



Check list for reconditioning SF₆ gas

Authorization number:
(is assigned by DILO as soon as measured values are known)

Customer: _____

Reconditioned gas to be returned to customer Reconditioned gas to remain at DILO

Bottles / Vessel number	No.	No.
Total weight in kg		
Tare weight in kg		
Filling quantity in kg		
Purity in %		
Dew point in °C atm.		
SO ₂ in ppmv		
Measured with: Measuring device:	Serial number:	
Type of SF ₆ unit:		
Recovery of SF ₆ gas:	Final value: _____ mbar	

Packing

Quantity / Type of packaging _____

Dimensions in cm _____

Total weight of package in kg _____

The cylinders must be fastened by wedges and fixed in a safe and suitable way as to avoid moving or falling over.

Labelling? UN1080 UN3163 no label

Only one UN-Number per container!

TÜV validity of the cylinders? _____

Colour of cylinder neck Green Yellow Grey

Loading facilities (forklift trucks) available on site?: Yes No

ATTENTION
Tanks as from 450 liters must be marked on two opposite sides with dangerous goods mark!

Please note the max. storage pressure of 50 bar!
Please send us a photo of the goods to be returned!

Shipper's obligations are acknowledged and taken into account.

Where was the gas used? High voltage Medium voltage Low voltage

Used in voltage level? _____

.....
Date

.....
Signature (customer)



Leaflet for filling 600 l pressure vessels

When filling 600 l pressure vessels with SF₆ or SF₆ gas mixtures, please note that the filling quantity depends on the composition of the gas mixture:

Filling quantity:

Filling quantity depending on percentage, SF₆ and test pressure (p_h) of the pressure vessel

SF ₆ percentage; Residual air	Filling degree at 70 bar test pressure [kg/l]	Filling degree at 100 bar test pressure [kg/l]
100 %	1.06	1.23
≥ 99.9 %	1.06	1.23
≥ 99.0 %	1.02	1.20
≥ 95.0 %	0.83	1.09
≥ 90.0 %	0.62	0.94
≥ 80.0 %	0.37	0.66

Example:

A gas mixture with 96.2 % SF₆ shall be filled into a 600 l pressure vessel with a test pressure of 70 bar:

Maximum filling degree: 0.83 kg/L

Maximum filling quantity = filling degree x Pressure vessel volume = 0.83 kg/l x 600l = 498 kg.

It is allowed to fill the pressure vessel with 498 kg SF₆/air mixture.

The values of the table are guide values.

To determine the exact filling degree, please contact DILO, stating the percentage actually measured.



Loader checklist

in accordance with the GGVSEB [Ordinance on the Transport of Dangerous Goods by Road, Rail and Inland Waterways] / ADR 2021 for transport by road

- valid until 30.06.2023 –

Definition of loader:

The company which loads the items being shipped onto a vehicle, into a large container or into a small container and the company which, as the direct owner, consigns the dangerous goods to the carrier for transport or transports them itself.

1. Date	2. Transport company
3. Vehicle registration	4. Driver's name

Note: all inspection points must be checked. N/A means "Not applicable"; if no field exists under this column then this inspection point must be answered with "Yes" or "No".

A: Basic checks

A1: Permissibility of carriage

No.	Inspection point	Yes	No	N/A
A1-1	Is transportation of the dangerous goods permitted in accordance with Sec. 3 of the GGVSEB? (i.e. no prohibition on carriage in accordance with Part 2, Section 3.2 and 3.3 of the ADR GGVSEB source: Sec. 21 (1) No. 1, Sec. 3 ADR source: Part 2, 3.2, 3.3			

A2: Vehicle inspection

No.	Inspection point	Yes	No	N/A
A2-1	Has an inspection of the vehicle or container been carried out BEFORE LOADING (see separate checklist "Equipment check vehicle") in accordance with the GGVSEB / ADR 2017 and has it been ensured that the vehicle or container is free from defects and does not have any damage which affects the integrity of the vehicle or container? GGVSEB source: Sec. 29 (1) ADR source: 7.5.1.2			



A3: Inspections before loading

No.	Inspection point	Yes	No	N/A
A3-1	Are the packages (including uncleaned, empty packages) visibly undamaged and complete, and has it been ensured that there are no dangerous adhesions on the exterior? Note: goods may only be handed over for transport after correction of faults GGVSEB source: Sec. 21 (1) No. 2 ADR source: 1.4.3.1.1. b)			
A3-2	Was the vehicle or container cleaned before loading if the loading area is contaminated? GGVSEB source: Sec. 29 (1) ADR source: 7.5.8.1			
A3-3	Only after partial removal of dangerous goods: Has the packaging been tightly resealed after partial removal of the dangerous goods and is it in a suitable condition as the original packaging? GGVSEB source: Sec. 21 (1) Nr. 3 ADR source: 4.1.1.1			
A3-4	Uncleaned empty packages only: Are uncleaned empty packages closed as they were in their filled state? GGVSEB source: Sec. 21 (1) No. 4 ADR source: 4.1.1.11 in conjunction with 4.1.1.1			

A4: Loading process

No.	Inspection point	Yes	No	N/A
A4-1	Were packages with direction arrow loaded in accordance with the position of the direction arrow? GGVSEB source: Sec. 29 (1) ADR source: 7.5.1.5			
A4-2	Were liquid goods loaded underneath dry goods to the greatest extent possible? GGVSEB source: Sec. 29 (1) ADR source: 7.5.1.5			
A4-3	Has it been ensured that packages are only stacked if they are approved for stacking? GGVSEB source: Sec. 29 (1) ADR source: 7.5.7.2			
A4-4	Has it been ensured that packages are protected against damage during loading? GGVSEB source: Sec. 29 (1) ADR source: 7.5.7.3			



No.	Inspection point	Yes	No	N/A
A4-5	<p>Was the load (hazardous goods and non-hazardous goods) sufficiently and properly secured?</p> <p>Note: the following applies in accordance with Sec. 22 of the StVO [Road Traffic Act]: the load, including equipment for securing loads and loading equipment, should be stowed and secured such that it cannot slip, fall over, roll back and forth, fall down or cause avoidable noise even during emergency braking or sudden swerving. The generally recognised rules of technology should be observed here.</p> <p>GGVSEB source: Sec. 29 (1) ADR source: 7.5.7.1</p>			
A4-6	<p>Have the rules on the prohibition of fire and naked lights been observed during loading near vehicles or containers and inside the vehicles or containers?</p> <p>GGVSEB source: 29 (2) Nr. 4, Anlage 2 Nr. 3.1 ADR source: not applicable, applies only to national transport</p>			
A4-7	<p>Has the ban on smoking been observed during loading?</p> <p>GGVSEB source: 29 (2) Nr. 3 ADR source: 7.5.9, 8.3.5</p>			
A4-12	<p>Only if CV1-CV35 is specified in column 18 of Table A:</p> <p>Have these special regulations been observed?</p> <p>GGVSEB source: 29 (1) ADR source: 7.5.11</p>			
A4-13	<p>For gas transport, if CV36 is entered in Column 18 of Table A, only:</p> <p>Have the regulations concerning loading in open or ventilated vehicles been observed, or alternatively has the "Warning, no ventilation, open with care" warning sign been attached and has it been ensured that no gas exchange can take place between the load compartment and driver's cab?</p> <p>Note: The alternative with the warning sign should be limited to special cases (such as rental vehicles).</p> <p>GGVSEB source: Sec. 29 (4) ADR source: 7.5.11 in conjunction with 3.2 Table A, Column 18, Special provision CV 36</p>			

A5: Application of labels after loading

No.	Inspection point	Yes	No	N/A
A5-4	<p>Uncleaned empty containers only:</p> <p>Are empty packages (including intermediate bulk containers and large packs), empty tanks (all types), empty vehicles and empty containers for dangerous good in bulk, and empty MEMUs which have contained dangerous goods which have not been cleaned, degassed or decontaminated identified with the same labels, danger labels and placards as in their filled state?</p> <p>GGVSEB source: Sec. 21 (2) No. 3 ADR source: 5.1.3.1, 5.2, 5.3</p>			



B: Obligation to provide information to the driver

No.	Inspection point	Yes	No	N/A
B-1	<p>Has the driver of the vehicle been provided with the following information for the dangerous sub-stance:</p> <ul style="list-style-type: none"> ▪ UN number ▪ Description of the goods ▪ Numbers of all danger labels ▪ Packing group, where applicable? <p>GGVSEB source: Sec. 21 (2) No. 1 ADR source: 5.4.1.1.1 a) to d)</p>			

C: Safety measures for the transport of dangerous goods

Note: With the exception of the following UN numbers, these measures are only applicable to carriages subject to labelling

UN Nos 0029, 0030, 0059, 0065, 0073, 0104, 0237, 0255, 0267, 0288, 0289, 0290, 0360, 0361, 0364, 0365, 0366, 0439, 0440, 0441, 0455, 0456, 0500 and packages of UN 2910 and 2911 which are not subject to ADR when the activity value exceeds the A₂ value.

No.	Inspection point	Yes	No	N/A
C-1	<p>Has it been ensured that dangerous goods are only handed over to carriers, the identity of which has been ascertained?</p> <p>GGVSEB source: Sec. 27 (3) No. 1 ADR source: 1.10.1.2</p>			
C-3	<p>Have all employees received sufficient training of the safety measures and are the records of this stored for at least 5 years?</p> <p>GGVSEB source: Sec. 27 (3) No. 2 ADR source: 1.10.2</p>			

D: Other obligations of the loader

No.	Inspection point	As required
D-1	<p>Accident report: In the event of serious accidents or incidents, the loader must ensure that a report is submitted to the Federal Office for Goods Transport for his own area of responsibility. The accident report must be submitted no later than one month after the accident happened.</p> <p>GGVSEB source: Sec. 27 (1) ADR source: 1.8.5.1</p>	



E: Employee training

No.	Inspection point	Yes	No	N/A
E-1	Has it been ensured that all employees who are involved in the handling of the transport of dan- gerous goods have received training in accordance with their area of responsibility? GGVSEB source: Sec. 27 (5) No. 1, ADR source: 1.3.1, 1.3.2, 8.2.3			
E-2	Is it ensured that records of the instructions are kept by the employer for at least 5 years? GGVSEB source: Sec. 27 (5) Nr. 1 ADR source: 1.3.3			

F: General safety obligations (important information)

No.	Inspection point	As required
F-1	The persons involved in the transport of dangerous goods must take the necessary precautions, in accordance with the type and extent of the foreseeable risks, in order to prevent cases of damage and, in the event of damage, to keep its extent as minimal as possible. Note: in accordance with a BGH [Federal Supreme Court] judgement, each individual involved must take all possible measures in the event that a problem is detected, even if it is not part of their original remit. A company which receives packages, for example, (recipient / unloader) must take steps if it becomes aware that the packages are incorrectly packed and the recipient / unloader’s employees are put at risk as a result. GGVSEB source: Sec. 4 (1)	

If any of the points have been answered with “NO” then the transport operation may NOT be performed!

Place, date:	Name and signature of the person performing the inspection:
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The checklist is an aid only and no liability can be assumed for correctness! The checklist is not updated. Please contact your dangerous goods safety adviser.