EXPLOSION PROOF INDUSTRIAL VACUUMS
Rated For Firing Ranges

Dust Ignition Proof and Firing Range Explosion Proof Industrial Vacuums

Hazardous Locations Equipment for Firing Ranges

Our FRV Dust-Ex industrial vacuums are designed and manufactured to comply with NFPA and NEC 500-5 Class II, Divisions 1 & 2, Groups F & G as well as the European ATEX Directie 94/9/EC, Zone 21, 22 requirements for hazardous locations containing combustible dust.

Ruwac manufactures and uses EXP rated accessories and components that are individually rated and meet the NEC and ATEX guidelines for equipment in hazardous locations.

These parts include but are not limited to:

- > Static Dissipating Housing, 10^{-6} Ohms
- > Conductive Heavy Duty Casters
- > Fully Grounded Filters
- > Bronze or Stainless Steel Impact Deflectors
- > Grounding Cable Reels
- > Conductive Hoses and Accessories

FRV 100 Dust-Ex / HEPA

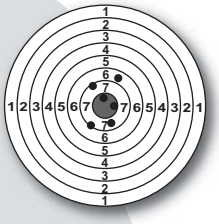
FRV 110 Dust-Ex / HEPA

Ruwac

We vacuum everything.

www.ruwac.com

Call Toll Free: **1-800-736-6288** (U.S. only)



We specialize in explosion proof vacuums.

DS 1000 Dust-Ex with HEPA

If you've got an explosive atmosphere, we've got a vacuum for you. Safety is our first priority, so we know the importance of every little detail in explosion proof machines. Ruwac Dust-Ex vacuums are specially designed to collect and contain fine powders and debris such as gunpowder and lead, without returning them to the environment. With over 30 years of expertise, our industrial vacuums have proven to be the vacuum of choice in shooting ranges and ammunition depots worldwide.

Ruwac vacuums are designed and manufactured to comply with U.S. NEC 500-505, Class II, Divisions 1 & 2, Groups F & G as well as the European ATEX Directive 94/9/EC, Zone 21, 22 requirements for hazardous locations containing combustible dust. Vacuums feature components certifed for use in hazardous locations: Class II - Groups F & G. Certified components include: motor, motor control, switch, and supply cord.

Our FRV Dust-Ex vacuums are intrinsically safe. All parts and components are fully grounded, static dissipating and guaranteed to be spark-free, safely ruling out the risk of explosion. For maximum safety and protection, trust Ruwac for your explosive applications.

VACUUM SPECIFICATIONS

	ELECTRIC		AIR OPERATED / PNEUMATIC	
Technical Data	FRV 110	FRV 220	FRV 100*	FRV 200**
Voltage	110 Volts	220 Volts	n/a	n/a
Horsepower	1.5 HP	1.5 HP	n/a	n/a
Motor Type	single phase	single phase	single Venturi	dual Venturi
Vacuum Pressure	5.5 Hg	5.5 Hg	10 Hg	16 Hg
Air Movement	135 CFM	135 CFM	150 CFM	275 CFM
Main Filter Area	13 ft^2	13 ft^2	13 ft^2	13 ft^2
Filter Efficiency	99.9% @ .5 micron	99.9% @ .5 micron	99.9% @ .5 micron	99.9% @ .5 micron
HEPA Filter Area	40 ft^2	40 ft^2	40 ft^2	40 ft^2
HEPA Efficiency	99.997% @ .3 micron	99.997% @ .3 micron	99.997% @ .3 micron	99.997% @ .3 micron
Noise Emission	68 dBA	68 dBA	72 dBA	72 dBA
Inlet	2"	2"	2"	2.75"
Weight	150 lbs	150 lbs	100 lbs	133 lbs
L x W x H	32" x 20" x 41"	32" x 20" x 41"	32" x 20" x 41"	32" x 20" x 54"

* FRV 100 requires 71 PSI and 65 CFM with a 1/2" unrestricted airline to operate.

** FRV 200 requires 100 PSI and 100 CFM with a 1" unrestricted airline to operate.

For information regarding other explosion-proof industrial vacuums or to use an explosion proof vacuum in a different hazardous environment, please contact a representative at (413) 532-4030.

Ruwac

CE Ex

ISO 9001 Registered

Did you know...

We also offer the same Dust-Ex vacuum with the same, intrinsically safe features in an air operated version. Our pneumatic (air operated) FRV 100 vacuum is maintenance free and features no moving parts. The vacuum and components comply with hazardous location requirements: Class II - Groups F & G. Please contact us for more information.

EXPLOSION PROOF INDUSTRIAL VACUUMS
Rated for use in Firing Ranges

FRV 110 - Dust-Ex / HEPA

II 2 D IP55 T3C

ELECTRICALLY OPERATED

Air Diffuser / Silencer
Diffuser silences discharged air and reduces air velocity while operating to avoid stirring up laden dust. Diffuser doesn't disrupt work environment by allowing only low velocity air to be returned.

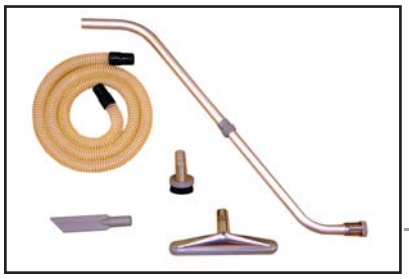
Vacuum Producer
Multi-stage centrifugal turbine produces more suction using less horsepower than any other in its class. Single phase explosion proof TEFC Baldor® motor is maintenance free, rated for continuous duty and is completely serviceable at one of many locations nationwide.

Durable Housing
Constructed with 900 tons of pressure, compression cast composite housing will not dent, break or rust. Carbon impregnated housing is chemically neutral and static dissipating ($<10^{-6}$ Ohms) to eliminate static discharge. Housing is modular to accomodate filter upgrades and is backed by our lifetime warranty.

Absolute Filtration
40 square foot HEPA filters are individually D.O.P. tested and certified to be 99.997% efficient at .3 micron. Our HEPA filters are made in accordance with UL standards. The use of a HEPA filter is recommended to collect and contain any lead byproduct or remaining contaminants that may be present at a firing range.

Superior Filtration
State-of-the-art, MicroClean filter provides 13 square feet of filtration 99.9% efficient at .5 micron. Permanent oversized filter is low loading to prevent air flow constriction and features a reinforced steel frame and self-cleaning filter system.

Sturdy Base
Heavy duty 3" double casters and base are fully grounded and provide easy portability. Aluminum inlet features a bronze deflector to drop material out of the air stream. Vacuum has low center of gravity and base is counterbalanced to prevent tipping.



Easy to Empty Dustpan
Foot lever actuated dustpan drops down for easy emptying without heavy lifting of lid or filter assembly. Our filtration system has no messy pre-filters, consumables or bags to change. Dustless emptying leaves filter untouched to prevent recontamination of area.

Accessories
Fully conductive non-sparking hoses and utility tools are available.

WARNING: A HEPA filter used for cleaning atmospheres containing lead must be handled as hazardous waste. Proper safety maintenance and procedures should be followed when coming in contact with HEPA filters labeled as hazardous.

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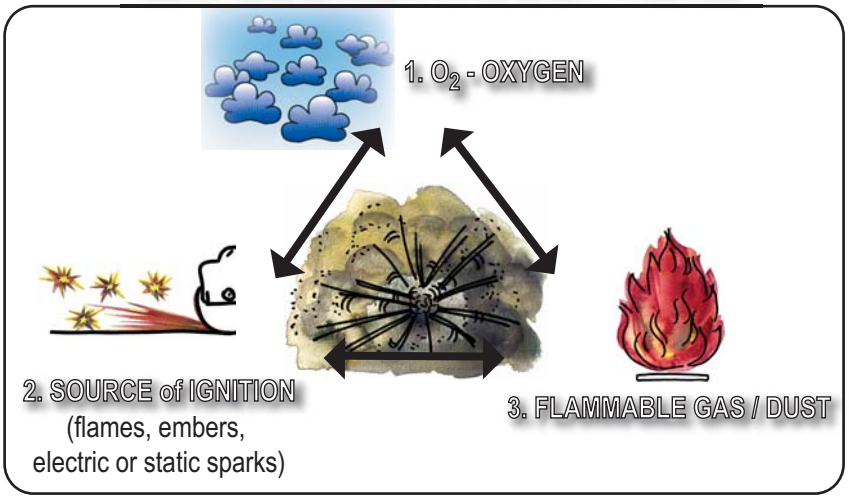
Safety Comes First When Dealing With Explosive Gases or Dust

In any circumstance, there is a danger of explosion, and thus an explosive atmosphere, when three conditions are simultaneously met.

1) **O_2 - OXYGEN**: Oxygen is present in normal air environments.
2) **SOURCE of IGNITION**: Electric or static sparks, open flames, embers or hot surfaces can be sources of ignition.
3) **FLAMMABLE GAS/DUST**: Any gas or dust that are combustible or ignitable are hazardous to such an environment.

EXPLOSIVE ATMOSPHERE



In the case of a shooting range, as much as 25% of the highly explosive propellant leaves the barrel of a gun unburned. This combustible propellant falls to the ground and creates an explosive atmosphere when mixed with the oxygen already present in the room. In addition to combustible dust, harmful lead byproducts left behind by bullets must also be effectively removed from a firing range. In order to prevent an explosion from occurring, a source of ignition must be adequately prevented. Any machine that enters a potential explosive atmosphere must be properly constructed and secured in such a way that ignition is not possible or likely.

To clean up unspent gunpowder and harmful lead in firing ranges, routine, thorough housekeeping must be practiced. A proper vacuum system must be intrinsically safe, so as to not introduce an ignition source, or stir up laden dust. It must also only allow clean, diffused air be returned to the atmosphere. In a shooting range, a HEPA (High Efficiency Particulate Air) filter should also be used to collect and contain any lead or remaining contaminants from the environment.

Standards for the construction of specific equipment used in hazardous locations must meet specific guidelines and restrictions.

Our FRV Dust-Ex industrial vacuums are designed and manufactured to comply with U.S. NEC 500-505, Class II Divisions 1 & 2, Groups F & G as well as the European ATEX Directive 94/9/EC, Zone 21, 22 requirements for hazardous locations containing combustible dust.

CE Ex

Ruwac Dust Ignition Proof and Explosion Proof Industrial Vacuums are rated for and meet the specifications required to operate in the following locations:

- ***Class II***: Atmospheres where the hazardous location is due to the presence of combustible dust.
- ***Division 1***: Where the hazardous environments will be expected to be present during everyday normal operation.
- ***Division 2***: Where the hazardous environments would only be expected to be present during abnormal conditions such as breakage, leakage or accidental rupture.
- ***Class II, Group F***: Atmospheres containing carbon black, coal or coke dust.
- ***Class II, Group G***: Atmospheres containing flour, starch or grain dust; combustible dusts having resistivity of 10^8 Ohm-centimeter or greater.

DISTRIBUTED BY:

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