

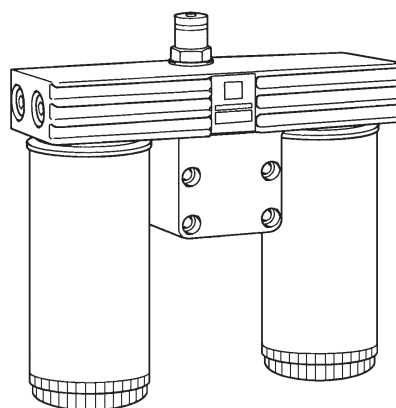
OF 4-25, OF 40-65 **CF 4-25, CF 40-65**

Mechanical Oil Filter
Chemical Oil Filter

Operating Instructions GA01296_002_C0

Part Nos.

101 91 / 92
101 96 / 97



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Original installation and operating instructions.

Obligation to Provide Information

Before installing and commissioning the equipment, carefully read these Operating Instructions and follow the information so as to ensure optimum and safe working right from the start.

The Leybold **OF and CF oil filters** have been designed for safe and efficient operation when used properly and in accordance with these Operating Instructions. It is the responsibility of the user to carefully read and strictly observe all safety precautions described in this section and throughout the Operating Instructions. The equipment must only be operated in the proper condition and under the conditions described in the Operating Instructions. It must be operated and maintained by trained personnel only. Consult local, state, and national agencies regarding specific requirements and regulations. Address any further safety, operation and/or maintenance questions to our nearest office.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE is used to notify users of installation, operation, programming or maintenance information that is important, but not hazard related.

NOTICE



DANGER



WARNING



CAUTION



NOTICE



We reserve the right to alter the design or any data given in these Operating Instructions. The illustrations are not binding.

Retain the Operating Instructions for further use.

Figures

The references to figures, e.g. (4/2) consist of the consecutive Fig. No. and the Item No. in that order.

Safety Information



0 Important Safety Information

0.1 Hazards caused by materials and substances

- 1 Hazardous substances may escape from the filter or the oil. Take suitable precautions (e. g. gloves, goggles or gas mask).
- 2 Contaminated parts can be detrimental to health and environment. Before beginning with any work, first find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts; For example wear gloves, face protection or breathing protection. If there exists a potential hazard, the filter or the separator must be decontaminated before starting with any maintenance work. The filter elements in particular can get very hot (over 100 °C / 212 °F). There is the danger of receiving burns. Wear suitable protective clothing. For professional decontamination we recommend our service.
- 3 The equipment must be packed in such a way, that it will not be damaged during shipping and so that any contaminants are not released from the package.
- 4 When disposing of used oil and spent filter and filter elements, please observe the relevant environmental protection regulations.

NOTICE



0.2 Risk of damaging the device

- 1 The filter element should be changed regularly, depending on the operating conditions.

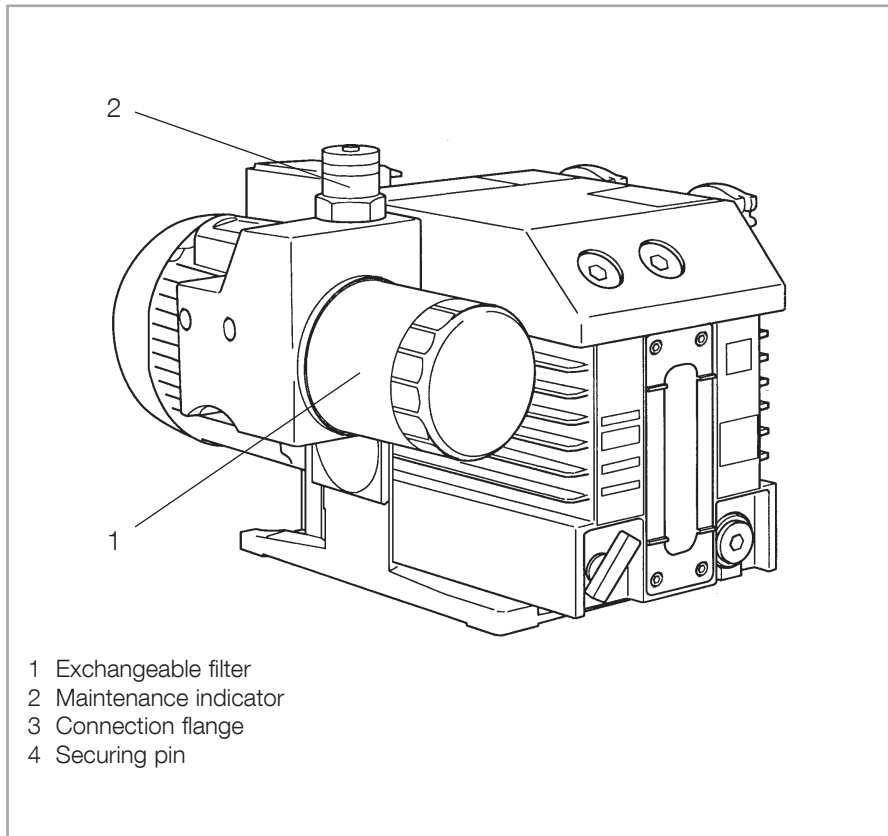


Fig. 1 TRIVAC B with OF 4-25 oil filter

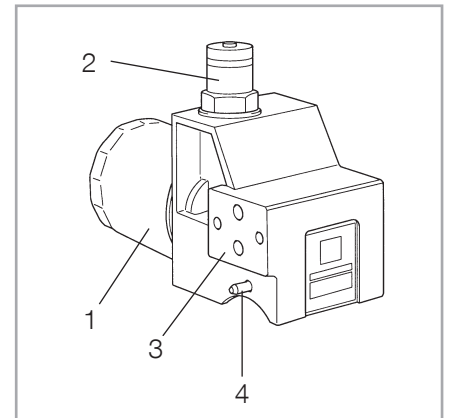


Fig. 2 Oil filter OF4-25

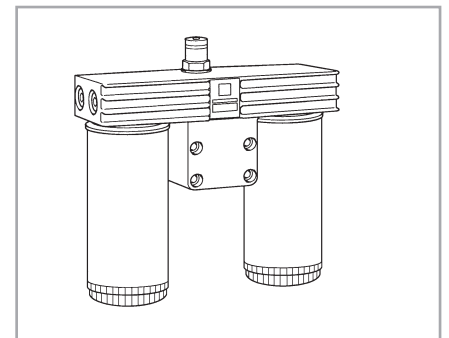


Fig. 3 Oil filter CF40-65

1 Description

1.1 Design and Function

The OF and CF oil filters were developed for the TRIVAC B range of rotary vane vacuum pumps.

When fitting the filter to the connection on the pump provided for this purpose the filter is thereby connected to the oil circulation system of the pump.

Mechanical Filter OF

The contaminated oil is cleaned as it flows through the actual oil filter inside the exchangeable filter (1/1).

At the nominal operating temperature of the pump and with a new filter, flow resistance will be about 0.3 bar.

If the flow resistance increases to 2.5 bar due to contamination of the exchangeable filter, the built-in overpressure relief valve will open. In the event of further contamination the filter will then operate just like a bypass line.

The degree of contamination of the exchangeable filter is indicated by the maintenance indicator (1/2).

As soon as a red ring becomes visible at the upper part of the maintenance indicator, a pressure of 2 bar has been reached signalling that an exchange of the exchangeable filter has become necessary.

Description

Upon request the maintenance indicator can also be supplied with an electrical signal indicator.

Chemical Filter CF

The design of the chemical oil filter is the same as for the mechanical oil filter. But its exchangeable filter is filled with a highly effective adsorbent for polar substances.

This adsorbent is up to 10 times more effective than normal Fuller's earth.

The adsorbent is extremely fine-grained. It acts as a deep-bed filter and is thus especially capable of retaining solids. The filter acts as both a chemical and a mechanical filter. Particles down to a size of 3 µm are retained.

1.2 Standard Specification

The OF and CF oil filters are supplied complete with the required exchangeable filters, the gasket and fastening screws. In addition, a filter wrench LS 9 or LS 7 (for the OF 4-25) is included.

The OF and CF oil filters are pre-cleaned so that they can be used with either mineral oil (e.g. LVO 100) or perfluoropolyether (PFPE, e.g. LVO 400).

1.3 Technical Data

Mechanical oil filter		OF 4 - 25	OF 40 - 65
Chemical oil filter		CF 4 - 25	CF 40 - 65
For use connection with TRIVAC		S 4 B, S 8 B, S 16 B, S 25 B D 4 B, D 8 B, D 16 B, D 25 B	S 40 B, S 65 B D 40 B, D 65 B
Nominal flow	l·h ⁻¹	900	2000
Degree of separation			
Mechanical oil filter	µm	5 - 10	5 - 10
Chemical oil filter	µm	3	3
Permissible operating pressure	bar (psig)	2.5 (21.7)	2.5 (21.7)
Opening pressure			
Non-return valve	bar (psid)	0.12 (1.7)	0.12 (1.7)
Overpressure valve	bar (psid)	2.5 ±0.3 (21.7 ±4.3)	2.5 ±0.3 (21.7 ±4.3)
Additional quantity of oil after			
new installation	l (qt)	1.0 (1.1)	2.5 (2.6)
filter exchange	l (qt)	1.0 (1.1)	2.0 (2.1)

1.4 Ordering Data

	Part No.	Part No.
Mechanical oil filter	101 91	101 92
WF exchangeable filter	189 91	189 92*
Chemical oil filter	101 96	101 97
WF Alu exchangeable filter	189 96	189 96*

* 2 needed

1.5 Spare Parts

	OF 4 - 25	CF 4 -25	OF 40 - 65	CF 40 - 65
	Part No.			
Exchangeable filter	189 91	189 96	189 92 (2x)	189 96 (2x)
Gasket (connection flange)	200 10 735	200 10 735	200 10 746	200 10 746
Filter wrench	Typ LS 7 200 09 172	Typ LS 9 200 09 171	Typ LS 9 200 09 171	Typ LS 9 200 09 171
Maintenance indicator	200 09 068	200 09 659	200 09 068	200 09 659
Flat gasket 25 x 35 x 3 mm	239 72 112	239 72 112	200 72 112	200 72 112
Flat gasket 16 x 30 x 1 mm	239 25 226	239 25 226	239 25 226	239 25 226
Ring	200 09 076	200 09 076	200 09 076	200 09 076
Double nipple	431 79 107	200 09 149	200 09 149	200 09 149

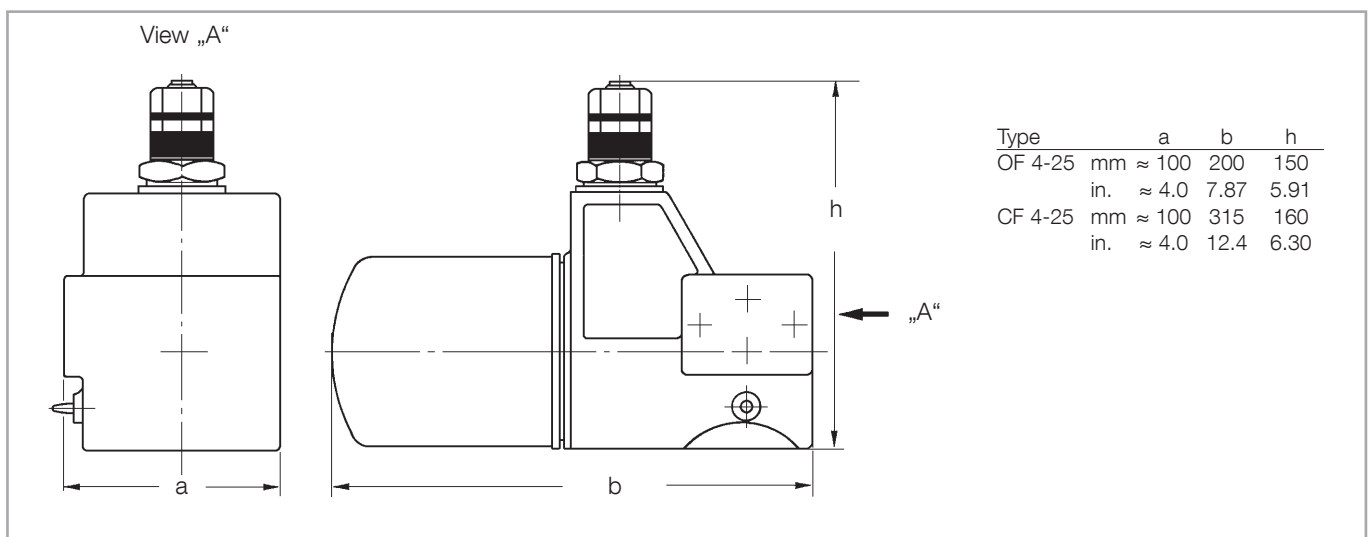


Fig. 4 Dimensional drawing for OF/CF 4-25 oil filter

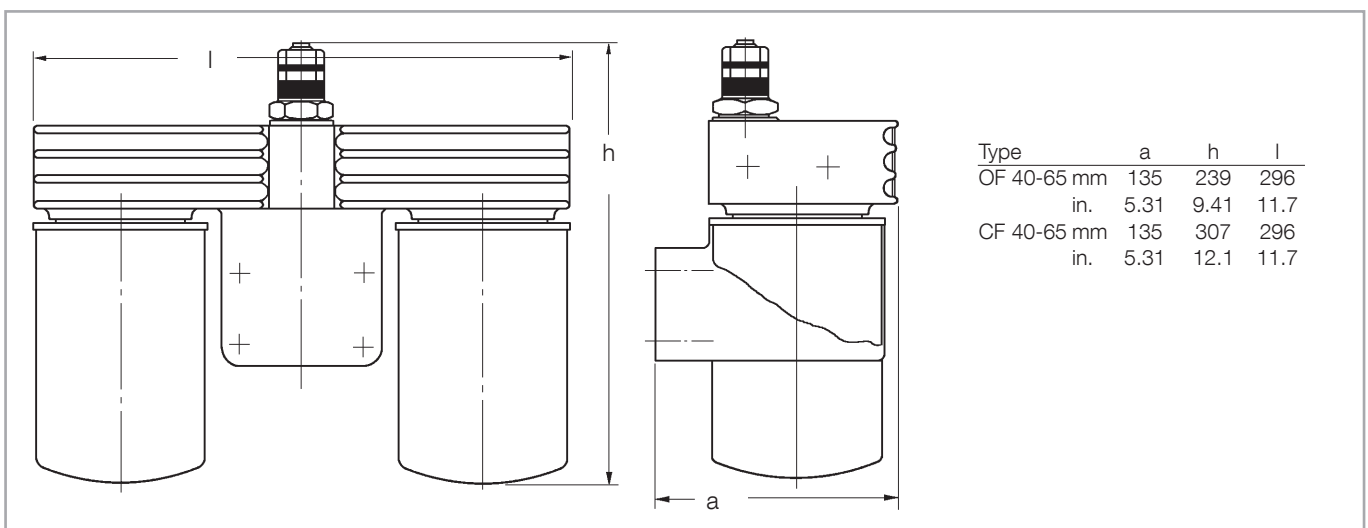


Fig. 5 Dimensional drawing for OF/CF 40-65 oil filter

Transport and Storing / Installation

WARNING

2 Transport and Storing

The equipment must be packed in such a way, that it will not be damaged during shipping and so that any contaminants are not released.

3 Installation

The OF and CF oil filters are fitted directly to the coupling housing of the TRIVAC B pumps.

CAUTION

Before working on the pump disconnect all electrical connections. You must reliably prevent the pump from running up.

Remove the orifice at the housing of the coupling (oil filter connection) together with its gasket. For this, refer to the Operating Instructions of the pump.

Fit the OF or CF oil filter using the supplied screws and the gasket which is also supplied.

The right gasket is the one with the middle ridge. Take care that the sealing surfaces are clean. Always tighten the fastening screws evenly.

In the case of the OF filter 4-25 and CF filter 4-25 the securing pin (2/4) is introduced into the mating hole on the housing of the coupling so as to ensure proper installation.

In the case of OF filter 40-60 and CF filter 40-65 proper installation is ensured by the arrangement of the screws.

During initial operation of an OF or CF filter, both exchangeable filter and the cast iron adapter pieces will take up a certain quantity of oil.

The quantity of oil which has to be topped up after installing an oil filter amounts to:

- 1 l of oil for the OF/CF 4-25,
- 2.5 l of oil for the OF/CF 40-65.

After initial operation check the oil level of the pump once more.

4 Maintenance: Filter Change

Before working on the pump disconnect all electrical connections. You must reliably prevent the pump from running up.

The exchangeable filters attain the same temperature as the pump. Therefore before exchanging the filters them cool down first.

When the pump has been pumping hazardous substances, determine the type of hazard and introduce appropriate safety precautions.

Observe all applicable safety regulations.

Maintenance of the filters will normally be limited to exchanging the filter in time as soon as the red ring in the upper part of the maintenance indicator (1/2) becomes visible.

As soon as this is the case, the exchangeable filter should be exchanged by a new one the next time the vacuum pump is switched off.

For this, loosen the contaminated exchangeable filter using the supplied filter wrench and wet the gasket on the new oil filter with a little oil.

Manually tighten the new exchangeable filter. Check for any leaks and then tighten further if required.

After having exchanged a filter you must top up some oil as follows:

- 1 l of oil for the OF/CF 4-25,
- 2.5 l of oil for the OF/CF 40-65.
- (1 l of oil per exchangeable filter)

Check the oil level of the pump each time after having exchanged a filter.

Comply with the corresponding regulations for the protection of the environment when disposing of the used exchangeable filters.

4.1 Leybold Service

Whenever you send a pump to Leybold, indicate whether the pump is contaminated or is free of substances which could pose a health hazard. If it is contaminated, specify exactly which substances are involved. You must use the form we have prepared for this purpose; we will forward the form on request.

A copy of the form is printed at the end of these operating instructions: „Declaration of contamination of vacuum equipment and components“. Another suitable form is available from www.leybold.com/ → Documents → Download Documents.

Connect the form at the device or lay it to the device.

This statement detailing the contamination is required to satisfy legal requirements and for the protection of our employees.

Pumps which are not accompanied by a contamination statement will be returned to the sender.

DANGER



NOTICE



Maintenance / Disposal

CAUTION



Use secure shipping packaging

Package the equipment such that it will not suffer any damage when being shipped and so that no oil or hazardous materials can escape from the packaging.

5 Waste Disposal

The equipment may have been contaminated by the process or by environmental influences. In this case the equipment must be decontaminated in accordance with the relevant regulations. We offer this service at fixed prices. Further details are available on request.

WARNING



Risk of injury and environmental damage

Contaminated parts can be detrimental to health and environment. Before beginning with any work, first find out whether any parts are contaminated.

Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts; For example wear gloves, face protection or breathing protection.

Separate clean components according to their materials, and dispose of these accordingly. We offer this service. Further details are available on request.

When sending us any equipment, observe the regulations given in Section “Leybold Service”.

Disposal of Waste Oil

Owners of waste oil are entirely self-responsible for proper disposal of this waste.

Waste oil from vacuum pumps must not be mixed with other substances or materials.

Waste oil from vacuum pumps (Leybold oils which are based on mineral oils) which are subject to normal wear and which are contaminated due to the influence of oxygen in the air, high temperatures or mechanical wear must be disposed of through the locally available waste oil disposal system.

Waste oil from vacuum pumps which is contaminated with other substances must be marked and stored in such a way that the type of contamination is apparent. This waste must be disposed of as special waste.

European, national and regional regulations concerning waste disposal need to be observed. Waste must only be transported and disposed of by an approved waste disposal vendor.

Declaration of Contamination of Compressors, Vacuum Pumps and Components

The repair and / or servicing of compressors, vacuum pumps and components will be carried out only if a correctly completed declaration has been submitted. Non-completion will result in delay. The manufacturer can refuse to accept any equipment without a declaration.

A separate declaration has to be completed for each single component.

This declaration may be completed and signed only by authorized and qualified staff.

Customer/Dep./Institute : _____ Address : _____ _____ Person to contact: _____ Phone : _____ Fax: _____ End user: _____	Reason for return: ☒ applicable please mark Repair: ☐ chargeable ☐ warranty Exchange: ☐ chargeable ☐ warranty ☐ Exchange already arranged / received Return only: ☐ rent ☐ loan ☐ for credit Calibration: ☐ DKD ☐ Factory-calibr. ☐ Quality test certificate DIN 55350-18-4.2.1
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A. Description of the Leybold product: Material description : _____ Catalog number: _____ Serial number: _____ Type of oil (ForeVacuum-Pumps) : _____	Failure description: _____ Additional parts: _____ Application-Tool: _____ Application- Process: _____
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B. Condition of the equipment <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 10%; text-align: center;">No¹⁾</th> <th style="width: 10%; text-align: center;">Yes</th> <th style="width: 40%; text-align: center;">No</th> </tr> </thead> <tbody> <tr> <td>1. Has the equipment been used</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> </tr> <tr> <td>2. Drained (Product/service fluid)</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> </tr> <tr> <td>3. All openings sealed airtight</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> </tr> <tr> <td>4. Purged</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> </tr> </tbody> </table> If yes, which cleaning agent _____ and which method of cleaning _____ ¹⁾ If answered with "No", go to D. ←		No ¹⁾	Yes	No	1. Has the equipment been used	☐	☐	☐	2. Drained (Product/service fluid)	☐	☐	☐	3. All openings sealed airtight	☐	☐	☐	4. Purged	☐	☐	☐	Contamination : <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 10%; text-align: center;">No¹⁾</th> <th style="width: 10%; text-align: center;">Yes</th> </tr> </thead> <tbody> <tr> <td>toxic</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> </tr> <tr> <td>corrosive</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> </tr> <tr> <td>flammable</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> </tr> <tr> <td>explosive ²⁾</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> </tr> <tr> <td>radioactive ²⁾</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> </tr> <tr> <td>microbiological ²⁾</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> </tr> <tr> <td>other harmful substances</td> <td style="text-align: center;">☐</td> <td style="text-align: center;">☐</td> </tr> </tbody> </table>		No ¹⁾	Yes	toxic	☐	☐	corrosive	☐	☐	flammable	☐	☐	explosive ²⁾	☐	☐	radioactive ²⁾	☐	☐	microbiological ²⁾	☐	☐	other harmful substances	☐	☐
	No ¹⁾	Yes	No																																										
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microbiological ²⁾	☐	☐																																											
other harmful substances	☐	☐																																											

C. Description of processed substances (Please fill in absolutely) 1. What substances have come into contact with the equipment ? Trade name and / or chemical term of service fluids and substances processed, properties of the substances According to safety data sheet (e.g. toxic, inflammable, corrosive, radioactive)															
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;">X</td> <td style="width: 30%;">Tradename:</td> <td style="width: 65%;">Chemical name:</td> </tr> <tr> <td style="text-align: center;">a)</td> <td colspan="2"></td> </tr> <tr> <td style="text-align: center;">b)</td> <td colspan="2"></td> </tr> <tr> <td style="text-align: center;">c)</td> <td colspan="2"></td> </tr> <tr> <td style="text-align: center;">d)</td> <td colspan="2"></td> </tr> </table>	X	Tradename:	Chemical name:	a)			b)			c)			d)		
X	Tradename:	Chemical name:													
a)															
b)															
c)															
d)															
2. Are these substances harmful ? No ☐ Yes ☐ 3. Dangerous decomposition products when heated ? No ☐ Yes ☐ If yes, which ? _____															

²⁾ Components contaminated by microbiological, explosive or radioactive products/substances will not be accepted without written evidence of decontamination.

D. Legally binding declaration

I / we hereby declare that the information supplied on this form is accurate and sufficient to judge any contamination level.

Name of authorized person (block letters) : _____

Date

signature of authorized person

firm stamp

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