

# Checklist

## Welding, Cutting Soldering and Heating (flame processes)



### Is the gas welding equipment in your company in a safe condition?

Insufficient training and breaches of safety rules while operating gas welding equipment often result in injuries and fires.

The main risks are:

- Mechanical risks (e.g. toppling of gas cylinders, tripping over gas hoses, slipping of the workpiece)
- Harmful gases and fumes
- Fire and explosion hazards

With this checklist you will get a better grip on these risks.

In the following section, you will find a range of important questions pertaining to this checklist. If a question is not applicable to your plant, simply remove it from the list.

**Action must be taken wherever you answer a question with  «no» or  «partially»**

Note actions overleaf.

## Mechanical risk

1	Are cylinders and other welding equipment secured so that they cannot fall or topple? (Fig. 1)	<input type="checkbox"/> yes <input type="checkbox"/> partially <input type="checkbox"/> no
2	Are workpieces properly positioned and secured?	<input type="checkbox"/> yes <input type="checkbox"/> partially <input type="checkbox"/> no
3	Do the welders wear safety shoes to prevent foot injuries from falling or toppling objects?	<input type="checkbox"/> yes <input type="checkbox"/> partially <input type="checkbox"/> no
4	Are precautions taken to prevent personnel from tripping over gas hoses? E.g. – Use of suitable holders for burners and hoses – Coil hoses properly (Fig. 2) – Use of suitable covers	<input type="checkbox"/> yes <input type="checkbox"/> partially <input type="checkbox"/> no



Fig. 1: Securing compressed gas cylinders with chains.



Fig. 2: Hoses are properly coiled up next to the working area thus eliminating a trip hazard.

## Harmful gases and fumes

5	Are workplaces provided with effective ventilation and/or extraction systems? (Fig. 3)	<input type="checkbox"/> yes <input type="checkbox"/> partially <input type="checkbox"/> no
6	Are special measures taken if welding work is to be carried out on coated, painted or heavily soiled parts? Special measures: – Remove any coating at welding area – Remove contaminants with an extraction system – Use suitable breathing apparatus (Fig. 4)	<input type="checkbox"/> yes <input type="checkbox"/> partially <input type="checkbox"/> no
7	Is there an EC declaration of conformity and an operating manual available for the welding extraction system? Further information: "Sicherheit beginnt beim Einkauf" (Safety starts with the purchase), Suva reference 66084.d	<input type="checkbox"/> yes <input type="checkbox"/> partially <input type="checkbox"/> no
8	Is suitable breathing apparatus used whenever contaminants cannot be properly extracted? Examples: If the ambient air contains a sufficient amount of oxygen (min. 18% by volume): – Filter device with half-mask or full mask with combination filter of A2BE2P2 class to SN EN 405 or – Fan-assisted filter breathing unit with welding helmet TH2 or TH3 with A2B2E2P class filter to SN EN 12941 In confined, insufficiently ventilated areas: compressed air line breathing unit with welding helmet to SN EN 270	<input type="checkbox"/> yes <input type="checkbox"/> no



Fig. 3: Gas cutting workplace with extraction system at the worktable (multi-chamber extraction system) and dust removal system.



Fig. 4: If thermal cutting or flame heating processes are to be carried out in confined or poorly ventilated areas (e.g. in containers, pipes), a compressed air line breathing unit together with a welding helmet must be worn.

## Thermal risks

- 9 Are measures taken to prevent skin burns or eye injuries due to metal splatter, flames and hot parts?  
Possible protective measures: placing of a protective shield, protective clothes, safety shoes, protective gloves, head and eye protection
- yes  
 partially  
 no

## Risks due to noise and non-ionising radiation

- 10 Are hearing protection devices always worn in noisy areas (sound level >85 dB[A])? (Fig. 5)
- yes  
 no
- 11 Do welders wear suitable goggles for protection from the glare of the welding flame as well as from hot welding splatters.  
Further information: "Augen- und Gehörschutzmittel" (Eye and ear protection devices), reference 88001.d
- yes  
 partially  
 no

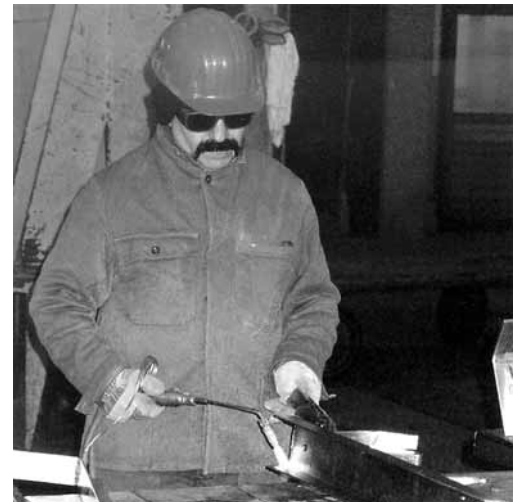


Fig. 5: Gas welder fettling a work piece, with welding goggles (protection class 4 to 7 to EN 169) and ear protection.

## Fire and explosion hazards

- 12 Is the condition of gas hoses checked regularly, and do defective hoses get replaced immediately?
- yes  
 partially  
 no
- 13 Are gas hoses secured so that they cannot come off the hose connectors (e.g. with clips)?
- yes  
 partially  
 no
- 14 Are fittings for use with oxygen kept free from grease and oil?
- yes  
 no
- 15 Are systems with mixed gas burners (fuel gas and oxygen or compressed air) fitted with suitable protective devices such as gas non-return valve, flashback arrester and reverse flow protector? (Fig. 6)  
Further information: "Gasentnahmestellen und Sicherheitseinrichtungen" (Gas supply units and safety devices), SVS publication RS 200
- yes  
 partially  
 no
- 16 Have measures been taken at gas supply sites (e.g. cylinders, cylinder groups, acetylene generators, electrolysis equipment, piped gas lines) to prevent explosions and their spread? (Fig. 7)  
Further information: "Versorgungsanlagen für technische Gase" (Supply systems for technical gases), SVS publication IG 42
- yes  
 partially  
 no



Fig. 6: Gas welding station with pressure reducing valve, non-return valve, flashback arrester.



Fig. 7: Explosion protection measures at an outdoor site for gas cylinders and gas cylinder groups for inflammable gases (good natural ventilation, Ex zone 1).

## Increased risks due to unfavourable conditions

<p><b>17</b> Are special precautions taken for welding and cutting operations in confined spaces? Further information: "Schweißen in Behältern und engen Räumen" (Welding in containers and confined spaces, reference 84011.d)</p>	<input type="checkbox"/> <b>yes</b> <input type="checkbox"/> <b>partially</b> <input type="checkbox"/> <b>no</b>
<p><b>18</b> Are liquefied gas installations used on construction sites provided with devices to cut off the gas supply if the hose gets damaged?</p>	<input type="checkbox"/> <b>yes</b> <input type="checkbox"/> <b>partially</b> <input type="checkbox"/> <b>no</b>
<p><b>19</b> Is clarification always obtained from the customer as to whether a written hot-work permit is required?</p>	<input type="checkbox"/> <b>yes</b> <input type="checkbox"/> <b>no</b>
<p><b>20</b> Are special measures taken if welding or cutting work is to be carried out on containers, pipes and other hollow bodies contaminated with liquid residues, vapours, gases or dusts? Special precautions such as e.g. blanking off, draining, cleaning, inserting are to be documented in a written hot-work permit. Further information: SVS-Formular Schweisserlaubnis (SVS form hot work permit), pad with 50 forms, available from SVS</p>	<input type="checkbox"/> <b>yes</b> <input type="checkbox"/> <b>partially</b> <input type="checkbox"/> <b>no</b>



Fig. 8: If a fire or explosion hazard cannot be ruled out completely, a written hot-work permit must be issued.

## Training

<p><b>21</b> Are welding operations carried out solely by people who are familiar with the equipment and processes, and are they instructed regularly? (Fig. 9) Further information: SVS register "Aus- und Weiterbildung" (Further education), available from the SVS</p>	<input type="checkbox"/> <b>yes</b> <input type="checkbox"/> <b>no</b>
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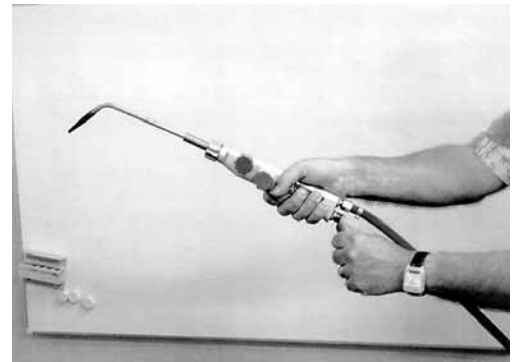


Fig. 9: During training, is there a demonstration of how to check the suction pressure of the torch?  
(Further information in: «Brenngas-Sauerstoff-Anlagen» (Fuel gas/oxygen installations), Suva SBA 128.d)

### Further information (available only in German, French and Italian):

- Schweißen, Schneiden und verwandte Verfahren zum Bearbeiten metallischer Werkstoffe (Welding, cutting, and allied processes for the processing of metallic materials), EKAS-Richtlinie 6509.d
- Brenngas-Sauerstoff-Anlagen (Fuel gas/oxygen installations), SBA 128.d
- Schweißen und Schneiden, Schutz vor Rauchen, Stäuben, Gasen und Dämpfen (Welding and cutting, protection from fumes, dust, gases and vapours), Suva reference 44053.d
- Brandschutz beim Schweißen (Fire protection during welding operations), Suva reference 84012.d
- Augen- und Gehörschutzmittel, Verkaufsdokumentation (Eye and ear protection products, sales documentation) Suva reference 88001.d
- Gasentnahmestellen und Sicherheitseinrichtungen (Gas supply stations and safety devices), SVS Regeln der Technik (SVS Technical Rules), SVS reference RS 200
- Versorgungsanlagen für technische Gase (Supply systems for technical gases), SVS-Information Gas, SVS reference IG 42
- Brandschutz beim Schweißen, Schneiden und verwandten Verfahren (Fire protection during welding, cutting and allied processes), SVS-Regeln der Technik, SVS reference RS 350 (d)
- Checkliste Anlage für Gasschweißen und verwandte Verfahren (Checklist, installations for gas welding and allied processes), SVS-Regeln der Technik, SVS reference IS 10 (d)
- Checkliste Anlage für Lichtbogenschweißen und verwandte Verfahren (Checklist, installations for arc welding and allied processes), SVS-Regeln der Technik, SVS reference IS 11 (d)

Further risks may be identified in your company within the scope of this checklist. Please take the necessary actions if that is the case (see overleaf).

Checklist completed by: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Rooms and workplaces inspected: \_\_\_\_\_

**Action plan: Welding, cutting, soldering, heating (flame processes)**

No.	To do	By (date)	Responsible	Done		Notes	Checked	
				Date	Signed		Date	Signed

Follow-up check on: \_\_\_\_\_ (Recommendation: every 6 months)

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