BG ETEM
Energie Textil Elektro
Medienerzeugnisse

Practice

Industry-wide regulation
Dust During Electrical Installation Works

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Dust During Electrical Installation Works

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With the support of:

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Pictures: BG ETEM, Bosch, DeWalt, Hilti, metabo

1 Industry-wide regulation: Dust During Electrical Installation Works

This industry-wide regulation is a supplemented version of the previous regulations on low-dust working methods. In particular, further tips on how to do jobs while minimising dust with dust-separating machine systems have been included. These concern: the use of vacuumed combi hammers for chiselling work, vacuumed drills (hammer drills) and vacuumed flush socket drill bits.

The amount of dust is further minimised thanks to the use of harmonised equipment systems for all of the jobs listed and by using the protective measures shown. The aim is to comply with the new workplace thresholds for respirable dust fraction of 1.25 mg/m³ by the end of 2018 at the latest.

Introduction

While carrying out electrical works on construction sites, such as cutting slots and grooves (chasing out) for electrical cables, or drilling holes for switch and distribution boxes, employees are exposed to mineral dust that is hazardous to health. The dust produced during such work, can be inhaled and may reach the upper respiratory tract, the bronchia or even the alveoli, depending on the particles' size. Dust particles that reach the alveoli may remain there for months or even years.

Thus, dust exposure on construction sites represents a serious health hazard to employees, and emphasises the need for a specialist risk assessment according to the Ordinance on Hazardous Substances, as well as the implementation of the corresponding measures (see sample for the documentation for the risk assessment, page 14).

The federal states of Bavaria, Berlin and Hesse have completed a field campaign together with the German Social Accident Insurance Institution for the energy, textile, electrical and media products sectors and the support of the German Electrical and Electronic Manufacturer's Association (ZVEI), as well as the German Social Accident Insurance Institution for the Construction Industry measuring the levels of such hazardous materials. This joint campaign identified the state of the art for protective measures while carrying out dust-emitting work on construction sites by the electrical industry. The results published in the final report "Exposure at Work: Dust produced during electrical installation works" serve as the basis for this industry-wide regulation. The final report (German only) can be downloaded from: **www.bgetem.de, Webcode 12466546**

1.1 Initial Situation

Mineral dust is produced during the following electrical installation works in particular:

- Wall chasing
- Drilling flush sockets
- Drilling
- Chiselling
- Working in suspended ceilings
- Cleaning

Mineral Dust

Mineral dust is produced when carrying out electrical installation works on masonry, concrete, etc. Depending on the kind of masonry or stone, the dust can contain different proportions of quartz.

Measurements carried out from 1998 to 2005 showed that the general threshold limit values for dust were exceeded considerably during certain activities.

General Threshold Limit Values for Dust

The general threshold limit values for dust are maximum workplace limits and they are determined at 10 mg/m3 for the inhalable fraction and at 3 mg/m3 for the respirable fraction. The inhalable fraction is that part of the dust that can be inhaled through the mouth and nose.
The respirable fraction is that part of the inhalable fraction that can reach as far as the pulmonary alveoli.

For a transitional period, an assessment yardstick of 3 mg/m³ can be used until the end of 2018 instead of the new workplace limits for assessing the effectiveness of the protective measures for the respirable dust fraction if the procedure described in number 2.4.2 of TRGS 900 is implemented. This industry-wide regulation defines the necessary measures for dust-emitting work in electrical installation works.

The German Social Accident Insurance Institutions and the manufacturers of electric power tools within the German Electrical and Electronic Manufacturer's Association have engaged with this topic. On one hand, this has been done by means of providing guidance for a more consistent application of organisational and personal protection measures and, on the other hand by improving and harmonising the tool technology, especially with respect to dust absorption and separation systems.

1.2 Health Hazards

Dust is inhaled into the body via the respiratory system. Health hazards especially arise due to the production of mineral dust which may contain different portions of quartz depending on the kind of masonry, concrete, etc. Employees exposed to this kind of dust over several years without protection during their work can catch, for example, chronic bronchitis pulmonary emphysema (hyperinflation of the lung) or silicosis (black lung). In some cases, silicosis can develop into lung cancer. The results of more recent studies indicate possible carcinogenic effects in the lung also caused by respirable dust.

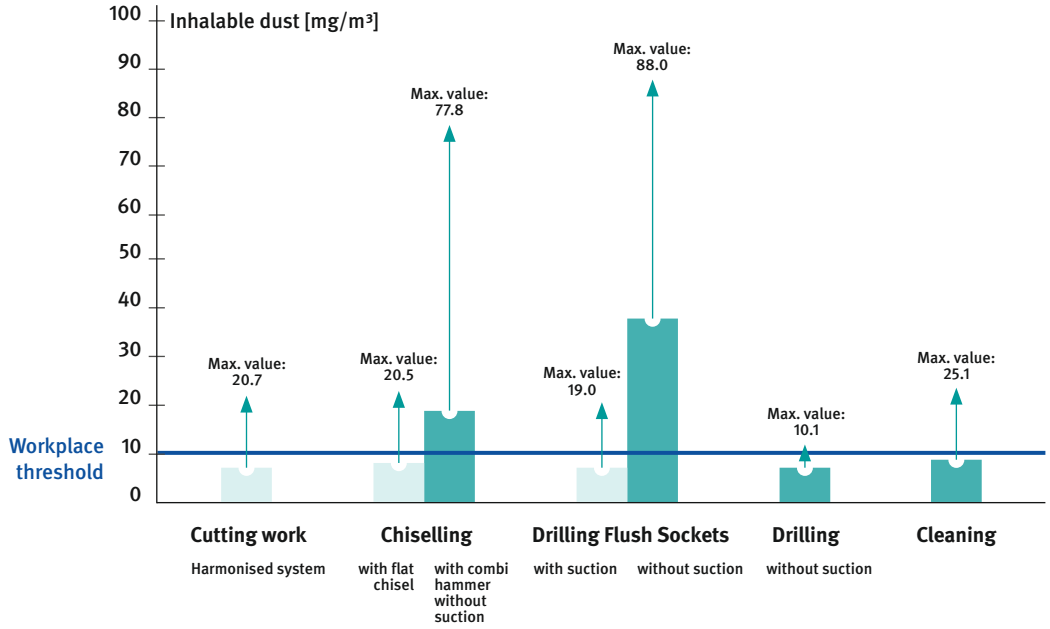

Diagram 1:
Representation of the Average Inhalable Dust Concentrations. Furthermore, the highest values (average value over the duration or measurement) shown as a dot.

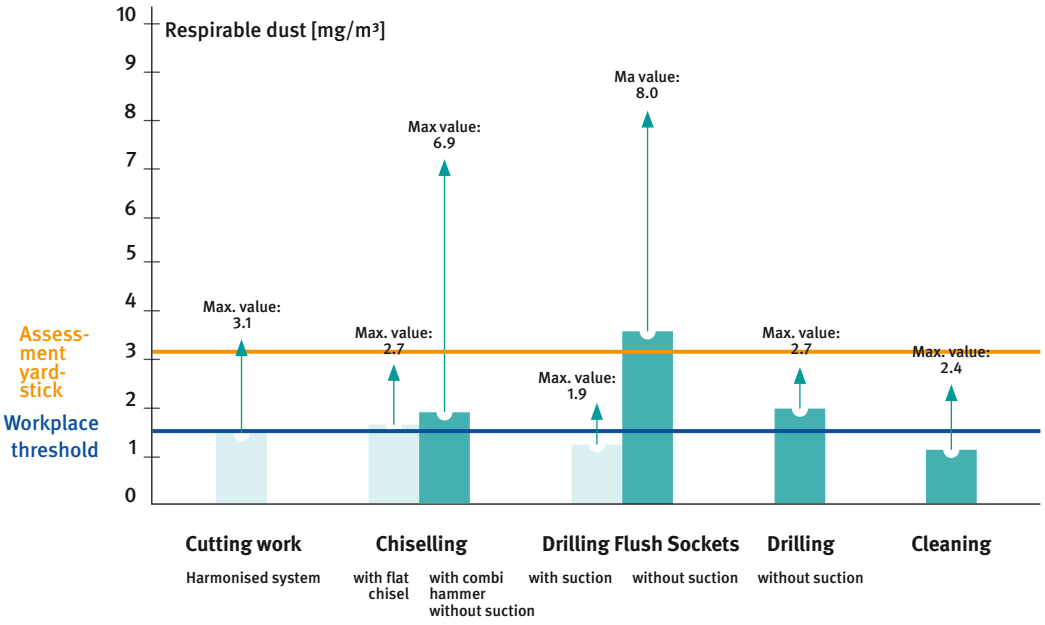

Diagram 2:
Representation of the Average Repirable Dust Concentrations. Furthermore, the highest values (average value over the duration or measurement) shown as a dot.

1.3 Representation and Evaluation of the Exposure

In order to determine the state of the art, harmonised systems were used to carry out additional dust measurements between 2007 and 2009. The basic requirements for low-dust working according to TRGS 500 “Protective measures” were adhered to in this process.

During these measurements the inhalable fraction and the respirable fraction were determined. Additionally, the concentration of the quartz dust was identified. Diagrams 1 and 2 show the average dust concentration detected in the various activities over the course of the measurement. Moreover, the highest values are marked with a dot (average value during the measurement).

In general it can be seen that the threshold limit values for inhalable dust are not exceeded when using wall chasers, working with the Flat Chisel, or drilling flush sockets with absorption system, as well as drilling and cleaning. However, the shift average values for respirable dust fraction often exceed the workplace limit of 1.25mg/m³ published in 2014. 95 per cent of all shift average values are below 2.07mg/m³. If the measures described in the industry-wide regulation are implemented, the assessment yardstick of 3mg/m³ may be applied for a transitional period of up to 2018 at the latest.

The limit values are expected to be exceeded mainly in the following activities:

- Chiselling with a combi hammer without suction
- Drilling flush sockets without suction
- Cutting without a harmonised system
- Drilling without suction
- Cleaning

Drilling flush sockets without suction with a clearly recognisable source of dust formation

Moreover, the general threshold limit values can be exceeded due to the following negative influencing factors:

- Usage of accessories that do not belong to the system used
- Insufficient care, maintenance and inspection of the equipment
- Poor ventilation or works carried out in very small rooms
- Restoration works in old buildings e.g. due to large amounts of plaster on the walls
- Inadequate work organization, e.g. poor coordination of different trades
- Lack of attention from employees regarding low-dust working

For quartz, if harmonised systems of wall chasers are used in conjunction with other activities (sometimes without suction), concentrations of 0.02mg/m³ to 0.93mg/m³ have been proved.

Under unfavourable conditions and if using equipment without suction, a maximum quartz concentration of 2.0mg/m³ has been detected.

There is currently no workplace limit value for quartz In Germany. According to TRGS 906 "List of Carcinogenic Activities or Procedures under Article 3 para. 2 No. 3 Hazardous Substances Ordinance", activities where respirable dust containing quarts is released are classified as carcinogenic. If the protective measures cited in this industry-wide regulation are applied, the quartz concentration in the air at the workplace will be minimised.

1.4 Industry Standard Procedures and Modes of Operation

A detailed hazard assessment (see page 14) is the basis for suitable protective measures. The specific conditions and influencing factors with respect to possible hazards must be taken into account.

Since the production of dust cannot be ruled out when operating electrical tools, action must be taken to effectively reduce exposure. Technical protective measures are to the fore here.

Use of the measures described below usually ensures adherence to the workplace limit for inhalable dust fraction of 10 mg/m³ and the assessment yardstick of 3 mg/m³ for respirable dust fraction.

Harmonised Systems

Harmonised systems comprise the tool (such as cutting disc, drill), the electrical tool, the accessory (such as dust hood, dust collecting system) and the dust-removing unit recommended by the manufacturer (at least Dust Class M). If wall grinders, Combi Hammers or angle grinders are used, several kilograms of dust can be removed per hour. In harmonised systems of Type I, the limit value for inhalable dust and the assessment yardstick for respirable dust are met and the quarz concentration is minimised (see lists of low-dust working systems on pages 11–13).

Pictures 1 and 2:
Examples of harmonised systems: Wall grinders and angle grinders with conversion kits for wall grinders with a dust-removing unit of Dust Class M

Pictures 3 to 6:
Examples of harmonised systems: combi hammers and drill for drilling flush sockets, drilling and chasing with additional collecting unit and a dust-removing unit of Dust Class M

1.5 Selection and Operation of the Equipment Systems

Type I harmonised systems should be used for typical, dust-emitting work. Type I harmonised systems include the equipment combinations listed below:

- Wall grinders with dust-removing units of Dust Class M
- Angle grinders with conversion kits for wall grinders with dust-removing units of Dust Class M
- Diamond drill or Combi Hammer for fitting sockets with dust-removing units of Dust Class M
- Combi hammers for drilling with integrated or additional collecting device with dust-removing units of Dust Class M
- Combi hammers for chasing with dust-removing units of Dust Class M

Examples of low-dust processing systems can be found in the lists on pages 11–13. Before buying new harmonised systems, check whether systems are available that adhere to the new workplace limit for respirable dust fraction. You can find information on this at **www.bgbau.de, Webcode WCNjVi**

In order to ensure low-dust working conditions the following advice should be observed when working with these systems on construction sites:

- The equipment configuration and tools should be selected in line with the material being worked on. Depending on the base material, the manufacturer offers different tools and equipment.
- Work processes should be carried out according to the manufacturers' instructions described in the operating manual.
- When work progress is slowing down, tools should be checked for wear and to determine whether to replace or to sharpen them.
- Only the accessories approved by the manufacturer should be used; they must not be altered in any way.
- If the dust-removing unit warning device is triggered, work must be stopped and the cause of the disruption must be removed in line with the operating manual.
- The manufacturer's advice regarding the operation, maintenance and cleaning of the dust removing unit, including the filter, should be observed. Full dust collecting containers must be emptied immediately in a way that minimises dust.
- Filters should be cleaned and replaced regularly. Filters/filter components should not be removed during operation.

1.6 Work Organisation and Personal Protective Equipment

- Coordination of work processes and trades in order to ensure low-dust working conditions. Example: while doing electrical installations in vertical coring bricks wall chasing always has to be done before drilling flush sockets.
- Provide good ventilation. In small rooms, leave the dust-removal unit running for a long time.
- Ensure a free work area. When cutting longer slots the dust removing unit should follow easily and in plenty of time.
- As far as possible, breaking of the ligament in the slots should be done manually with a flat chisel.
- Use the dust-removing unit with the appropriate accessories. Dust must not be raised by sweeping.
- Selection, provision and usage of ear protection, eye protection and hand protection (protective gloves). Respiratory protection (at least a filtering half mask, Class FFP2 to filter particles) must be available and used when dust forms visibly.
- Provision of the general advice regarding occupational health and toxicological aspects (as part of the training) in order to instruct the employees about the health risks and explain the various check-ups offered.
- Due to the detected exposures, preventive check-ups should at least be provided for dust in general and for quartz in particular. When working in unfavourable conditions for more than one hour per shift, compulsory check-ups should be carried out because increased exposure must be assumed.
- If filtering half masks, Class FFP3, have to be worn to filter particles, preventive occupational health check-ups must be provided. If Class FFP2 filtering half masks are sufficient, check-ups must be offered.

1.7 Operating Instructions and Training

Once everything necessary has been done to protect employees, there is still a remaining risk from the behaviour of the employees themselves. In order to limit this risk, employees have to be trained and instructed so that they are able to protect themselves:

- Operating instructions have to be written for activities that produce mineral dust (see sample operating instructions, page 16).
- Employees have to be trained in possible risks and the appropriate protection measures as well as how to follow the work

procedure correctly before starting work. Participants, content, place and date of the training have to be documented.
- Employees must confirm with their signature that they have taken part in the training and that they have understood everything.
- The training should be repeated at least once a year or after a specific incident.
- Ensure that the specified measures will be completely implemented. Any problems should be addressed and solved immediately.

1.8 List of Employees

Damage to health cannot be ruled out in the works described due to the release of carcinogenic dust containing quartz. For this reason, a list of employees who have been exposed must be kept to document exposure at work.

This list must contain the work and information on the level and duration of exposure to carcinogenic, mutagenic or reprotoxic substances. It must be stored for 40 years after the end of exposure. If employment contracts are terminated, the employee must be handed an extract with the information concerning him/herself. An example of a list of this kind can be found at **www.bgetem.de, Webcode 12920140.**

1.9 List of Type I Low-Dust Harmonised Systems

The equipment combinations listed below contain dust-removing units with varying container volumes.

Depending on the amount of dust produced, integrated dust collecting containers and dust-removing units with a small container volume must be emptied more frequently to obtain the desired level of dust separation.

Wall chasing	Cutting depth
AEG MFE 1500 with dust-removing unit Milwaukee “M” vacuum ASM 1400	25 mm
Baier BDN 453 with dust-removing unit BSS 407 M	35 mm
Baier BMF 500 NL with dust-removing unit BSS 407 M	35 mm
Baier BMF 501 with dust-removing unit BSS 407 M	35 mm
Bosch GNF 20 CA with dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC	20 mm
Bosch GNF 20 CA with dust-removing unit GAS 50 M	20 mm
Bosch GNF 35 CA with dust-removing unit Bosch GAS 35 M AFC oder GAS 55 M AFC	35 mm
Bosch GNF 35 CA with dust-removing unit GAS 50 M	35 mm
Eibenstock EMF 150 with dust-removing unit Eibenstock DSS 25 M or DSS 50 M	45 mm
Flex MS 1706 FR with dust-removing unit Flex S 47 M	35 mm
Flex MS 1706 FR with dust-removing unit Flex VCE 45 MAC	35 mm
Hilti DCG 125–S, DEG 125–D, DEG 125–P Hood DC–EX 125/5 “ M with dust-removing unit Hilti VCU 40–M	25 mm
Hilti DCG 125–S, DEG 125–D, DEG 125–P Hood DC–EX 125/5 “ M with dust-removing unit of the series Hilti VC 20–UM or VC 40–UM	25 mm
Hilti DCG 125–S, DEG 125–D, DEG 125–P Hood DC–EX 125/5 “ M with dust-removing unit of the series Hilti VC 20–UM–Y or VC 40–UM–Y	25 mm
Hilti DC-SE 20 with dust-removing unit Hilti VCU 40–M	35 mm

Wall chasing	Cutting depth
Hilti DC-SE 20 with dust-removing unit of the series Hilti VC 20–UM or VC 40–UM	35 mm
Hilti DC-SE 20 with dust-removing unit of the series Hilti VC 20–UM–Y or VC 40–UM–Y	35 mm
Hilti DCH 180–SL with dust-removing unit Hilti VCU 40–M	50 mm
Hilti DCH 180–SL with dust-removing unit of the series Hilti VC 20–UM or VC 40–UM	50 mm
Hilti DCH 180–SL with dust-removing unit of the series Hilti VC 20–UM–Y or VC 40–UM–Y	50 mm
Hitachi CNF 35 U with dust-removing unit RNT 1225 M	25 mm
Hitachi CNF 45 U with dust-removing unit RNT 1225 M	35 mm
ITW Spit D 60 with dust-removing unit ITW Spit AC 1630 P M	35 mm
ITW Spit D 88 with dust-removing unit E ITW Spit AC 1630 P M	25 mm
ITW Spit D 90 with dust-removing unit ITW Spit AC 1630 P M	50 mm
ITW Spit F 40 with dust-removing unit ITW Spit AC 1630 P M	40 mm
ITW Impex ST–H–68E with dust-removing unit ITW Spit AC 1630 P M	40 mm
Makita SG 1250 with dust-removing unit Makita 447M	25 mm
Makita SG 1250 with dust-removing unit Makita 447M X	25 mm
Makita SG 150 with dust-removing unit Makita 447M	35 mm
Makita SG 150 with dust-removing unit Makita 447M X	35 mm
Metabo MFE 30 with dust-removing unit Metabo SHR 2050 M	25 mm
Metabo MFE 30 with dust-removing unit Metabo ASR 35 M Auto Clean	25 mm
Milwaukee WCE 30 with dust-removing unit Milwaukee “M” vacuum ASM 1400	25 mm
Protool WCP 32 with dust-removing unit Protool VCP 260 E-M AC, VCP 450 E-M AC	25 mm
Protool WCP 50 with dust-removing unit Protool, VCP 260 E-M AC², VCP 450 E-M AC	50 mm

Demolition hammers
Bosch GSH 11 E/VC, suction unit GDE max, sharp chisel twister with dust-removing unit GAS 35/55 M AFC
DeWalt D25501K with DWH051K and dust-removing unit DeWalt D27902 M

Demolition hammers
DeWalt D25601K (with suction DWH051K) and dust-removing unit DeWalt D27902 M
DeWalt D25602K (with suction DWH051K) and dust-removing unit DeWalt D27902 M
DeWalt D25711K (with suction DWH051K) and dust-removing unit DeWalt D27902 M
DeWalt D25712K (with suction DWH051K) and dust-removing unit DeWalt D27902 M
DeWalt D25762K (with suction DWH051K) and dust-removing unit DeWalt D27902 M
DeWalt D25831K (with suction DWH051K) and dust-removing unit DeWalt D27902 M
DeWalt D25870K (with suction DWH051K) and dust-removing unit DeWalt D27902 M
DeWalt D25899 K (with suction DWH 052K) and dust-removing unit DeWalt D27902 M
DeWalt D25901 K (with suction DWH 052K) and dust-removing unit DeWalt D27902 M
DeWalt D25941 K (with suction DWH 052K) and dust-removing unit DeWalt D27902 M
DeWalt D25961 (with suction DWH 052K) and dust-removing unit DeWalt D27902 M
Hilti TE 60, TE 60–AVR, suction TE DRS–B with dust-removing unit of the series Hilti VC 20–UM or VC 40–UM
Hilti TE 60, TE 60–AVR, suction TE DRS–B with dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y
Hilti TE 500–AVR, suction TE DRS–B with dust-removing unit of the series Hilti VC 20–UM or VC 40–UM
Hilti TE 500–AVR, suction TE DRS–B with dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y
Hilti TE 700–AVR, suction TE DRS–B with dust-removing unit of the series Hilti VC 20–UM or VC 40–UM
Hilti TE 700–AVR, suction TE DRS–B with dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y
Hilti TE 706–AVR, suction TE DRS–B with dust-removing unit of the series Hilti VC 20–UM or VC 40–UM
Hilti TE 706–AVR, suction TE DRS–B with dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y
Hilti TE 805, suction TE DRS–B with dust-removing unit of the series Hilti VC 20–UM or VC 40–UM
Hilti TE 805–AVR suction TE DRS–B with dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y
Hilti TE 1000–AVR, suction TE DRS–B with dust-removing unit of the series Hilti VC 20–UM or VC 40–UM
Hilti TE 1000–AVR, suction TE DRS–B with dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y
Hilti TE 1500–AVR, suction TE DRS–B with dust-removing unit of the series Hilti VC 20–UM or VC 40–UM
Hilti TE 1500–AVR, suction TE DRS–B with dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y

Diamond drills/drilling flush sockets

Bosch hammer drill GBH 2-24 D/DF hollow drill bit SDS-plus, suction unit GDE 68 with dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC

Bosch hammer drill GBH 2-26 DFR/DRE hollow drill bit SDS-plus, suction unit GDE 68 with dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC

Bosch hammer drill GBH 2-28 DV/DFV, SDS-plus, suction unit GDE16 Plus with dust-removing Bosch GAS 35 M AFC or GAS 55 M

Bosch hammer drill GBH 2-28 DV/DFV hollow drill bit SDS-plus, suction unit GDE 68 with dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC AFC

Bosch hammer drill GBH 3-28 DV/DFR, SDS-plus, suction unit GDE16 Plus with dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC

Bosch hammer drill GBH 3-28 DRE/DFR hollow drill bit SDS-plus, suction unit GDE 68 with dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC

Bosch hammer drill GBH 4-32 DFR, SDS-plus, suction unit GDE 68 with dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC

Hilti DD 110–D (with integrated suction device) and dust-removing unit of the series Hilti VC 20–UM or VC 40–UM

Hilti DD 110–D (with integrated suction device) and dust-removing unit of the series Hilti VC 20–UM–Y or VC 40–UM–Y

Hilti DD 110–W (with integrated suction device) and dust-removing unit of the series Hilti VC 20–UM or VC 40–UM

Hilti DD 110–W (with integrated suction device) and dust-removing unit of the series Hilti VC 20–UM–Y or VC 40–UM–Y

Hammer drills

Bosch GBH 2-20 D, suction unit GDE16 Plus, SDS Plus drill with dust-removing unit GAS 35 M AFC or GAS 55 M AFC

Bosch GBH 2-23 REA (optionally with integrated suction or dust-removing unit) Bosch GAS 35 M AFC or GAS 55 M AFC

Bosch GBH 2-24 D or GBH 2-24 DF suction GDE 16 Plus, SDS Plus drill and dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC

Bosch GBH 2400 suction GDE 16 Plus, SDS Plus drill and dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC

Bosch GBH 2-26 DRE or GBH 2-26 DFR suction GDE 16 Plus, SDS Plus drill and dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC

Bosch GBH 2600 suction GDE 16 Plus, SDS Plus drill and dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC

Bosch GBH 2-28 DF or GBH 2-28 DFV, suction GDE 16 Plus, SDS Plus drill and dust-removing unit GAS 35 M AFC or GAS 55 M AFC

Bosch GBH 3-28 DRE or GBH 3-28 DFR, suction GDE 16 Plus SDS Plus drill and dust-removing unit S 35 M AFC or GAS 55 M AFC

Bosch GBH 8-45 D/DV, suction unit GDE 68, SDS-Max drill and dust-removing unit GAS 35 M AFC or GAS 55 M AFC

Bosch GBH 18 V-EC suction GDE 16 Plus, SDS Plus drill and dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC

Hammer drills

Bosch GBH 36 V-LI or GBH 36 VF-LI suction GDE 16 Plus, SDS Plus drill and dust-removing unit Bosch GAS 35 M AFC or GAS 55 M AFC

DeWalt D25762K (with suction DWH050K) and dust-removing unit DeWalt D27902 M

DeWalt D25712K (with suction DWH050K) and dust-removing unit DeWalt D27902 M

DeWalt D25711K (with suction DWH050K) and dust-removing unit DeWalt D27902 M

DeWalt D25602K (with suction DWH050K) and dust-removing unit DeWalt D27902 M

DeWalt D25601K (with suction DWH050K) and dust-removing unit DeWalt D27902 M

DeWalt D25501K (with suction DWH050K) and dust-removing unit DeWalt D27902 M

Hilti TE 2, TE 2-S or TE 2-M, suction TE DRS-S and dust-removing unit of the series Hilti VC 20–UM or VC 40–UM

Hilti TE 2, TE 2-S or TE 2-M, suction TE DRS-S and dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y

Hilti TE 30-AVR, TE 30-C-AVR or TE 30-M-AVR, suction TE DRS-S and dust-removing unit of the series Hilti VC 20–UM or VC 40–UM

Hilti TE 30-AVR, TE 30-C-AVR or TE 30-M-AVR, suction TE DRS-S and dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y

Hilti TE 50 or TE 50-AVR, suction TE DRS-S and dust-removing unit of the series Hilti VC 20–UM or VC 40–UM

Hilti TE 50 or TE 50-AVR, suction TE DRS-S and dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y

Hilti TE 60, suction TE DRS-S and dust-removing unit of the series Hilti VC 20–UM or VC 40–UM

Hilti TE 60 with suction TE DRS-S and dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y

Hilti TE 60, with suction TE DRS-S and dust-removing unit of the series Hilti VC 20–UM or VC 40–UM

Hilti TE 60, with suction TE DRS-S and dust-removing unit of the series Hilti VC 20–UM–Y or VC 40–UM–Y

Hilti TE 60-ATC, suction TE DRS-S and dust-removing unit of the series Hilti VC 20–UM or VC 40–UM

Hilti TE 60-ATC with suction TE DRS-S and dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y

Hilti TE 70 or TE 70-ATC, suction TE DRS-S and dust-removing unit of the series Hilti VC 20–UM or VC 40–UM

Hilti TE 70 or TE 70-ATC, suction TE DRS-S and dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y

Hilti TE 80-ATC, suction TE DRS-S and dust-removing unit of the series Hilti VC 20–UM or VC 40–UM

Hilti TE 80-ATC with suction TE DRS-S and dust-removing unit of the series VC 20–UM–Y or VC 40–UM–Y

Further information and the current,
possibly modified, table is available on the GISBAU website at:
www.bgbau.de, Webcode WCNjVi

1.10 Sample of the Documentation of the Risk Assessment

Please note: Entries printed in italic are examples that you can change according to your needs.

As of: December 2014

Risk Assessment - Documentation

Article 7 para. 6 Gefahrstoffverordnung

Created by:	**Responsible:**
Date:	
Working area:	*Construction site electrical installation*
Activity:	*Wall chasing, drilling flush sockets, drilling anchor holes, chiselling, cleaning*

Description of the Activities

During the above-mentioned activities, slots and grooves are cut into the masonry, flush sockets are drilled, holes are drilled or slots are chiselled out. In the process, large amounts of mineral dust are produced. This dust is collected directly at the electrical tool. This dust is directly separated via the dust-removing unit as part of the harmonised system.

Hazardous Material Used/Released

Mineral dusts: inhalable fraction, respirable fraction Quartz	*General threshold limit value for inhalable dust: 10mg/m³ respirable dust fraction: 1.25mg/m³ (until the end of 2018 assessment yardstick 3 mg/m³) activities with respirable dust containing quarts are carcinogenic according to TRGS 906.*	*The released quantity of mineral dust depends on various parameters (activity, level of collection, separation rate, etc.).*

Assessment

Risks due to Inhalation

Due to the nature of the work, the formation and release of health hazardous mineral dust cannot be avoided. The mineral dust is absorbed into the body by breathing and can remain in the respiratory organs. Health hazards have to be expected (chronic bronchitis, pulmonary emphysema, silicosis, which can lead to lung cancer in some cases). The activity is classed as carcinogenic according to TRGS 906. The results of more recent studies indicate possible carcinogenic effects in the lungs from respirable dust.

Measurements of hazardous materials on construction sites frequently show that the general threshold limit value for dust is clearly exceeded, especially when 'old tools' or non-harmonised systems of wall chaser and dust-removing unit are used or when electric power tools do not use a dust removing unit. With harmonised equipment systems the general threshold limit values for inhalable dust fraction and the assessment yardstick for respirable dust fraction can generally be adhered to and the quartz concentration minimised. The general measures for low-dust working conditions also have to be applied.

Substitution of the released substance/process not possible since work is necessary on the existing masonry.

Use of a closed systems not technically possible.

Risks from Skin Contact

No known risk

Physical, Chemical and Other Risks

No known risk

Protective Measure/Effectiveness	Responsibility
Provide and use harmonised equipment systems (electrical tools and dust-removing unit)	*Manager*
Provide and use only recommended accessories	*Manager*
Operation, maintenance, cleaning and inspection of the equipment and the accessories according to the manufacturer's information	*Manager, all employees*
Provide good ventilation. In small rooms, leave the dust-removing unit running for a long time	*all employees*
Avoid spreading dust	*all employees*
Selection, provision and use of ear protection, eye protection and hand protection (protective gloves). Breathing protection (at least a filtering half mask, Class FFP2, to filter particles) has to be provided and used if dust visibly forms.	*Manager, all employees*
Cleaning without sweeping but rather by vacuuming or binding the dust with moisture	*Manager, every employee*
Occupational medical examination for dust in general and quartz *Mandatory check-up: For working in unfavourable influencing factors for more than one hour per shift* *Voluntary check-up All other activities*	*Manager*
Occupational medical examination for respiratory protection *Mandatory check-up: Use of FFP3 masks* *Voluntary check-up Use of FFP2 masks*	*Manager*
Draw up operating instructions (Sample from the BG ETEM can be used)	*Manager*
Carry out training and occupational medicine and toxicological advice	*Manager*

Regulations Used

GefStoffV	*Hazardous Substance Ordinance*
TRGS 559	*Mineral Dust*
TRGS 900	*Workplace Limits*
TRGS 906	*List of Carconogenic Activities or Processes according to Article 3 para. 2 No. 3 GefStoffV*
DGUV Rule 112-190	*(BGR/GUV-R 190) Use of Breathing Equipment*
DGUV Rule 112-192	*(BGR/GUV-R 192) Use of Eye and Face Protection*
DGUV Rule 112-194	*(BGR/GUV-R 194) Use of Hearing Protection*

1.11 Sample Operating Instructions

Please note: Training shall be confirmed by signature of the party receiving training.

Company _____

Working area: Construction site,
electrical installation

Responsible: _____
Signature

OPERATING INSTRUCTIONS
ACCORDING TO ARTICLE 14 GEFSTOFFV

BG ETEM
Energie Textil Elektro Medienerzeugnisse

Workplace: _____ As of: _____

Activity: Chiselling, wall chasing drilling flush sockets, drilling, cleaning

B 039

Hazardous Material Description

Mineral dust hazardous to health

when chiselling, wall chasing, drilling flush sockets, drilling in masonry and cleaning

Hazards for Humans and the Environment

Working in dusty environments for many years can lead to damage of the respiratory tract and lungs. In particular, chronic bronchitis (inflammation of the lower respiratory tract) and pulmonary emphysema (hyperinflation of the lungs) and possible cases of lung cancers should be mentioned. Particles in the dust that contain quartz can also lead to changes of the pulmonary tissue Very high quartz concentrations can lead to dust disease (silicosis), which can lead to lung cancer in some cases.

Protective Measures and Behaviour Rules

Use of harmonised systems _____ e.g. wall chaser with recommended dust-removing unit, dust class M

Use only the accessories recommended by the manufacturer. Do not alter the accessories in any way. Sharpen or replace tools in plenty of time.

If the dust-removing unit warning device is triggered, work must be stopped and the cause of the disruption must be removed in line with the operating manual. The reasons for this could be blocked filters or over-full dust containers.

Provide good ventilation. In small rooms, leave the dust-removal unit running for a long time.

Only use electrical tools and dust-removing units which are regularly checked and which are in good order (test badge _____). Clean the construction site with the existing dust-removing unit, do not sweep or blow away.
Remove building rubble carefully with a shovel. Do not raise dust. Report defects to the machines and equipment to the manager _____.
Regularly clean and change filters; do not remove filters/filter components

In the event of high formation of dust, respiratory protection has to be worn, at least a filtering half mask, class FFP2 _____.
Wear working clothing _____ at work.
Wear protective gloves _____, ear protection _____
and eye protection _____.
Do not smoke, eat or drink at work and do not store any food here.
Take part in the regular occupational health check-ups.

Behaviour in the Event of Danger

Stop work in the event of a defective tool or dust- removing unit, or if dust forms due to unknown reasons, inform manager _____.
If possible, correct the defects professionally or authorize repair/change by _____.

First Aid

Eye contact: Do not rub, immediately rinse with water, and consult an ophthalmologist if necessary.
First aider _____ **Emergency number** _____

Proper Disposal

Put the building rubble into the designated containers carefully and avoid swirling up the dust.
Remove and dispose of used filters and separated dust from the dust-removing unit carefully.

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