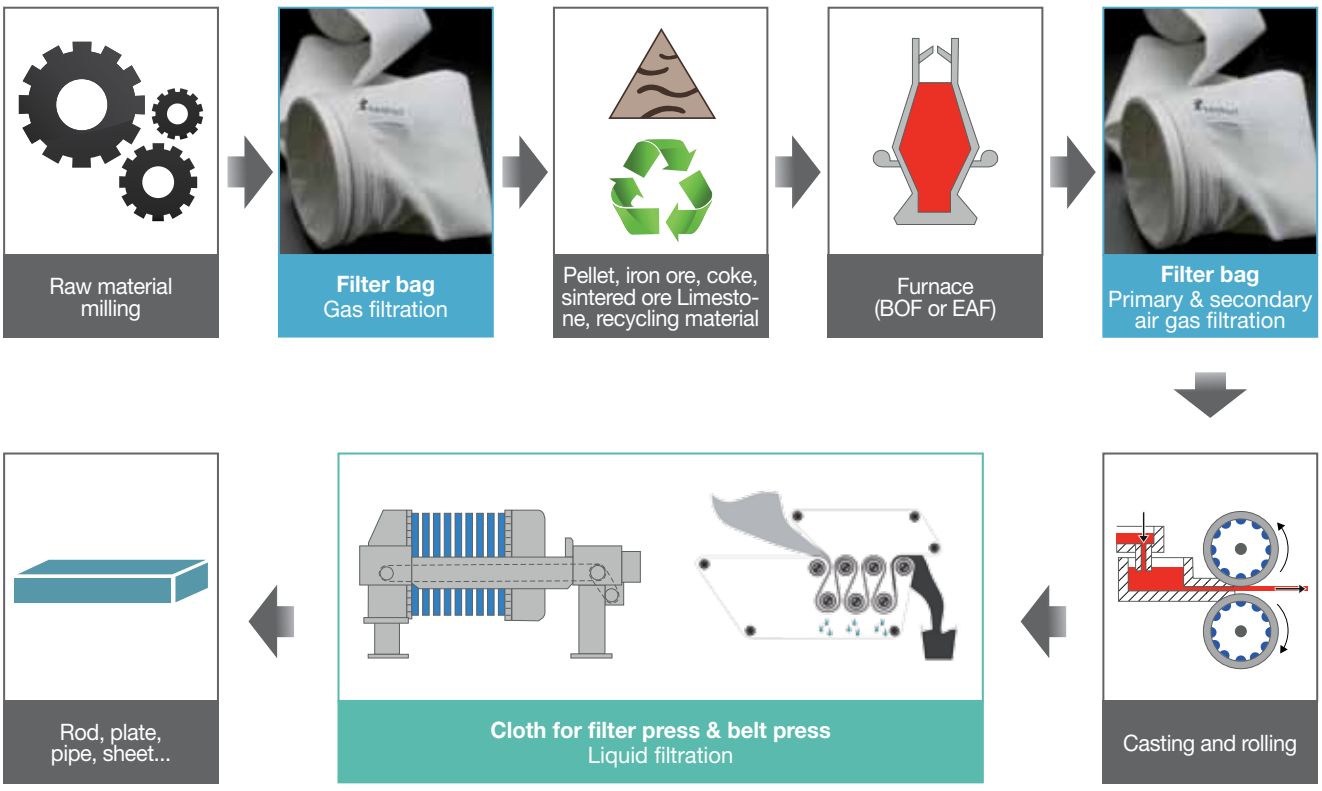
PRODUCT PORTFOLIO FOR STEEL WORKS AND FOUNDRIES

Particulate matter (PM) in steel plants and foundries is generated in many parts of the operation and may contain mineral oxides, metals (e.g. arsenic, cadmium, mercury, lead, nickel, chromium, zinc, manganese) and metal oxides. The particle sources can be:

- **melting and refining activities** (BF - Blast Furnace, BOF - Basic Oxygen Furnace, EAF - Electric Arc Furnaces), cast house emissions, gas from the top of the furnace during the BF cleaning, oxygen injection and decarbonizing phases (primary off-gas emissions), charging/tapping (secondary off-gas emissions)
- **heating and remelt furnaces** (depending of type of fuels used)
- **mechanical action** (e.g. scarfing, grinding and sand blasting)
- **materials handling** (e.g. raw materials, additive, recycled and waste materials, and by-products)
- **coal storage**, conveying, charging, coking, pushing, and quenching
- **continuous casting** (transfer of molten steel to the mold and cutting of the final product by oxy-fuel torches)
- **thermal processes** including coke making, sintering, pelletizing, and direct reduction
- in most foundries, **cupola furnaces** produce the most significant amount of particulate matter (e.g. coke, fly ash, silica, rust and limestone)

Dust collection may be accomplished by either **pulse jet filter, shaker or reverse air baghouses**.

Steel production steps



GAS FILTRATION - PULSE JET FILTERS

The main fibers used are polyester and meta-aramid. Our products are available as rolls (widths up to 2,40 m) **and finished bags** with lengths up to 10 meters, top cuff with steel band or ring (for circular and oval bags).

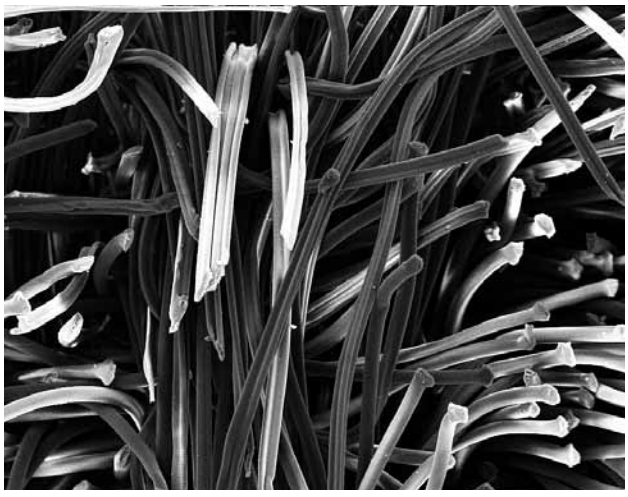
Our bags have perfect fit in the cell plate hole and negligible dust penetration from the top cuff. The following tables describe our main solutions: **standard felts, special felts and special treatments**.

STANDARD & SPECIAL FELTS

Testori Solution	Testori main codes	Weight range g/m²	Features	Benefit
STANDARD NEEDLEFELTS	T 502 SA T 552 SA T 602 SA T 652 KL X 552 RH X 552 SA	450 - 650	• Available with standard polyester fiber or with 100% regenerated polyester fiber **GREEN**FELT™ • Available with different air permeability and surface finishing (membrane, intrinsic coating, calendered, both sides glazed, deep foam coating)	• Available also as eco-friendly product • Surface finishing helps cake release and reduce chemical attack of the polymer
SPECIAL MULTILAYER NEEDLEFELTS FIRETES	TH 551 FIRETES	550	• Layered structure with fibers of pre-oxidized acrylic polymer positioned on dust side blended with finer fibers and standard 2,2 dtex average count fibers to make the support batt	• Reduced effect of sparks or any incandescent particles eventually shifted by the gas flux on the bag surface • Reduced dust penetration (extended bag life) • Emission reduction to values below 5 mg/Nm³
MULTILAYER NEEDLEFELTS	T 557 Singed T 607 KL T 657 SA	500 - 650	• Unique layered structure with fibers of different fineness (also microfibers) • Different air permeability and surface finishing (membrane, intrinsic coating, calendered, both sides glazed, deep foam coating)	• Emission reduction to values below 5 mg/Nm³ • Higher efficiency • Fine fibers on dust side reduce dust penetration through the thickness, increasing bag life

Felts are produced in the range of air pemeability @200 Pa of 60 to 140 l/dm² min. All data are not binding and may vary

Filter bag


Multilayer felt-detail

SPECIAL TREATMENT

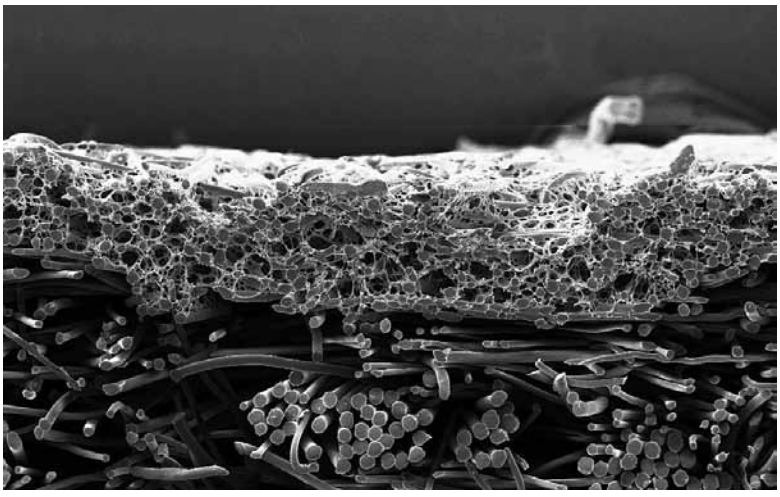
Testori Solution	Testori main codes	Weight range g/m²	Features	Benefit
SPECIAL TREATMENT *EKU*	T 552 EKU	500 - 600	• Protects the filter media by preventing the heat transfer from the spark to the fiber • Can be applied to an array of filter media (PES, PPS, PAN, meta aramid) being able to withstand operating temperatures up to 180°C • Bags can withstand short accidental operating condition without being damaged • Suitable in combination with PTFE finishing treatment	• Reduced effect of sparks or any incandescent particles which may impact the media surface • Increased bag lifetime • Better cake release in case of PTFE finishing
SPECIAL TREATMENT *NOVATES*	T 452 NOVATES	450 - 550	• Polyurethane based coating applied to reduce average pore size of needle felts	• Higher efficiency • Emission reduction to values below 5 mg/Nm³

Felts are produced in the range of air pemeability @200 Pa of 60 to 140 l/dm² min. All data are not binding and may vary

GAS FILTRATION - REVERSE AIR & SHAKER BAGHOUSES

Testori offers also polyester and glass fabrics **as rolls or finished bags for reverse air & shaker baghouses**.

Testori Solution	Testori main codes	Weight g/m²	Bag features
POLYESTER FABRIC	T 2300 S T 2300 KL	310	• Diameter up to 300 mm with intermediate steel rings • Length up to 12 meters
GLASS FABRIC	G 345 TTX	345	
POLYESTER FELT	T 456 SA	450	



Novates felt-detail

Multilayer needlefelts - Firetes

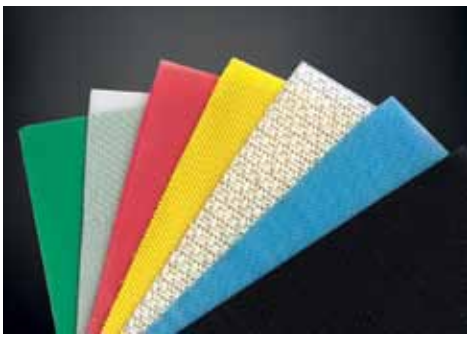
LIQUID FILTRATION

The most significant use of water in foundries is in the cooling systems of electric furnaces (induction or arc), cupola furnaces and in wet dedusting systems. In most foundries, water management involves an internal recirculation of water resulting in a minimal effluent volume.

Effluent streams normally include cooling water, stormwater, rinse water, and several different process effluent streams. Cooling water is normally recycled within the process. Rinse water may contain suspended solids, dust, lubricating oil, and other pollutants depending on the process.

Liquid filtration equipment is needed to recover water for reuse. Testori offers a wide range of filter cloths for filter presses and horizontal belt filters. Filter presses are largely used in steel plants since they guarantee good performance and low operational costs. Vacuum belt filters are the best solution for dewatering to ensure low energy consumption, high efficiency and long life.

Testori Solution	Testori main codes	Weight g/m²	Features	Benefit
FILTER CLOTHS FOR FILTER PRESSES	P 4422 CQ P 3802 CQ P 6582 T	300 370 500	• Polypropylene fabrics in mono/mono and mono/multi construction • With or without center feed hole • Wide range of weight and constructions (satin, twill...) • Edge coating	• High durability • Excellent cake discharge
FILTER CLOTHS FOR BELT FILTERS	P 6124 CQ	435	• Polypropylene, polyester • Different types of tracking systems: rubber edge guides, heat cut, coated edges • Double layer fabrics	• Long life • Optimal dewatering efficiency



Fabrics

Belt filter

Cloth for filter press

ACCESSORIES, SPARE PARTS & SERVICES

Testori Group offers its know-how and **experienced team** for:

- installation and replacement of filter bags
- maintenance and inspections on the plant
- leakage tests (with fluorescent inert powder)

We supply accessories and spare parts to guarantee the correct functioning of the equipment:

- Bag **cages**: in carbon or stainless steel, galvanized, with cataphoresis coating or with other treatments to prevent corrosion. We supply also special cage tops with bottom pans welded to the inside and two or three pieces cages (for long bags)
- **Venturis**: available in spun mild steel, Vydyne and cast aluminium
- **Electrodynamic probe** for baghouse (TUV approved in according to EN 15859): to allow continuous monitoring of flow rates and dust concentrations. Maintenance costs are significantly reduced

Our internal laboratories have **analytical capabilities** to optimize the filter performance and its maintenance:

- Fiber type identification & chemical tests: to verify process conditions and the powder nature
- Dynamometric test to evaluate mechanical properties
- Granulometric and porometric test
- Permeability and efficiency test (VDI)
- Antistatic properties measurement
- Optical and electronic microscopy tests
- Used bags and pocket analysis

Laboratories activities

Bags installation

Bags & cages

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