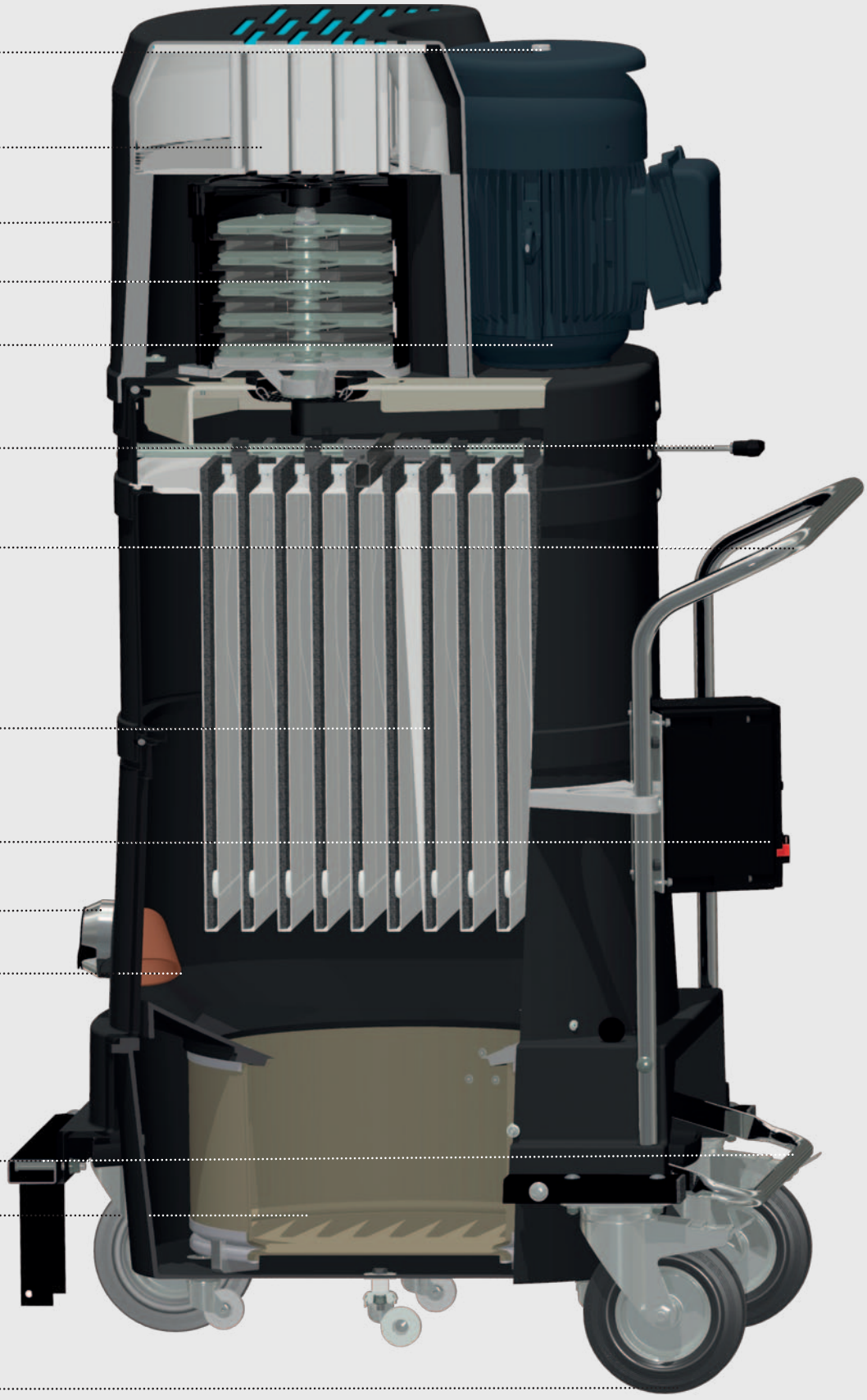
Ruwac
Industriesauger

Industrial Vacuum Cleaners for gas explosion hazardous areas

Zone 1 and Zone 2

DS 1220 with gas explosion protected equipment

DS 2520 with gas explosion protected equipment



Our competency

We manufacture industrial vacuum systems powered electrically and by compressed air with matching accessories according to the ATEX Directive 2014/34/EU and the requirements of TRGS 727 for the following areas of application:

- Use in Zone 1 or 2 gas explosion hazardous areas
- Suitable for picking up combustible dusts
- Vacuuming of high-insulating materials - expertly tested by the Dekra Exam
- Optional for vacuuming substances containing solvents with activated carbon module
- Optional for vacuuming carcinogenic, mutagenic or hazardous substances
- Optionally for use in Zone 21 or 22 in dust explosion hazardous areas

If the application area is changed, all industrial vacuum systems for gas-explosive areas can be adapted to the new requirements due to their modular design.
The equipment can, for example, be retrofitted to temperature class T5 or with dust class H according to EN 60335-2-69.

DLS 1000

DS 1400

DS 2520

DS 1220

Expert confirmation

Electrostatic hazards due to the charging of high-insulating materials

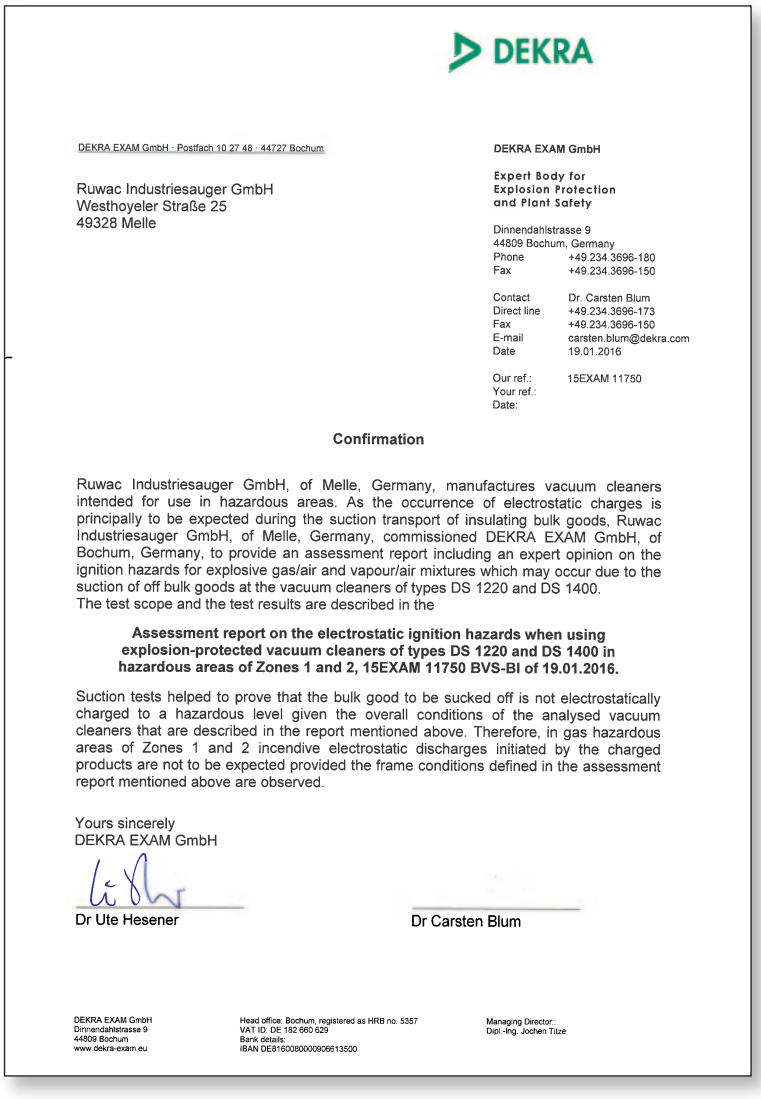
Vacuuming of high-insulating dusts, powders or granulates must be viewed as a demanding task in the area of gas explosion hazardous atmospheres.

For this, not only from a technical point of view, the electrostatic charge on machine and accessories must be derived and grounded, but also the electrostatic charge of the extracted high-insulating materials has to be considered.

Although the electrostatic charge of non-conductive materials in vacuuming processes is unlikely to lead to critical charges compared to other pneumatic processes, the new edition of the TRGS 727 Ignition Hazards due to Electrostatic Charge has revived this issue.

For this reason, in cooperation with **DEKRA EXAM** GmbH, we have examined our industrial vacuum systems, especially for vacuuming high-insulating materials.

Through joint investigations, we have now provided expert proof that our industrial vacuum systems may be used for the vacuuming high-insulating materials in gas explosion hazardous atmospheres.



DEKRA

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Date 19.01.2016

Our ref.: 15EXAM 11750
Your ref.:
Date:

Confirmation

Ruwac Industriesauger GmbH, of Melle, Germany, manufactures vacuum cleaners intended for use in hazardous areas. As the occurrence of electrostatic charges is principally to be expected during the suction transport of insulating bulk goods, Ruwac Industriesauger GmbH, of Melle, Germany, commissioned DEKRA EXAM GmbH, of Bochum, Germany, to provide an assessment report including an expert opinion on the ignition hazards for explosive gas/air and vapour/air mixtures which may occur due to the suction of off bulk goods at the vacuum cleaners of types DS 1220 and DS 1400.
The test scope and the test results are described in the

Assessment report on the electrostatic ignition hazards when using explosion-protected vacuum cleaners of types DS 1220 and DS 1400 in hazardous areas of Zones 1 and 2, 15EXAM 11750 BVS-BI of 19.01.2016.

Suction tests helped to prove that the bulk good to be sucked off is not electrostatically charged to a hazardous level given the overall conditions of the analysed vacuum cleaners that are described in the report mentioned above. Therefore, in gas hazardous areas of Zones 1 and 2 incendive electrostatic discharges initiated by the charged products are not to be expected provided the frame conditions defined in the assessment report mentioned above are observed.

Yours sincerely
DEKRA EXAM GmbH

Dr Ute Hesener

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Ex-marking according to ATEX Directive

II 2G Ex eb

II 2D Ex tb

Equipment group II for all areas except mining

Equipment category	Gas area	Dust area
Category 1	Zone 0	Zone 20
Category 2	Zone 1	Zone 21
Category 3	Zone 2	Zone 22

Explosion protection class

Protected against gas explosions	G	Gas
Protected against dust explosions	D	Dust

Ex - marking according to IEC/EN 60079-0

Ignition protection type

Protection by housing	t
Increased safety	e

2014/34/EU and standard IEC/EN 60079-0

IIC T3 Gb

IIIC T125°C Db

Explosion group (gas)

IIA	Propane or similar combustible gases
IIB	Ethylene or similar combustible gases
IIC	Hydrogen or similar combustible gases

Explosion group (dust)

IIIA	Combustible lint
IIIB	Combustible lint, combustible, non-conductive dusts
IIIC	Combustible lint, combustible, non-conductive and conductive dusts

Maximum surface temperature of the equipment

Temperature class **T1 - T6 - gas** explosion protected equipment

Temperature class **TXX °C - dust** explosion protected equipment

Equipment Protection Level

Equipment with very high protection level	**a**
Equipment with high protection level	**b**
Equipment with extended protection level	**c**

Technical data

	DS 1220	DS 1400	DS 2410	DS 2420	DS 2520	DS 2720
Housing	GFK	GFK	GFK	GFK	GFK	GFK
Motor power (kW)	2,5	4,6	4,6	4,6	5,5	7,5
Voltage (V)	400	400	400	400	400	400
Vacuum (mbar)	-206	-213	-213	-170	-230	-210
Air flow rate (m^3/h) (measured with 3m hose)	300	440	440	540	650	880
Sound pressure level (dB(A)) (DIN EN ISO 3744)	70	70	72	74	75	77
Pocket filter for dust class M (m^2)	1,2/2,6	1,2/2,6	4,5	4,5	4,5	4,5
Residual dust filter for dust class H (m^2)	3,2	3,2	4,8	4,8	4,8	4,8
Height (mm) (Pocket filter 1.2 m^2 for dust class M)	950	960	-	-	-	-
Height (mm) (Pocket filter 2.6 m^2 for dust class M)	1.226	1.295	-	-	-	-
Height (mm) (Pocket filter 4.5 m^2 for dust class M)	-	-	1.690	1.568	1.643	1.783
Height (mm) (Pocket filter 1.2 m^2 for dust class H)	990	1.060	-	-	-	-
Height (mm) (Pocket filter 2.6 m^2 for dust class H)	1.330	1.399	-	-	-	-
Height (mm) (Pocket filter 4.5 m^2 for dust class H)	-	-	1.815	1.695	1.775	1.913
Width (mm)	520	520	740	740	820	820
Length (mm)	850	850	950	950	1.015	1.015
Protection class (IP)	65	65	65	65	65	65
Capacity (liters)	35	35	90	90	90	90
Suction connection (mm)	50	70	70	70	70	100

Ex-marking of the Industrial Vacuum Cleaner

for Zone 1 and Zone 22

II 2G Ex eb IIC T3 Gb
II 3D Ex tc IIIC T125°C Dc

for Zone 1 and Zone 21

II 2G Ex eb IIC T3 Gb
II 2D Ex tb IIIC T125°C Db

for Zone 21

II 2D Ex tb IIIC T125°C Db

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The Industrial Vacuum Cleaners are available in explosion protected version in accordance with ATEX 2014/34/EU.

ATEX 2014/34/EU

DIN EN 60335-2-69, Anh. AA

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