

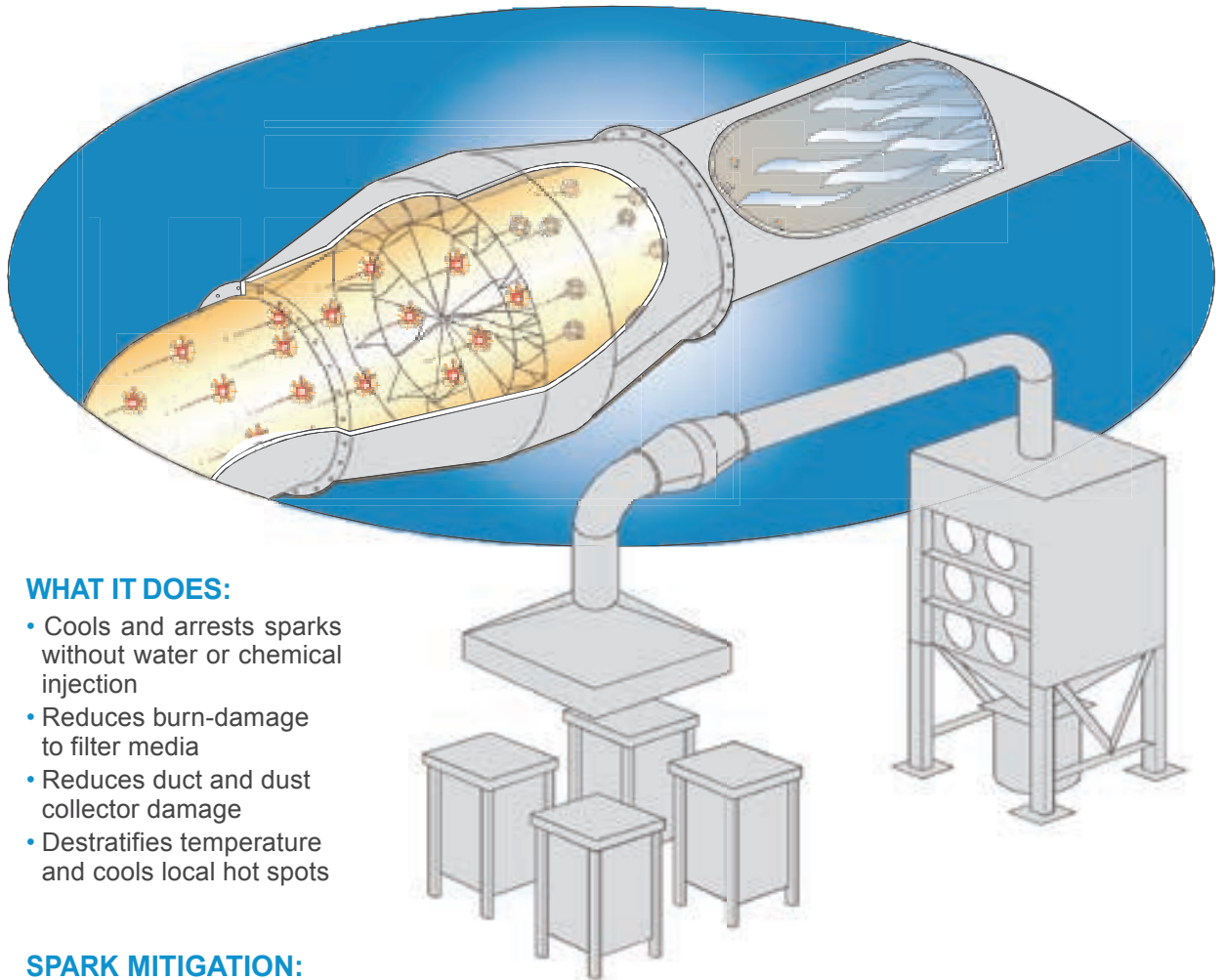


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FILTRATION SOLUTIONS

## SPARK COOLER

For the reduction of spark damage in Dust Collection Systems

Proven Performance • Cost Effective • Very Low Pressure Drop  
Zero Floor Space • No Maintenance • Simple Install



### WHAT IT DOES:

- Cools and arrests sparks without water or chemical injection
- Reduces burn-damage to filter media
- Reduces duct and dust collector damage
- Destratifies temperature and cools local hot spots

### SPARK MITIGATION:

The **Spark Cooler** is ideally suited to mitigate sparks generated in metal and other low-load material processing applications, under non-explosive conditions. The Spark Cooler works to create turbulence in the air flow stream, thereby disturbing the thermal bubble surrounding the spark and allowing the lower temperature in the gas stream to influence the particle temperature. It is not an extinguishing system and should never be applied as a standalone device in processes requiring absolute spark suppression.



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Products

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# SPARK COOLER®

## Performance Advantages

- Proven Spark Mitigation
- Greatly reduced damage to filter media
- Minimal pressure drop
- Zero footprint/space requirement
- Easy installation: no factory tech or calibration required
- Works in vertical or horizontal position
- No secondary dust accumulation point

## Business Operation Benefits

- Virtually eliminates system maintenance downtime
- Static device – no moving parts, no electrical controls
- Retrofit or new applications
- Quick payback (1 line shut down or 2-3 filter damage incidents)
- Integral part of Plant Safety Program



Patent #s  
US 7,416,573  
US 7,588,611  
CAN 2,541,488

	Ideal Applications
<b>PROCESSES</b>	<ul style="list-style-type: none"> <li>• Metal Grinding</li> <li>• Resistance Welding</li> <li>• Plasma Cutting</li> <li>• Laser Cutting</li> <li>• Thermal Spray</li> <li>• Carburization</li> <li>• Metal Quenching</li> </ul>
<b>SPECIFIC APPLICATIONS</b>	<ul style="list-style-type: none"> <li>• All Metal Process Industries</li> <li>• Fabrication facilities</li> <li>• Automotive plants</li> <li>• Foundries</li> <li>• Metal Recycling</li> <li>• Robotic weld cells</li> <li>• Battery Recycling</li> <li>• Ball Bearing Manufacturing</li> <li>• Charcoal manufacturing</li> <li>• Shoe grinding (rubber)</li> <li>• Coffee manufacturing</li> </ul>
<b>VELOCITY</b>	Optimal: 1500-5000 fpm
<b>TEMPERATURE</b>	Optimal: up to 300°F primary air stream
<b>PARTICLE SIZE</b>	Small-to-medium sized embers
<b>DUCT DISTANCE</b>	Optimal: 10 diameters Effective: 5 diameters Functional: > 1 diameter



## Industrial Spark Mitigation Alternatives

	Dropout Box	Cyclone Collector	SPARK COOLER	Extinguishing Systems
Spark (ignition source) mitigation/reduction	✓	✓	✓	
Consistently effective spark (ignition source) mitigation/reduction*		✓	✓*	
NFPA ignition source reduction alternative	✓	✓	✓	
Wood, food & grain applications	✓	✓		✓
Metal & carbonaceous dust applications	✓	✓	✓**	✓
Very low pressure drop (1" or less)			✓	✓
Minimal shop floor footprint			✓	✓
Minimal to no maintenance			✓	
Simple design, installation and configuration			✓	
Quick payback*** (reduced cartridge/collector damage, reduced production line downtime)			✓	
Minimal potential for secondary dust accumulation location			✓	✓
NFPA explosive dust extinguishment solution				✓
Low cost relative to total system cost	✓		✓	

\* Fewer than 5 known fire incidents in over 500 Spark Cooler applications

\*\* Typically effective on non-agglomerating materials

\*\*\* Typically < 1 yr. depending on number of incidents, line-downtime costs, filter costs & dust collection system configuration

# SPARK COOLER®

## Selection Procedure

Selecting a **SPARK COOLER** is a simple four step procedure:

- Step 1:** Identify the duct diameter.
- Step 2:** Confirm the air flow. If the flow falls outside the range shown, refer to the flow information below.
- Step 3:** Identify the corresponding model number
- Step 4:** Select the material and flange pattern.

The selections translate into a six or seven digit model number. Include this with your quotation request or purchase number, along with the quantity desired, shipping details and any special instructions.

### Spark Cooler Model Number

SC 14 C 3 K

SC – Spark Cooler

Duct Diameter (in inches)

Shape of Duct  
C – Circular  
R – Rectangular

Flange Pattern  
K – Standard Pattern  
R – Rolled Edge  
S – Slip Fit

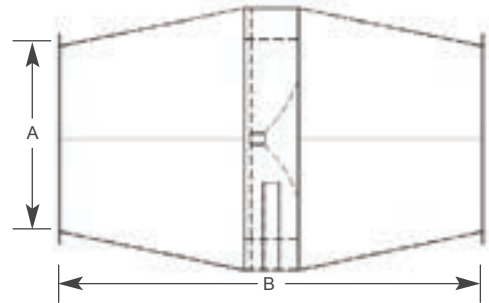
Fabrication Material  
1 – 304L    3 – Carbon Steel  
2 – 316L    4 – Painted Carbon Steel  
*Consult Factory for Additional Options*

Custom sizes, alternative materials and varying arrangements are available. Contact your product representative or contact us for custom units.

## Sizing Chart

Model No.	A – Duct Diameter (in)	B Length (in)	CFM	Wt (lbs)
SC6	6	13	490-880	30
SC8	8	23	870-1570	40
SC10	10	23	1360-2450	50
SC12	12	34	1960-3530	60
SC14	14	34	2670-4810	70
SC16	16	45	3490-6280	96
SC18	18	45	4420-7950	108
SC20	20	46	5450-9820	120
SC22	22	54	6600-11880	175
SC24	24	55	7850-14140	216
SC_ _ *	—	—	up to 100,000	—

\*Standard sizes available up to 100,000 CFM. For specifications of larger or alternate sizes, please contact the factory.



## Performance

The Spark Cooler is ideally suited to mitigate sparks generated in metal and other low-load material processing applications, under non-explosive conditions. Since 2008, the Spark Cooler has been installed in over 500 applications, with fewer than five known fire events occurring subsequent to installation. The Spark Cooler is not an extinguishment system and should never be relied upon to achieve spark eradication in processes where suppression requirements are absolute. The Spark Cooler does not guarantee complete elimination of sparks, and does not preclude the possibility of fire and explosion. Therefore, system redundancy and complementary measures should be taken in conjunction with the Spark Cooler to further reduce the risk of fire and explosion from sparks in applications in which there is potential for catastrophic combustion.

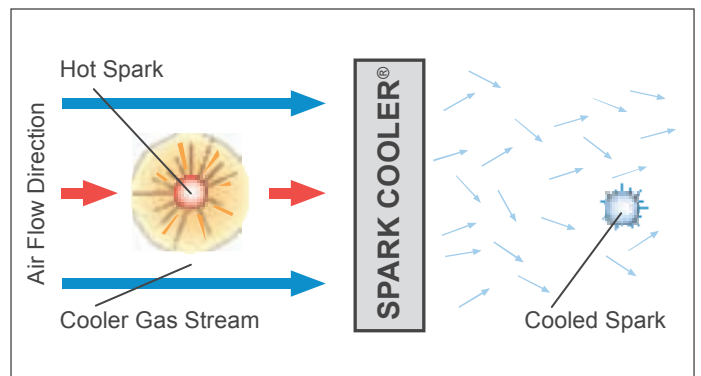
As an ignition-source mitigation device, the Spark Cooler is unique in its performance offering. In metal-related processes, with nonagglomerating materials, the Spark Cooler offers effective spark mitigation (as evidenced by the figures above), minimal pressure drop (less than 1”), zero footprint or space requirement on the shop floor, simple installation (no controls or calibration required), vertical or horizontal positioning, zero maintenance and breakdown (no moving parts), and continuous operation (which results in no system downtime and no energy use).

## How It Works

The presence of sparks is a significant problem in the filtration of combustible particles. A spark gets buoyancy from a surrounding bubble of hot air and often moves along, uninterrupted, at the same velocity as the gas stream until the spark hits the filter media. When the spark is deposited on the filter media surface, it can ignite a fire and the filtration system can be compromised. Therefore, designing an exhaust/filtration system that minimizes the risk of spark ignition is critical.

The Spark Cooler is a simple and effective product for inclusion on process systems that works to reduce the frequency of sparks reaching the filter media. Properly applied, it can create turbulence

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# SPARK COOLER®

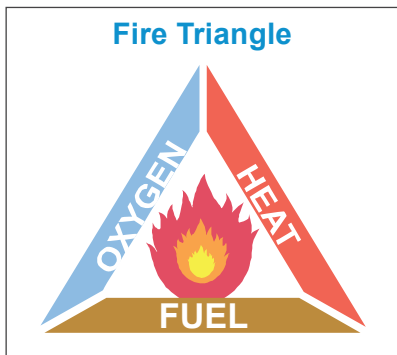
(continued from previous page) in the gas stream sufficient enough to disturb the thermal bubble surrounding the spark, and thereby allow the lower temperatures of the gas stream to work to reduce the spark's temperature. In many instances the spark is eventually extinguished. This temperature reduction can reduce the frequency and severity of spark-related damage to dust collection and exhaust systems, including filters, ducting, and collection equipment.

SIZING		FLOW RATE					OPTIMAL DISTANCE (inches)*			
Spark Cooler Model #	Duct Diameter (inches)	CFM					Upstream Distance	Downstream Distance – GOOD	Downstream Distance – BETTER	Downstream Distance – BEST
		SC6_ _ _	6	490	590	690				
SC8_ _ _	8	870	1050	1220	1400	1570	8	40	60	80
SC10_ _ _	10	1360	1640	1910	2180	2450	10	50	75	100
SC12_ _ _	12	1960	2360	2750	3140	3530	12	60	90	120
SC14_ _ _	14	2670	3210	3740	4280	4810	14	70	105	140
SC16_ _ _	16	3490	4190	4890	5590	6280	16	80	120	160
SC18_ _ _	18	4420	5300	6190	7070	7950	18	90	135	180
SC20_ _ _	20	5450	6540	7640	8730	9820	20	100	150	200
SC22_ _ _	22	6600	7920	9240	10560	11880	22	110	165	220
SC24_ _ _	24	7850	9420	11000	12570	14140	24	120	180	240
SC_ _ _ _ _**	30-66	12270-106910					–	–	–	–
Velocity (fpm)		2500	3000	3500	4000	4500				
Pressure Loss (w.g.)		0.32	0.46	0.63	0.82	1.04				

\* Approx. 1 duct diameter required upstream from Spark Cooler inlet; Required downstream distances from Spark Cooler outlet: Good = 5 duct diameters, Better = 7 duct diameters, Best = 10 duct diameters  
 \*\* Standard sizes available up to 100,000 CFM. Please contact the factory for specifications of larger or alternate sizes.

## NFPA Importance

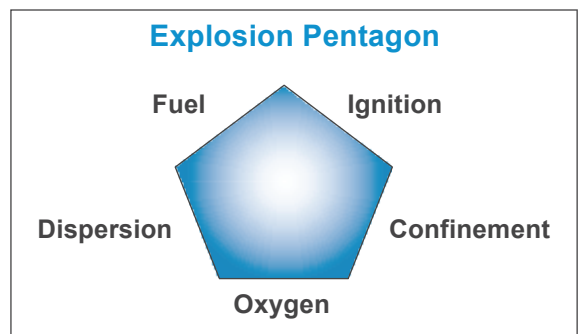
The NFPA, OSHA, and other regulatory and industry groups are focused, increasingly, on fire prevention and safety related to dust fires and explosive dust. Mitigating the ignition source is an important consideration as it addresses one of the primary elements (heat) required in both fires and explosions. While thorough safety programs, dust management procedures, and extinguishing systems are indispensable components of effectively managing the explosion exposure, fire prevention and ignition-source mitigation are important as well.



Extinguishing, isolation and containment systems seek to minimize the consequences of a fire or explosion, but do nothing to address the existence or frequency of deflagration (fire events). The **Spark Cooler** is an option that can be considered primarily for metal-dust applications, as part of a fire-protection program, and also as an adjunct to explosion-control systems. Properly applied, it functions to mitigate the frequency of fire-events for a specific application, and therefore warrants consideration for inclusion in protection efforts in non-explosive process environments. In addition, provided extensive extinguishing, isolation and containment systems are in place, it also warrants consideration for

inclusion alongside such systems in explosive process environments. In short, in specific applications where the Spark Cooler reduces sparks, it is a simple, low-cost tool that can reduce incidents, and fewer incidents means improved safety and reduced cost and disruption.

Finally, because 1) NFPA guidelines require additional isolation equipment for secondary dust accumulation points, and 2) the Spark Cooler, properly applied, is unique among spark mitigation devices in that it does not create a secondary dust collection point, the Spark Cooler is a tool worthy of serious consideration, provided it is otherwise a fit for a specific application.



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