

DGUV Rule 115-002

Staging and Production Facilities for the Entertainment Industry

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Glinkastraße 40  
10117 Berlin, Germany  
Tel.: +49 30 288763800  
Fax: +49 30 288763808  
Email: [info@dguv.de](mailto:info@dguv.de)  
Internet: [www.dguv.de](http://www.dguv.de)

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## Staging and Production Facilities for the Entertainment Industry

**DGUV Rules** assemble sector, work procedure or workplace specific contents. They explain which practical prevention measures will cover your duties of preventing work accidents, occupational diseases and work-related health risks.

In addition, the rules indicate ways to avoid work accidents, occupational diseases and work-related health risks where no occupational safety or accident prevention regulations exist. Furthermore, they bundle the practical knowledge obtained from the accident insurance agencies' prevention work.

Due to their special creation process and their content, focussing on specific operational procedures or application areas (orientation on industry sectors/operation modes/divisions), rules are professional recommendations on how to ensure safety and health. They have a high level of practical relevance and insight, and as they are considered necessary by the majority of the parties involved, they can be used as a guideline for operational prevention measures. Yet, no presumption of conformity is to be understood with these rules.

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This **Rule for safety and health protection** aims to substantiate and elucidate the **Accident-prevention regulation** “Veranstaltungs- und Produktionsstätten für szenische Darstellung“ (**DGUV Regulation 17 and 18**, formerly BGV C1 and GUV-V C1), henceforth referred to as “Staging and production facilities for the entertainment industry”.

With this DGUV rule, the practical prevention measures for staging and production facilities will be described in a way that ensures safe operation according to modern and holistic safety and health protection.

Based on **DGUV Regulation 17 and 18** “Staging and Production Facilities for the Entertainment Industry”, on this DGUV rule, and on the industry-specific professional information herefrom derived, the whole range of artistic scenic performances, often executed in a very creative way, can be implemented in legal conformity. In view of frequently occurring live action and constantly developing events with experience-oriented aspects, it is necessary to specifically adjust the rules.

This DGUV rule replaces the *related instructions* hitherto contained in the **Accident-prevention regulation** “Staging and production facilities for the entertainment industry”. In addition to the DGUV rule, **DGUV Information 215-310** “Sicherheit bei Veranstaltungen und Produktionen” (Safety for events and productions) serves as a summary guideline to safety and health protection for the entertainment industry.

## 2 Application Area

### §1 Scope

*(1) This accident-prevention regulation applies to*

*1. the stage and performance areas of staging facilities and  
2. the production and performance areas of production facilities for film, television, radio and photographic use.*

*(2) This accident-prevention regulation does not apply to cinemas without stage areas or to fairground-entertainment or circus companies.*

#### **on §1:**

**DGUV Regulation 17 and 18** “Staging and Production Facilities for the Entertainment Industry” and this DGUV rule are addressed to companies, employers as well as to operators of staging and production facilities for the entertainment industry, to service providers of the entertainment industry as well as to insured parties, employees, self-employed entrepreneurs and artists.

The enterprises, businesses and service providers for arts, culture, entertainment, information and communication comprise in particular state-owned resp. municipal companies (e.g. theaters, broadcasting companies, staging facilities), commercial entertainment companies, educational institutions, associations, agencies and self-employed entrepreneurs.

This rule is specifically applicable for all activities performed within the setting of scenic performances by actors, musicians, dancers, artistes, stunt people, students, voluntary workers and amateurs.

The *scope* may in individual cases also include areas for spectators, if production or performance is taking place in these areas or spectators become part of the action like insured persons. Staging facilities for scenic performances that are not classified as venues by construction law can also be part of it, like small school auditoriums, community centers or broadcasting studios.

## § 2 Definitions

*Within the meaning of this accident-prevention regulation,*

- 1. staging facilities are all workplaces in buildings or outdoors which have stages or performance areas, including the necessary equipment;*
- 2. production facilities for film, television, radio and photographic use are studios, acting areas and performance areas in the case of outdoor recording/filming, including the equipment required for them;*
- 3. safety equipment is all technical equipment used in staging and production facilities to avert immediate hazards; and*
- 4. mechanical equipment is all technical equipment used for operations in staging and production facilities.*

### **on § 2, par. 1 and 2:**

*Staging and production facilities for the entertainment industry are, for example:*

- film, radio, television – studios, ateliers and other production sites
- theater and music theater – theaters, multipurpose halls, open air stages, acting and performance areas in concert halls, stages in cabaret and vaudeville theaters, music halls, schools
- events and entertainment – shows, open air events, concerts, discotheques
- fairs and exhibitions

### **on §2, par. 3:**

*Safety equipment contains, for example:*

- substitute power supply systems and safety lights
- fire alarm and fire extinguishing systems
- hazard detecting systems
- smoke extraction systems
- safety curtains

In particular, safety equipment can be installations and provisions which are required in staging and production facilities due to construction law. The primary purpose of safety equipment is to protect the building and all persons in it.

### **on § 2, par. 4:**

*Mechanical equipment* is working material of the entertainment technology. This includes machines which move and hold persons and loads on scene or lift and lower performers as well as machines which serve for horizontal transport. These are, in particular: stage lighting and overhead light rigging systems, lighting and portal bridges, projection screens, stage wagons, scenery and decoration hoists, revolving stages and turntables, electric chain hoists, flying systems, camera cranes and camera support systems, decoration elements moved by force, light holding devices, point hoists, safety

curtains, stands and stage lifts. They might be permanently installed (e.g. as the theater's upper and lower machinery) or temporarily provided (such as stands or camera cranes).

Machines intended to move performers during artistic performances are excluded from the application area of the **German machinery ordinance**. For this exception to the rule, a comparable level of safety is achieved with the help of **DGUV Regulation 17 and 18**. Cf. also **DGUV Information 215-320** „Fliegen von Personen bei szenischer Darstellung“ (Flying of persons in stage performances) and **DGUV Information 215-321** „Bereitstellung und Benutzung von Versenkeinrichtungen“ (Provision and use of stage lifts).

Cf. also **DGUV Principle 315-390** „Grundsätze für die Prüfung maschinentechnischer Einrichtungen in Bühnen und Studios“ (Principles for the testing of mechanical equipment on stages and in studios).

### 3 Measures for the Protection against Particular Risks – Work Environment and Working Materials

#### § 3 General Provisions

*The employer must ensure that equipment in staging and production facilities is designed in accordance with the provisions of Part III.*

#### **on § 3:**

The measures of safety technology laid down in Part III of **DGUV Regulation 17 and 18** “Staging and production facilities for the entertainment industry” concerning architecture and equipment of staging and production facilities for the entertainment industry are intended as protection against:

- hazards due to specific architectural conditions
- hazards due to particular scenic requirements (e.g. risk of falling)
- falling objects
- movements due to operating conditions
- inadvertent movements

The requirements for setup and operation of staging and production facilities for the entertainment industry result from the **Arbeitsstättenverordnung** (Workplace Ordinance) and the **Technische Regeln für Arbeitsstätten** (Technical Rules for Workplaces). The requirements for selecting and providing of work material result from the **Betriebssicherheitsverordnung** (Operational safety ordinance) and the **Technische Regeln für Betriebssicherheit** (Technical rules for operational safety).

In order to define the necessary measures of safety technology, a professional assessment of the work conditions (risk assessment) is required.



#### § 4 Stability and Load-Bearing Capacity

*Surfaces and sets must be dimensioned, designed, erected, supported, stiffened, suspended and anchored in such a way that they can absorb and transmit the static and dynamic loads which occur when they are used as intended. They must also be stable during set-ups and strikes and, if they are walked upon, they must be able to withstand the weight.*

#### **on § 4:**

*Surfaces and sets include particular stage and performance areas, platforms, accessible and inaccessible decorations, elements of walls, floors and ceilings, truss constructions, stairs and other parts of the scenery.*

In addition to the requirements of legal conformity with building regulations and the rules of the construction industry for stability and load-bearing capacity of surfaces and sets, the following technical rules need to be consulted in particular:

**-DIN 56955** Veranstaltungstechnik - Lastannahmen für Einbauten in Bühnen und Nebengebieten - Verkehrslasten

(Entertainment technology - Load assumptions in stages and associated areas - Safe working loads)

**-DIN 56950-1** Veranstaltungstechnik – Maschinentechnische Einrichtungen – Sicherheitstechnische Anforderungen und Prüfungen

(Entertainment technology - Machinery installations - Part 1: Safety requirements and inspections)

**-DIN 56928** Veranstaltungstechnik – Technische Decken – Sicherheitstechnische Anforderungen

(Event technology - Technical ceilings and grids - Safety requirements)

**-DIN 15920-4** Veranstaltungstechnik – Podestarten, Bühnenwagen, frei verfahrbar

(Entertainment technology - Practical types - Part 4: Boat-trucks)

**-DIN 15920-11** Veranstaltungstechnik – Podestarten, Sicherheitstechnische Festlegungen für Podeste (Praktikabel), Schrägen, Stufen, Treppen und Bühnengeländer aus Holz (Entertainment technology - Practical types - Part 11: Safety regulations for wooden practicals, ramps, steps, stairs and stage balustrades)

**-DIN 15921** "Podeste und Zargen aus Aluminium - Sicherheitstechnische Anforderungen und Prüfung" (Entertainment technology - Aluminium platforms and frames - Safety requirements and testing)

For outdoor events, it is vital to ensure stability and load-bearing capacity for all possible environmental and operational conditions.

The components of surfaces and sets need to be designed in a way that necessary lifting and carrying will not put the workers at any health risk because of the working conditions. In cases where lifting and carrying are only possible in ergonomically inconvenient positions or a component weighs more than 25kg, they need to be labelled with weight information. If necessary, instructions for set-up and dismantling need to be written down.

## § 5 Safety Underfoot

*(1) Performance areas, sets and decorations must be designed in such a way that performers can work safely. In particular,*

- 1. stage floors must be even, free of splinters and have tight joints,*
- 2. it must be possible to cover any unavoidable gaps and openings which are more than 20 mm in width,*
- 3. sets consisting of several components must be secured so as to prevent them from coming apart,*
- 4. floor coverings must be secured so as to prevent them from slipping and*
- 5. it must not be possible to unknowingly move from a performance area to an adjacent surface which is not capable of bearing loads.*

*(2) Rooms which are darkened for operational reasons must be fitted with equipment which enables people to find their way safely.*

### **on § 5 par. 1:**

The reference value for a maximum inclination of a passable area is 8 percent according to the **Technical rules for workplaces**, cf. **ASRA A1.8** "Verkehrswege" (Passageways). Only where special scenic requirements make it necessary, a steeper slope might be chosen. In this case, an individual risk assessment has to clarify which additional measures will be needed, cf. **§ 20 par. 1**.

For long-lasting scenic performances while standing, e.g. for choirs, horizontal standing areas have to be provided.

Some movement processes in scenic performances, esp. falling scenes or musical and dance performances, can require a specific floor quality which can be achieved by sufficient shock absorption and vertical deformation of the floor. The risk of tripping or hitting against edges should be avoided, and, more specifically, detected hazard points be padded.

For the design of performance areas, the kind of scenic performance has to be taken into account. When using ground fog, for example, it is necessary for the performance area to be without any irregularities and to have an anti-slip surface.

These requirements are also applicable for rehearsal rooms.

### **on § 5 par. 2:**

This requirement is fulfilled if, for example, guide lights or reflective resp. luminescent markings are provided.

Safety underfoot for performance areas also requires a working light with an illuminance of at least 300 lux installed for non-scenic operation, cf. also **ASR A3.4** "Beleuchtung" (Lighting).

## § 6 Protection against Falls from a Height

*(1) Effective equipment to prevent persons falling from a height must be in place at workstations, performance areas, passageways and access points which are adjacent to hazardous areas or are more than 1 m above adjacent surfaces.*

*(2) If, for compelling staging reasons, equipment of the type described in Paragraph (1) cannot be used in specific cases, fall-arrest equipment must be in place instead. If such fall-arrest equipment cannot be used on performance areas for compelling staging reasons, the falling edge of the performance area must be marked and clearly visible in all lighting conditions.*

*(3) Clearly visible, permanent warning signs must be in place at openings in safety curtains and at stairs leading to the apron to indicate the fall hazard.*

### **on § 6 par. 1:**

The basic requirements for *protection against falls from a height* are in conformity with the **Workplace ordinance**, and are defined in **Technical rules for workplaces ASRA 2.1** "Schutz vor Absturz und herabfallenden Gegenständen, Betreten von Gefahrenbereichen" (Protection against falls from a height and falling objects, Accessing hazard zones). More specifications can be found in **Technical rules for operational safety TRBS 2121** "Gefährdungen von Personen durch Absturz" (Danger to persons by falls from a height) in accordance with the **Operational safety ordinance**.

A risk of fall from a height is given when the fall height exceeds 1 m. When the difference in height is less than 1 m, a risk assessment will have to clarify whether and which protective measures against falls are necessary, when for example the edge is indistinguishable or sure-footedness is not guaranteed.

Guards must be, in accordance with their intended use, designed in such a way that they withstand the calculated stresses and prevent workers from falling over or through it. The minimum height of guards is 1 m. The height of the guards can be reduced to 0.8 m for parapets when the guard has a minimum depth of 0.2 m and through the depth, an equivalent protection against falls is guaranteed. When the fall height exceeds 12 m, the height of the guard must be at least 1.1 m.

The requirements for protection against falls are applicable for workplaces, performance areas, passageways and access points. Particular care has to be taken for measures against falls from a height during set-up and dismantling of mobile stage constructions. It is also necessary to make provisions for measures required for the rescue of persons.

Structural and technical measures prevail organizational or individual protection measures. In staging and production facilities where works at a height need to be executed (e.g. in multi-purpose halls or in television studios), constructional passageways (like bridges, working footbridges or technical ceilings) must be provided with railings, cf. also **DIN EN ISO 14122-2** „Sicherheit von Maschinen - Ortsfeste Zugänge zu maschinellen Anlagen - Arbeitsbühnen und Laufstege" (Safety of Machinery - Permanent Access to Machinery - Working Platforms and Walkways).

In cases where such fittings are not realizable or impracticable, the constructor must provide installations which arrest a person's fall or prevent an even steeper fall, e.g. lifeline systems for attaching personal protective equipment against falls from a height.

*Equipment to prevent persons falling from a height* can be, for example:

- fixed railings according to **DIN EN 1191-1-1** "Allgemeine Einwirkungen auf Tragwerke - Wichten, Eigengewicht und Nutzlasten im Hochbau" (Actions on structures - Part 1-1: General actions - Densities, self-weight, imposed loads for buildings)
  - stage railings used by instructed persons, according to **DIN 15920-11** "Veranstaltungstechnik - Podestarten, Sicherheitstechnische Festlegungen für Podeste (Praktikabel), Schrägen, Stufen, Treppen und Bühnengeländer aus Holz" (Entertainment technology - Practical types - Part 11: Safety regulations for wooden practicals, ramps, steps, stairs and stage balustrades) or **DIN 15921** "Podeste und Zargen aus Aluminium - Sicherheitstechnische Anforderungen und Prüfung" (Entertainment technology - Aluminium platforms and frames - Safety requirements and testing)
  - lifeline systems according to **DIN EN 795** „Persönliche Absturzschutzausrüstung – Anschlageneinrichtungen“ (Personal fall protection equipment – Anchor devices)
- DGVU Rule 112-198** „Benutzung von persönlichen Schutzausrüstungen gegen Absturz“ (Use of personal fall protection equipment)

#### **on § 6 par. 2:**

*Compelling staging reasons* which lead to the non-use of protection or fall-arrest equipment are for example design aspects of scenery or the necessary unobstructed view on the scenic performance.

Fall-arrest equipment can be, for example, safety nets. Cf. also **DGVU Rule 101-011** „Einsatz von Schutznetzen“ (Use of safety nets).

*Falling edges* are the sides of stages and performance areas facing the audience as well as edges of trap openings and elevated areas and structures. These edges must be clearly discernable under all lighting circumstances, e.g. by luminescent or fluorescent markings or lights (e.g. illuminated edges, LED bands or footlight).

When scenic performances at heights up to 3 m are planned where for compelling staging reasons neither protection against fall nor fall-arrest equipment or the use of personal safety equipment against falls from a height is possible, the following measures have to be taken in particular:

- the performer's tread area must be made of an anti-skidding surface
- the impact area (including the safety area) must be made of a suitable, flexible floor (sprung floor, flexible mats)
- in possible falling areas, no objects or constructions that could aggravate injuries are allowed
- there should be a grip for the performer

In order to choose a suitable floor, **DIN EN 1176-1** „Spielplatzgeräte und Spielplatzböden – Allgemeine sicherheitstechnische Anforderungen und Prüfverfahren“ (Playground equipment and surfacing - Part 1: General safety requirements and test methods) can be consulted. Cf. also **DGVU Information 215-315** „Besondere szenische Darstellungen“ (Special stage performances).

## § 7 Protection against Falling Objects

*(1) Measures must be taken to provide protection against objects falling onto workstations, passageways and performance areas.*

*(2) Where counterweights are stored on fly galleries, guards must be permanently installed.*

*(3) Counterweights must be secured to their arbour in such a way that they cannot fall out if they strike hard against the stop.*

*(4) Counterweight lines must be enclosed. There may be breaks in the enclosure, in the batten-operating areas, above a height of 2.30m from the ground.*

*(5) Fall-arrest equipment must be in place above passageways and workstations located beneath the adjustable counterweights' path of travel.*

*(6) Portable luminaires, projection equipment and loudspeaker systems must be secured from falling by two devices which act independently of one another. If loose parts or parts which work themselves loose fall, it must be possible to arrest their fall using equipment.*

### on §7:

As a rule, constructions and installations that bear a risk of objects falling on persons have to be designed in a way that guarantees an inherent safety (immanent to the construction, intrinsic safety) which prevents objects from falling. In case this intrinsic safety is not fully realizable, measures have to be taken in order to guarantee safety from single point failure.

Intrinsic safety means that installations provide sufficient protection for objects against falling, e.g. a stationary installed lighting fixture which can only be loosened by the help of tools.

Safety from single point failure is guaranteed by additional security elements, like for example safety ropes.

The safety requirements to prevent objects from falling are described in **DGUV Information 215-313** „Sicherheit bei Produktionen und Veranstaltungen – Lasten über Personen“ (Safety for events and productions – Overhead loads).

Further requirements for the protection against falling objects comply with the **Workplace ordinance** and are substantiated in the **Technical rule for workplaces** “Schutz vor Absturz und herabfallenden Gegenständen, Betreten von Gefahrenbereichen“ (Protection against falls from a height and falling objects; Accessing danger zones). Floors that have no closed surface (e.g. gratings), for instance, have to be built in a way that subjacent workplaces or passageways are not put at risk by falling objects. Thus, the respective maximum gap size (e.g. mesh size in gratings) is to be determined in the course of the risk assessment, taking into account the local circumstances.

## § 8 Protection against Inadvertent Movements

- (1) Moving parts of the above-stage and under-stage machinery and their loads must be equipped with devices to protect against inadvertent movements.
- (2) To provide protection against inadvertent upward and downward movements by parts of the above-stage and under-stage machinery and their loads,
  1. suitable drive systems,
  2. brakes or
  3. counterweights in conjunction with locking devicesmust be in place.
- (3) Equipment must be in place which can bring the moving loads to a standstill if a fault occurs.
- (4) Notwithstanding Paragraph (3), safety equipment must be able to move as intended.

### on § 8 par. 1-3:

*Inadvertent movements* must be prevented with regard to mechanical equipment of the entertainment technology. Inadvertent movements are for example unintended twisting, tilting, unhooking, falling and uncontrolled lowering of loads or load bearing elements.

Constructions and installations that bear a risk of inadvertent movements have to be designed in a way that guarantees an inherent safety against inadvertent movements (intrinsic safety). In case this intrinsic safety is not fully realizable, measures have to be taken in order to guarantee safety from single point failure. As an example, hardware or software failure in the control system must not lead to a hazardous situation.

The basic requirements for safety of machinery are described in **DIN EN ISO 12100** „Sicherheit von Maschinen“ (Safety of Machinery). Furthermore, specific requirements for mechanical equipment are contained in **DIN Series 56950**:

- DIN 56950-1** Veranstaltungstechnik – Maschinentechnische Einrichtungen: Sicherheitstechnische Anforderungen und Prüfung (Entertainment technology - Machinery installations - Part 1: Safety requirements and inspections)
- DIN 56950-2** Veranstaltungstechnik – Maschinentechnische Einrichtungen: Sicherheitstechnische Anforderungen an bewegliche Leuchtenhänger (Entertainment technology - Machinery installations - Part 2: Safety requirements for studio hoists)
- E-DIN 56950-3** Veranstaltungstechnik - Maschinentechnische Einrichtungen - Teil 3: Sicherheitstechnische Anforderungen an Stative und Traversenlifte (Entertainment technology - Machinery installations - Part 3: Safety requirements for stands and truss lifts of stands)
- E-DIN 56950-4** Veranstaltungstechnik – Maschinentechnische Einrichtungen: Sicherheitstechnische Anforderungen und Prüfung – konfektionierte Bildwände (Entertainment technology - Machinery installations - Part 4: Safety requirements for serially manufactured projection screens)
- E-DIN 56950-5** Veranstaltungstechnik – Maschinentechnische Einrichtungen: Sicherheitstechnische Anforderungen und Prüfung – Elektrokettenszugsysteme (Entertainment technology – Mechanical equipment – Safety requirements and inspections – Electric chain hoist systems)

Substantial construction characteristics and protective measures against inadvertent movements of mechanical equipment are:

- assessment of the load bearing capacity of construction and load bearing lines
- technical design of engines and brakes (dynamic self-locking transmissions or redundant brake system)
- technical execution of load bearing line terminations
- orderly winding process of load bearing lines (wire ropes)
- measures against overloads and speeding
- measures against underload with guided loads
- locks and restart blocks
- protective devices in danger zones
- measures for secure operation (natural handling, dead man's switch)
- measures against non-observance of determined movement sequences
- measures to prevent or master control system failures (e.g. electric, electronic, electronically programmable controls)
- emergency stop devices

With manually operated working devices (e.g. stands), it must be ensured that the operation forces are not too high. Uncontrolled forces (e.g. crank handle kick-back) must also be avoided. The reference value of the maximum force an operator can exert is 200 N.

It must also be ensured that the load bearing lines cannot be damaged through force applied by the operator (e.g. tearing of the rope terminations in the crank stand).

**on § 8 par. 4:**

Movements of safety technology installations (e.g. fall of the safety curtain) serve the primary scope of fire protection. For this reason, danger points resulting from that fact cannot usually be secured to a full extent by protective technical measures. Cf. also note on **§10 par. 5**.

*Load-bearing lines and attachment gear must be designed and sufficiently dimensioned to cope with the special hazards and loads which occur during operation.*

**on § 9:**

*Load-bearing lines and attachment gear* in the entertainment technology are used for moving and holding persons and loads. Here, due to the inherent particular risks, load-bearing lines and attachment gear have to meet increased requirements.

Load-bearing lines as a part of lifting appliances are e.g. round steel link chains, wire ropes, steel strips as a part of lifting appliances.

*Attachment gear* means the connecting elements (quick links, shackles, wire ropes, round steel link chains, roundslings) between load-bearing lines and loads.

Load-bearing lines and attachment gear must be designed intrinsically safe and fulfil the following requirements in material and design:

- dimensional stability
- standardized or known strength data
- reliable quality of production/manufacturing – e.g. inspection certificate according to **EN10204** „Metallische Erzeugnisse – Arten von Prüfbescheinigungen“ (Metallic products - Types of inspection documents)
- the correct function of safety-relevant connections must be clearly identifiable, when for example they click into place, are self-locking, bolted or screwed
- connections must be secured against self-loosening or self-detaching
- damage detectability by mere sight inspection
- material has to be chosen, depending on the expected stresses, in particular by these characteristics: weather, temperature and aging resistance

In addition, the intrinsic safety of load-bearing lines and attachment gear must be secured by doubling the operational coefficient as against the coefficient determined by the **Machine ordinance**.

Rope grips must not be used for the production of rope terminations. Rope grips in accordance with **DIN EN 13411-5** „Endverbindungen für Drahtseile aus Stahldraht – Sicherheit: Drahtseilklemmen mit U-förmigem Klemmbügel“ (Terminations for steel wire ropes - Safety - Part 5: U-bolt wire rope grips), or according to outdated **DIN 1142** „Drahtseilklemmen für Seil-Endverbindungen bei sicherheitstechnischen Anforderungen“ (Wire rope grips for rope terminations with safety requirements) are not allowed for overhead loads.

Load-bearing lines made of wire ropes must not be sheathed. Attachment gear can be sheathed if the sheathing is moveable, and a visual inspection of the whole wire rope is possible.

Cf. also **DGV Information 215-313** „Sicherheit bei Produktionen und Veranstaltungen – Lasten über Personen“ (Safety for events and productions – Overhead loads).

*§ 10 Equipment in Motion for Operational Reasons*



*(1) Protection measures must be in place at hazardous points on equipment which is in motion for operational reasons.*

*(2) If, in specific cases, protection at hazardous points is not possible due to compelling reasons, measures must be in place to ensure that*

*- there is a sufficient gap between fixed and moving parts*

*or*

*- visual or verbal communication is guaranteed between the persons at the control unit and at the moving parts.*

*(3) It must be possible to indicate by unmistakable and clearly discernible signals at the access points to stage-floor components, bridges or sets that they are about to move or are in motion.*

*(4) Moving equipment and parts which are walked upon for operational reasons must be equipped with protective equipment of such a nature that it is possible without hazard to walk onto, work on and egress from them as well as to install and remove scenery.*

*(5) The iron curtain separating the stage from the auditorium must be equipped with mains-independent, acoustic signal devices which signal the closing movement in a clearly discernible way in all operating modes.*

#### **on § 10:**

*Equipment in motion for operational reasons can be, for example, mechanical equipment, movable stage elements and decorations, movable stage walls, and stands. During the motion process, hazardous points may occur. Typical hazardous points are for example shearing or pinching areas as well as edges of stage lifts, retraction or retrieval points of running ropes and pulleys, hazardous points due to horizontally moving areas. A typical risk is also being hit by moving decoration.*

The following requirements are necessary for the protection at hazardous points resp. when determining protection measures against hazards:

- protection by stopping the dangerous movement
- protection by distance from the hazardous point or separating elements
- protective devices (e.g. pressure-sensitive edges, locking of operating elements)
- speed limits
- emergency-stop devices
- visual contact between the control unit and the hazardous point
- marking of the hazardous point
- signals for dangerous movements

- (1) If insured persons produce costumes or furnishings, such as sets, scenery or props, sufficiently dimensioned workshops with the necessary equipment must be provided.*
- (2) Noise zones in workshops must be physically separated from the assembly area. The structural acoustics must be designed in such a way as to reduce the noise.*
- (3) In workshops where hazardous substances can enter the air, effective extraction equipment must be installed.*

**on § 11:**

See, to that effect, **DGUV Information 213-031** „Gefahrstoffe in Werkstätten von Veranstaltungs- und Produktionsstätten für szenische Darstellung“ (Hazardous substances in workshops of staging and production facilities for the entertainment industry)

*Sufficiently dimensioned spaces and suitable rooms must be available for storing objects and materials. The permissible floor load must be indicated in a clearly visible and permanent fashion.*

no further explanations on **§ 12**

*(1) Orchestra pits must be designed in such a way that the insured persons who work in them are not exposed to preventable health hazards.*

*(2) Orchestra pits must be equipped with at least two escape routes which exit the pit in opposite directions.*

*(3) Rehearsal and tuning rooms must be designed in such a way that the insured persons who work in them are not exposed to preventable health hazards.*

### **on § 13 par. 1 and 3:**

Workplaces for musicians in orchestra pits as well as in rehearsal and tuning rooms must be furnished specifically, taking into account ergonomic design and noise impact.

Ergonomic requirements for workplaces for musicians include:

-spatial conditions: in addition to the floor space possibly needed for their musical instrument, a minimum space of 1.3m<sup>2</sup> in the orchestra pit; in rehearsal and tuning rooms, the workplace movement area must be at a minimum of 1.5 m<sup>2</sup> according to **ASR A1.2** „Raumabmessungen und Bewegungsflächen“ (Room dimensions and movement areas)

-chairs and seatings need to be suitable for the body posture required when playing the instrument

-the lighting must be designed for the visual task. In tuning and rehearsal rooms, the lighting must meet the requirements of **ASR A3.4** “Beleuchtung” (Lighting). The minimum illuminance value (for musical rehearsal rooms) is 300 lux. Workplaces should be supplied by a sufficient amount of daylight.

The requirements of the **Occupational health and safety regulation** “Lärm- und Vibrations-Arbeitsschutzverordnung” (Noise and vibration protection) are also applicable for the workplaces of musicians. Regarding the design of workplaces for musicians, this means room acoustical and technical-organizational measures. These include sound-absorbing surfaces and, if required, mobile sound insulation screens with sound-absorbing and sound-reflecting areas.

*§ 14 General Provisions*

*Unless otherwise provided, the provisions of Section IV are directed at employers, insured persons and subcontractors.*

**on § 14:**

The requirements of **DGUV Regulation 17 and 18** „Staging and production facilities for the entertainment industry“, chapter IV, see to the operations of staging and production facilities for the entertainment industry.

*§ 15 Management and Supervision*

*(1) The employer may only assign the management and supervision of work in staging and production facilities to qualified stage and studio workers.*

*(2) The employer must ensure that responsibility for management and supervision is determined before performances by outside performers, outside recording/filming or third-party use of the staging or production facilities.*

*(3) Performances, recordings and rehearsals may only begin once the supervising person has approved the performance areas.*

#### **on § 15 par. 1:**

*Qualified stage and studio workers* are specifically certified persons who are able, thanks to their training, knowledge and experience, to judge the assigned work and are aware of possible hazards. Those are, in particular, engineers resp. masters and bachelors of entertainment technology, master craftsmen of entertainment technology, and qualified workers of entertainment technology.

Due to the specific risks and hazards, the employer's duty is to very diligently select the qualified stage and studio workers. Here, the employer's risk assessment is most relevant in order to judge the upcoming tasks. The stage and studio workers' required qualifications and experience depend on the hazard potential of the works to be executed.

Possible fields of occupation for qualified stage and studio workers with regard to the hazard potential are explained in **DGUV Information 215-310** „Sicherheit bei Veranstaltungen und Produktionen“ (Safety for events and productions).

*Management and supervision* mean the autonomous exercise of management and expert responsibility. This includes determination, implementation and performance tests of the protective measures necessary for the respective works and stage performances. By assigning the management and supervision of work to persons, they are given the competence of action and decision-making so as to act independently.

#### **on § 15 par. 2:**

In order to realize an event, it is essential to clearly differentiate the responsibilities of the operating company, the event organizer or guest performers. All parties have to agree about the persons responsible for management and supervision. The persons responsible and the respective areas of responsibility need to be announced to all persons involved.

Cf., to that effect, §§ 6 and 13 of **DGUV Regulation 1** „Grundsätze der Prävention“ (Principles of prevention) and **DIN 15750** „Veranstaltungstechnik – Leitlinien für technische Dienstleistungen“ (Entertainment technology - Guidelines for technical services).

#### **on § 15 par.3:**

The *supervising person* usually is the person to whom management and supervision have been assigned according to **par. 1**. With a low hazard potential, supervision can also be

transferred to a suitable person. They must have sufficient expert knowledge and experience have to be authorized to give instructions.

For particular tasks, additional specific qualifications may be necessary, which possibly result from further legal grounds. These are, for example, qualifications as a special effects artist, pyrotechnician, laser safety officer, or event rigging expert.

*(1) The employer may assign the task of independently operating and maintaining mechanical equipment only to insured persons who have reached the age of 18 and are familiar with the equipment and procedures.*

*(2) Paragraph (1) does not apply to young persons above the age of 16 if such employment is necessary in order for them to achieve the aim of their training and their protection is ensured by a supervising person.*

no further explanations on **§ 16**



*(1) The employer must ensure that the insured persons assigned to operate and maintain mechanical equipment independently are instructed on how to do so before commencing their work and that such instruction is of a nature which ensures they can fulfil the tasks assigned to them reliably.*

*(2) Before the rehearsals for a stage performance or a production begin, the employer must instruct all persons involved as to the necessary accident-prevention measures.*

*(3) In the case of hazardous staging processes which necessitate a certain type of behaviour, the instructions must be repeated at appropriate intervals.*

**on § 17 par. 2:**

The terms *stage performance* and *production* include all sorts of scenic presentation, cf. **§ 2 par.1 and 2.**

The hazards identified during the assessment of the working conditions as well as the protective measures resulting from it are part of the instruction. The instruction will particularly take into account the hazards inherent through the environment, the technology and special effects used as well as the event's or the production's procedures, including the scenic performance.

*Persons involved* are both artistic and technical personnel as well as all other participants. This includes for example employees, students, self-employed entrepreneurs, performers, external personnel. Persons not insured who are likely to bring a risk to themselves or insured persons must also be instructed.

Cf. also §§ 4 and 31 of **DGUV Regulation 1** „Grundsätze der Prävention“ (Principles of prevention).

**on § 17 par. 3:**

Depending on the result of the risk assessment, an instruction may be necessary before each rehearsal or performance.

Cf. also **§ 20.**

*(1) In the case of work activities where technical or organisational measures are not able to prevent the risk of injury or damage to health, the employer must provide suitable personal protective equipment and implements. The insured persons must use said equipment and implements.*

*(2) When on high-altitude workstations, insured persons must not carry tools, small parts or other objects in their clothing. Suitable implements must be used to carry these objects.*

### **on § 18:**

Work activities that bear a risk of injuries and health damage which cannot be sufficiently reduced by technical and organizational measures alone are, for example:

- setup and dismantling, rigging
- work activities on technical ceilings
- events and productions with risk of damage to human hearing
- special stage presentations (cf. § 20)

The necessity of providing personal protective equipment (PPE) arises from an activity-related risk assessment. Cf. also §§ 29 – 31 of **DGUV Regulation 1** „Grundsätze der Prävention“ (Principles of prevention) as well as **DGUV Information 215-310** „Sicherheit bei Veranstaltungen und Produktionen“ (Safety for events and productions) and **DGUV Information 215-315** „Besondere szenische Darstellungen“ (Special stage performances).

A major risk in events and productions are possible falls from a height of persons. If this hazard cannot be sufficiently reduced by technical or organizational measures, PPE against falls from a height has to be provided and consistently used. Personal protective equipment against falls from a height includes: safety harness, connecting device with fall absorber, stop system – e.g. lifeline-system.

During instructions for the use of PPE intended to protect against lethal (e.g. PPE against falls from a height) or lasting damage, the employer has to teach the insured persons the proper and secure use of PPE within the framework of instructions, including practical exercises. On this occasion, there also has to be a training on how to behave in critical situations and how to rescue persons.

During setup and dismantling on technical ceilings (e.g. fly lofts, grid decks), the workers have to wear suitable foot protection (safety shoes, protective or operational footwear); cf. **DGUV Rule 112-191 and 112-991** “Benutzung von Fuß- und Knieschutz” (Use of foot and knee protection).

When there is a risk of damage to human hearing – for example through loud music, other sound sources or through scenic processes in combination with scenic special effects like pyrotechnics or the use of blank guns, hearing protection (e.g. earmoulds) has to be provided and used.

For special hazards in activities or performances, it can be necessary to use special PPE, for example protectors, bandages, jockstraps, protective clothing, respiratory protection. If a risk of artificial optical radiation is identified in the course of the risk assessment,

suitable measures are required, such as the use of protective clothing, safety goggles, barrier cream.

The personnel must use the PPE provided, check its proper condition and report any detected deficiencies to the employer without delay. The person responsible for management and supervision must control the proper use of PPE.

*(1) It is forbidden to be unnecessarily present in the vicinity of moving surfaces, on lighting bridges, under high-altitude workstations or in other hazard areas during set-ups, changeovers and strikes.*

*(2) It is forbidden to be present beneath moving, motorised pit-fillers.*

**on § 19:**

*Motorised pit-fillers include safety curtains and shutters.*

*(1) Hazardous staging processes must be conducted using protective measures and must be adequately rehearsed.*

*(2) The employer must ensure that only persons with the appropriate skills and physique are deployed in hazardous staging processes.*

*(3) Artistic requirements concerning the scenery and performance must not be implemented if the qualified stage and studio worker in charge raises objections to them on the grounds of safety.*

## **on § 20:**

With *hazardous staging processes* the risk tolerable for a common work process is usually exceeded. Examples are: jumping off a height, falling objects, performing extreme movements, wearing restraining costumes, open scenery change, scenic processes with mechanical equipment, handling weapons and pyrotechnical objects, operations with a risk of fire hazard.

If such staging processes are planned, the utmost priority is on executing them in a non-hazardous or less hazardous way.

Therefore, with hazardous staging processes, an individual risk assessment is necessary, which will include an assessment of extent of damage and probability of occurrence. The risk assessment aims at deducing measures to minimize the residual risk.

If the risk cannot be minimized sufficiently (i.e. to a degree tolerable for a common work process), the execution of hazardous staging processes cannot be executed but with utmost diligence. This diligence includes especially a suitable choice of performers. If necessary, the execution can be assigned to experts, for example stunt performers, or special coordinators. It is the task of these special coordinators to ensure a safe course of the procedure.

If, within the assessment of extent of damage and probability of occurrence, the risk has preliminarily been rated as high and cannot be further minimized, the process cannot be executed as planned.

A hazardous staging process is *adequately rehearsed* to a point where it can be safely performed when and if all sequences and movements (“cues”/“choreography”) have been repeatedly executed within the scenic context in a flawless and secure way. This must not overstrain the performers’ capacities. Rest periods must be respected between rehearsals and performance. The performer must be given the possibility of not executing the hazardous staging process or to break it off when, for personal reasons, they are not able to perform it securely.

Break-off signals and measures for emergencies must be determined.

As a rule, final rehearsals are always executed under the same conditions as performances or productions.

For more information, cf. also **DGUV Information 215-315** „Besondere szenische Darstellungen“ (Special stage performances).

On the subject of instruction and personal protective equipment cf. also **§§17 and 18**.

**on § 20, par. 2:**

The higher the hazard potential of the process to be executed, the higher the demands for competence of the person executing it.

When selecting the performers, the aspects to be taken into account are: the necessary qualifications and experiences, the physical abilities, the required agility resp. the control over trained sequences. The physical abilities can be approved, inter alia, via SEM evaluation.

In order to select a suitable person for the execution of the hazardous staging process, the employer can put in charge a reliable and skilled person, e.g. a stunt coordinator.

Cf., to that effect, §§ 7, 21 of **DGUV Regulation 1** „Grundsätze der Prävention“ (Principles of prevention)

**on §20, par. 3:**

The *qualified stage and studio worker's* task is to make sure the performance runs safely, **cf. § 15**.

In cases where the knowledge and experience of the qualified stage and studio worker are not sufficient due to the specificity of the hazardous staging process, a suitable and skilled person must be charged with the supervision of the process, e.g. a weapons master. The other obligations of the qualified stage and studio worker remain unaffected. The areas of responsibility must be clearly defined and differentiated.

*Equipment for performances by speciality artistes may only be set up and dismantled by the artiste him- or herself or by a person they appoint to do so. The artistes themselves must check that the equipment is safe before each use.*

**on § 21:**

*Performances by speciality artistes are traditionally delivered in circuses, vaudeville theaters and music halls. Examples are: tight-rope, trapeze acts. They must be exclusively performed by suitable, trained persons. Within the framework of performances of speciality artistes, specific working material is used (“props”, in the usage of the artistes).*

Working material for performances by speciality artistes are provided and set up by the artistes themselves (or a person assigned by them). If dismantling the artiste’s working material requires particular conditions, the minimum prerequisites must be named by the artiste. The employer has to make sure the conditions are fulfilled. If necessary, suitable attachment points or set-up areas must be provided. The artiste’s duty is to verify whether these are appropriate.

Working material for performances by speciality artistes must be designed, dimensioned and conditioned so as to withstand all calculated stresses. The choice of the appropriate material should be transparent, e.g. by using standardized parts.

The artiste’s performance must not present a danger to any other person.

Cf. also **DGV Information 215-315** „Besondere szenische Darstellungen“ (Special stage performances).

*No objects and materials apart from those required on the given day may be stored on stages, performance areas or work surfaces.*

no further explanations on **§ 22**

*§ 23 Handling of Objects*

*Insured persons must not be put at risk by objects and materials being placed in position, stacked, moved or transported.*

no further explanations on **§ 23**

*§ 24 Condition of Surfaces and Sets*



*(1) Surfaces and sets must be kept in flawless, clean condition. Their stability and load-bearing capacity must not be impaired.*

*(2) A passageway at least 1 m in width must be kept clear between the external walls and the cyclorama or the scenery if the cyclorama or scenery is not directly attached to the external walls.*

**on § 24, par. 1:**

The maximum allowable load must not be exceeded in any operating condition.

If for scenic reasons or during set-up and dismantling the safety of surfaces and sets cannot be directly guaranteed, additional measures are required. These can, for example, consist in access restrictions, warning signals, safety attendants.

**on § 24, par. 1:**

Cf. also the respective applicable provincial regulations for construction and operation of assembly rooms.

*Mechanical equipment may only be operated as intended and specified by the manufacturer and must not be overloaded.*

**on § 25:**

This requirement includes the necessity for the employer to define what *operating as intended* means for working material produced by personnel itself. The necessary measures for safe operation must be met when using them.

Persons must not be moved but with mechanical equipment intended for that use (e.g. stage lifts, flying systems, turntables). Cf., to that effect, **DGUV Information 215-321** „Bereitstellung und Benutzung von Versenkeinrichtungen“ (Provision and use of stage lifts) and **DGUV Information 215-320** „Fliegen von Personen bei szenischer Darstellung“ (Flying of persons in stage performances) as well as **Fachinformation** (Specialized information) of **BG ETEM and VBG** „Kamerabewegungssysteme“ (Camera motion systems).

When moving or holding overhead loads, only working material that is expressly suitable can be used; cf., to that effect, **DGUV Information 215-313** „Lasten über Personen“ (Overhead loads) and **IGVW Standards der Qualität** (Standards of Quality) **SQ P1** „Traversen“ (Trusses) and **SQ P2** „Elektrokettenzüge“ (Electric chain hoists)

The access equipment used for moving or holding persons within the framework of scenic performances (e.g. harnesses and fasteners) must be suitable for the designated body positions during flying. The manufacturer's information must be consulted in order to verify the specific adequacy of the equipment. Here, the manufacturer's testing criteria must be transparent.

- (1) Movements which can cause hazards may only be conducted if their speed is appropriate to the situation and*
- 1. equipment is in place to provide protection against the hazardous points or*
  - 2. the hazardous points are monitored by the machine operator and*
  - 3. the hazardous points are indicated in a clearly visible and permanent fashion.*
- (2) Instructions to initiate movements must be given in an easily discernible and unambiguous manner.*
- (3) Only persons who are suitable, have practice and have been appropriately instructed may access and egress from surfaces which are in motion.*
- (4) Notwithstanding Paragraph (3), accessing and egressing from stage lifts is not permitted while the platforms are in motion.*
- (5) The employer must ensure that those parts of the stage floor which can slide against each other are only built over together if they have been secured against inadvertent movements.*
- (6) Safety switches and similar devices must not be used for normal operation.*

**on § 26 par. 1:**

The operating personnel must always take particular care not to endanger themselves or other persons while the mechanical equipment is in motion.

The operational procedures of moving mechanical equipment must be organized in such a way that the operating personnel has reliable control over it. This control can be limited by interfering influences. These include, for example,

- a multitude of simultaneous and/or diverse movement procedures
- poor visibility conditions
- too many and/or ambiguous instructions, information, signals
- no intuitive user interfaces

The reference values for suitable maximum speed of mechanical equipment are:

- without people: 1.2 m/s
- with people:
  - 1 m/s in general
  - 0.7 m/s on stage lifts
  - 0.3 m/s in the case of access and/or egress during the movement (however, cf. par. 3 and 4)

On the subject of movements of stage lifts cf. **DGUV Information 215-321** „Bereitstellung und Benutzung von Versenkeinrichtungen“ (Provision and use of stage lifts).

On the subject of protective equipment cf. **§ 10**.

All performers must be familiarized with the kind of moving equipment prior to the performance and looked after during operation by the supervisor or personnel put in charge by the latter.

It is forbidden to be unnecessarily present in the vicinity of moving mechanical equipment.

**on § 26 par. 2:**

Usually, hand signals, communication via radiotelephone, luminous signals are rated as *easily discernible instructions*. Cf. also **ASR A1.3** "Sicherheits- und Gesundheitsschutzkennzeichnung am Arbeitsplatz" (Safety and health markings and signs at the workplace).

(1) Portable electrical music systems, props and lights, plus any components thereof, which are intended to be handled by performers, may only be operated if special protective measures are taken against shock.

(2) In the case of outdoor productions, the electricity feed-in must be checked to ensure it is free of defects before the electricity supply is set up.

(3) Lighting, image-projection and film-projection devices plus any other heat-emitting equipment may only be positioned and installed in such a way that the light and heat energy they emit can dissipate without hazard and the temperature of scenery, furnishings and other equipment does not reach an unacceptably high level.

#### **on § 27 par. 1:**

Apart from general protective measures against electric shock, the following protective measures for personal protection have proven reliable as *special protective measures*:

- fault-current protective devices with a rated fault current  $\leq 30$  mA
- safety extra-low voltage ( $\leq 25$  V AC,  $\leq 60$  V DC)
- safety separation

Cf., to that effect, **DIN VDE 0100-410** „Errichten von Niederspannungsanlagen – Teil 4-41: Schutzmaßnahmen – Schutz gegen elektrischen Schlag“ (Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock).

#### **on § 27, par. 2:**

*Outdoor productions* include events and productions at external theaters as well as outside.

*Free of defects* means above all the reliable functioning of the protective measures against electric shock.

Qualified electricians or, when a suitable testing device is used, persons instructed in electrical engineering can check plug circuits to ensure that they are free of defects. As an alternative, the power supply of electrical equipment up to 16A can be provided by a portable differential current device with monitoring of fault current, of protective earth tension and cable break, and of external voltage (protective, residual current operated circuit-breakers, PRCD-S, SPE-RCD) with a rated fault current  $\leq 30$  mA.

On the subject of the use of power supply units cf. also **DGUV Information 203-032** „Handlungsanleitung Auswahl und Betrieb von Ersatzstromerzeugern auf Bau- und Montagestellen“ (Guideline for selection and operation of substitute power supply units on building and assembly sites).

In order to guarantee the reliable functioning of protective measures against electric shock, protective equipotential bonding is necessary if metallically conductive constructions that may carry dangerous contact voltage (e.g. truss or stage constructions) are used.

Especially with open air events and productions, electric equipment must be at least classified as “splash-proof”.

Cf. also **DGUV Information 215-310** „Sicherheit bei Veranstaltungen und Produktionen“ (Safety in events and productions) und **IGVV SQ P4** „Mobile elektrische Anlagen in der Veranstaltungstechnik“ (Mobile electrical systems in entertainment technology).

**on § 27, par. 3:**

When using light sources, the risks of artificial optical radiation and radiant heat have to be taken into account. The minimum distance to persons and the maximum exposure times must be observed.

## § 28 Firearms and Pyrotechnics

*(1) Firearms with explosive propellants may only be used if they have been type-tested and approved and bear appropriate markings. Additionally, firearms with a calibre of more than 4 mm must be proof-tested and bear a valid proof-tested mark. Only permitted blank cartridges may be used.*

*(2) If, notwithstanding Paragraph (1), Sentence 3, blank cartridges cannot be used in film and television productions for compelling staging reasons, firearms may only be used at licensed shooting ranges under the supervision of a weapons expert.*

*(3) Class I, II, III as well as T1 and T2 pyrotechnic articles and kits must be tested and approved. Where pyrotechnic articles and kits are used to create effects, the employer must ensure that the regulations on explosives are complied with.*

### **on § 28:**

Cf. also **DGUV Information 215-315** „Besondere szenische Darstellungen“ (Special stage performances) and **DGUV Information 215-312** „Pyrotechnik, Nebel und andere szenische Effekte“ (Pyrotechnics, fog and other special stage effects) as well as the legislation on weapons and explosives.

Weapons must be supervised by a responsible person (e.g. a property master). Eligible persons must be over 18 years of age, regularly instructed and charged with the implementation of the assigned tasks by the employer.

## § 29 Fire Prevention

(1) Smoking, fire and open flames are forbidden in stage, performance and production areas.

(2) With the exception of furniture and props, sets and scenery may only be used if they are at least fire-resistant.

(3) Deviations from Paragraphs (1) and (2) are only permissible if staging reasons make such deviations unavoidable and the employer has taken special fire-safety measures.

### on § 29, par. 2:

In order to assess the quality “fire-resistant”, fire protection certificates may be consulted, e.g. according to **DIN 4102-1** „Brandverhalten von Baustoffen und Bauteilen: Baustoffe; Begriffe, Anforderungen und Prüfungen“ (Fire behaviour of building materials and building components - Part 1: Building materials; concepts, requirements and tests) and **DIN EN 13501-1** „Klassifizierung von Bauprodukten und Bauarten zu ihrem Brandverhalten: Klassifizierung mit den Ergebnissen aus den Prüfungen zum Brandverhalten von Bauprodukten“ (Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests). Judgement criteria are also smoke production and droplet formation.

### on §29, par. 3:

For the sake of fire prevention, the required fire protection measures must be chosen so as to fulfil all protection objectives listed hereafter:

- prevention of fire emergence
- minimization of fire spread
- minimization of smoke production
- facilitation of escaping, rescuing and firefighting

*Special fire-safety measures* must be coordinated with the authorities responsible for fire prevention and protection (which usually is the fire department). When determining the special fire-safety measures, the existing constructional fire protection installations should be taken into account.

On the subject of fire prevention cf. also **DGUV Information 215-316** „Brandschutz im Dekorationsbau“ (Fire protection in scenery construction). **ASR A2.2** „Maßnahmen gegen Brände“ (Fire fighting measures) sees to provision and operation of fire extinguishing installations at workplaces as well as to further measures for detection, alerting and fighting of incipient fires. The employer has to ensure that a sufficient number of employees is familiar with the use of fire extinguishing installations for incipient fires (fire protection assistants).



### *§ 30 Furnishings, Costumes and Effects*

*The employer must ensure that scenery, costumes, furniture, props and effects are of such a design and nature that injuries and damage to health are avoided when they are used as intended.*

#### **on § 30:**

This requirement also includes the obligation to determine all hazards that might come from scenery, costumes, furniture, props and effects via risk assessment. If essential risks are identified, it must be ascertained whether the production can be equipped differently by minimizing the risks. As an example, open fire can be substituted by light effects and breaking glass by breakaway glass.

The protective measures required to ensure the intended and foreseeable use must be determined in the course of the risk assessment. Decorations, costumes, furniture, props and effects can only be used while realizing the protective measures.

Cf. also § 3 of **DGUV Regulation 1** „Grundsätze der Prävention“ (Principles of prevention) and **DGUV Information 215-310** „Sicherheit bei Veranstaltungen und Produktionen“ (Safety for events and productions).

## § 31 Animals

*Where animal participation occurs, safety measures in line with the animals' characteristics must be taken during transport, performance and for their accommodation.*

### **on § 31:**

At any time, hazards due to unpredictable behavior of animals must be anticipated.

The participation of animals can only be allowed in the presence of a person the animal is familiar with (e.g. animal trainer). More persons and tools to control the animal may be required. In addition, suitable first aid devices must be provided.

Cf. also **DGUV Information 215-315** „Besondere szenische Darstellungen“ (Special stage performances).

Please note:

***Whoever intentionally or negligently***

***1. allows free movement to a dangerous animal of a species living in the wild or to a vicious animal, or***

***2. has responsibility for the supervision of such animal and fails to take the necessary precautionary measures to avoid damage which may be caused by the animal***

***shall be deemed to have committed a regulatory offence.***

(from Act on regulatory offenses, §121)

§ 32 Maintenance, Cleaning

*(1) The employer must ensure that safety and mechanical equipment is regularly maintained.*

*(2) Maintenance work on safety and mechanical equipment may only be carried out when it has been ensured that no inadvertent movements can be triggered.*

*(3) Staging and production facilities and their fittings and furnishings must be kept as dust-free as possible and must be cleaned thoroughly at least once a year.*

no further explanations on **§ 32**

## 5 Testing

As a rule, the requirements of the **Operational safety ordinance** apply to the testing of work material. **Annex 3, par. 3** of the Operational safety ordinance “Prüfvorschriften für bestimmte Arbeitsmittel“ (Test specifications of special work equipment) describes test specifications for mechanical equipment in the entertainment industry.

The requirements specified in the above mentioned paragraph apply to mechanical equipment in the entertainment industry used for moving and holding persons and overhead loads on scene. These are, in particular: stage lighting and overhead light rigging systems, lighting and portal bridges, projection screens, stage wagons, scenery and decoration hoists, revolving stages and turntables, electric chain hoists, flying systems, camera cranes and camera support systems, decoration elements moved by force, light holding devices, point hoists, safety curtains, stands and stage lifts.

### *§ 33 Testing Prior to First Use and after Substantial Changes*

*(1) The employer must ensure that safety and mechanical equipment is tested by an expert before it is put into operation for the first time (“testing prior to first use”) and before it is put back into operation after substantial changes.*

*(2) The testing specified in Paragraph (1) consists of a pre-test, structural testing, acceptance test and - if necessary - a re-test.*

*(3) In the case of safety and mechanical equipment for which a type-examination certificate or an EC declaration of conformity has been supplied, the testing prior to first use specified in Paragraph (1) includes testing to ensure proper installation, equipping and operational readiness.*

*(4) The testing prior to first use specified in Paragraph (1) is not necessary for safety and mechanical equipment which is delivered ready for operation and for which a type-examination certificate or an EC declaration of conformity has been supplied.*

Based on the Operational safety ordinance, **DGUV Principle 315-390** „Grundsätze für die Prüfung maschinentechnischer Einrichtungen in Bühnen und Studios“ (Principles for the testing of mechanical equipment on stages and in studios) substantiates the requirements laid down in par. V “Testing” of **DGUV Regulation 1** „Grundsätze der Prävention“ (Principles of prevention).

## § 34 Periodic Testing

*(1) The employer must ensure that safety and mechanical equipment is tested by an expert at least every four years to the same extent covered by the acceptance test.*

*(2) The employer must ensure that safety and mechanical equipment is tested by a competent person at least once a year.*

*(3) The employer must ensure that flying systems are tested by a competent person before each use. The testing must comprise a visual inspection and load tests when the system is in motion.*

*(4) The employer must ensure that load tests as specified in Paragraph (3) using people are only conducted at low heights.*

### **on § 34 par. 1 and 2:**

Mechanical work equipment is subject to damage causing influences (e.g. wear and tear). In order to identify defects in time, periodic testing must be implemented. In consideration of the industry-specific operating and ambient conditions, the testing periods laid down in par. 1 and 2 have proven their worth.

The testing periods must be determined by the employer in the course of the risk assessment. Here, the individual operation modes - which can justify longer or shorter testing periods than the above mentioned - must be taken in to account (cf. Annex 1 of **DGUV Principle 315-390**).

The employer has the duty of selecting and engaging proficient persons for the tests. Particular care must be taken that these persons only run tests they are qualified and suitable for, that they can carry out the tests without any technical instructions and that they are trained for the state-of-the-art technology.

On the subject of qualification of proficient persons due to essential expertise (competent person) and qualification of proficient persons due to special expertise (experts) cf. **DGUV Principle 315-390**.

## § 35 Test Records

*(1) The employer must ensure that the results of the tests specified in Sections 33 and 34 are recorded in a test log.*

*(2) The employer must confirm in the test log that he or she has taken note of the identified faults and the fact that they have to be eliminated. He or she must ensure that such faults are rectified. If, in view of the nature and extent of the faults, there are reservations about putting the equipment into operation for the first time, putting it into operation again or continuing operation, the employer must ensure that the equipment is put out of operation. He or she may only put the equipment into operation or continue operation when the faults have been rectified and any necessary re-tests, which he or she must arrange, have been carried out.*

*(3) If the result of the expert's test necessitates re-tests, the employer must advise the authority responsible for occupational health and safety and the relevant Berufsgenossenschaft of the result of the test.*

### **on § 35 par. 1:**

The test documentation depends on the extent and content of the testing and on the complexity of the mechanical work equipment. The test results including conclusions must be presented to the employer in a transparent and understandable manner, especially regarding further operation. The testing methods and steps have to be thoroughly documented in a test documentation. It must be openly stated if the results are not clear and safe. Cf. also **DGUV Principle 315-390**.

## § 36 Experts

*Only experts authorized by the Berufsgenossenschaft can act as experts for testing of safety and mechanical equipment.*

### **on § 36:**

*Experts are authorized* within the framework of a personal certification, which includes a written examination of the required competences. Upon successful completion of this examination, a certificate of expert knowledge in testing and assessing mechanical work equipment in the entertainment technology is given to the graduate. The requirements for this qualification are laid down in **Annex 3** of the Operational safety ordinance “Prüfvorschriften für bestimmte Arbeitsmittel“ (Test specifications of special work equipment) and in **DGUV Principle 315-390**.

The representative bodies of the **German statutory accident insurances** have assigned the authorization of experts to the VBG. The professional examination is executed by the expert committee administration of the DGUV, subcommittee “Bühnen und Studios” (Stages and studios). The authorization is limited in time. Prolongation or revocation of the authorization are executed in compliance with **DGUV Principle 315-390**. A list of experts is published by the DGUV.

Authorizations given by the Unfallkasse Berlin, which was formerly assigned with the procedure, remain valid until expiry of the time limit.

no further explanations on **§§ 37-39**