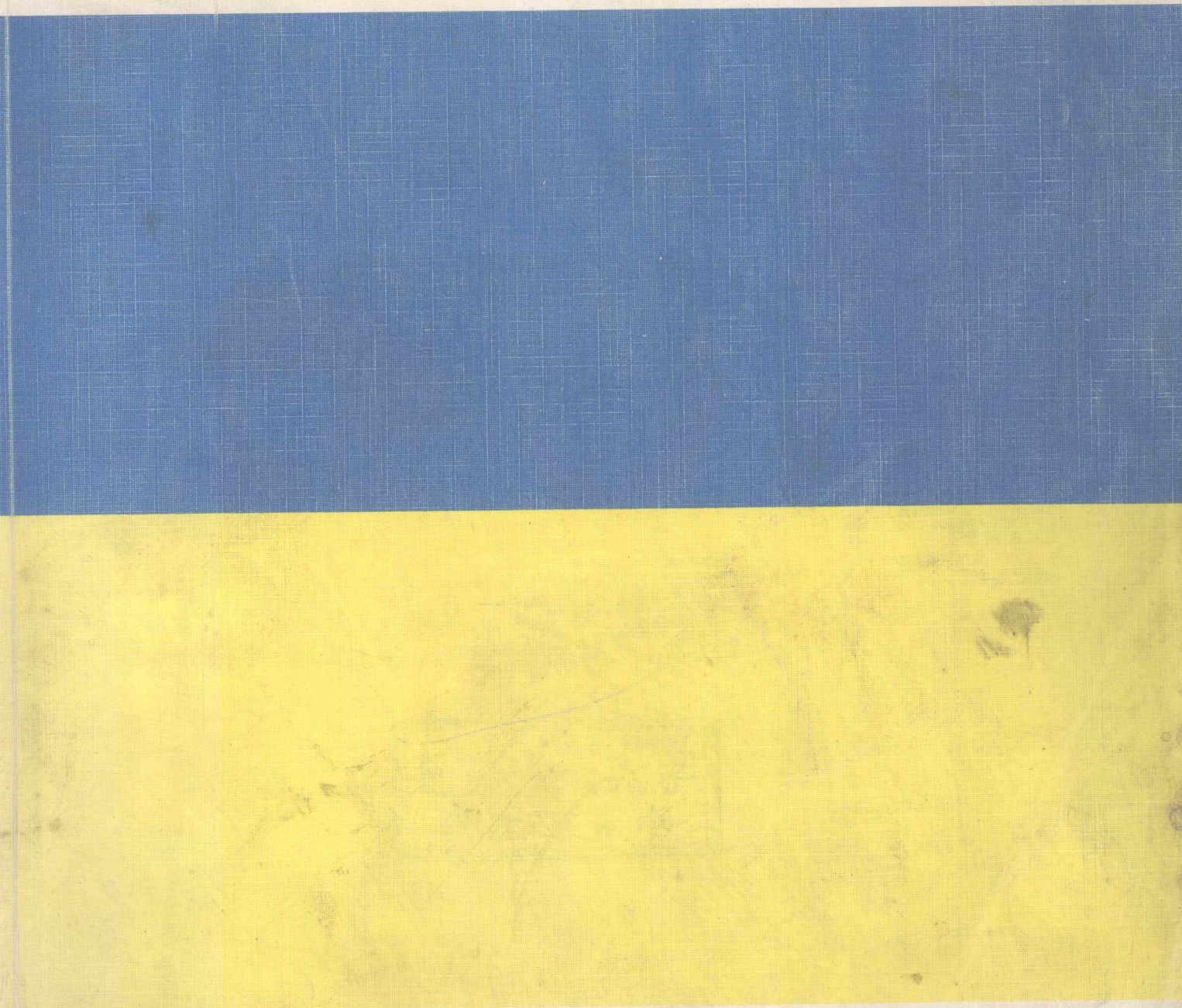


Riedel-de Haën

A member of the
Hoechst Group



Laboratory Chemicals 1981

Laboratory Chemicals

1981

1st Oktober 1980

Reagents for analysis
Products for synthesis
Solvents

Products for chromatography

Industrial chemicals

Réactifs pour analyse
Produits pour la synthèse
Solvants

Produits pour la chromatographie

Produits chimiques

Reactivos para fines analíticos
Productos para síntesis
Disolventes

Productos para cromatografía

Productos químicos para industria

Riedel-de Haën

Aktiengesellschaft





Riedel-de Haën AG

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Seelze Anschlußgleis

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I. General conditions of sale – Export Markets

This catalogue is intended for the customers of Riedel-de Haën Aktiengesellschaft. Stated in it are only those prices for goods which Riedel-de Haën supplies direct to customers. Customers who re-sell products bought from Riedel-de Haën as per agreement are in no way bound by this catalogue with regard to their own price structure. Nor does this catalogue contain any recommendations as to resale prices.

1. Applicable conditions

The conditions set out below shall apply unless Riedel-de Haën has drawn up and specified to the Buyer special conditions of sale for the Buyer's country; if this is the case, special conditions shall apply.

Any general conditions of purchase submitted by the Buyer are binding upon Riedel-de Haën only if confirmed in writing by Riedel-de Haën.

2. Offers for sale and orders

All offers submitted by Riedel-de Haën are not binding upon Riedel-de Haën. Orders and verbal agreements shall be binding on Riedel-de Haën only if and in so far as Riedel-de Haën has confirmed them in writing, or by form, or if it has complied with them by shipment of the goods and submission of an invoice.

Riedel-de Haën supplies orders with a minimum value of DM 1,500.–, net in one delivery, including packaging, freight paid to the frontier of the Federal Republic of Germany or alternatively f. o. b. Bremen, Hamburg or Lübeck. In view of the high cost of handling, small orders, the value of which is less than DM 1,500.–, cannot be accepted.

The expression "as before" is not binding upon Riedel-de Haën. It can be applied neither to the quality nor to the price of products.

Products which are sold by Riedel-de Haën in various qualities must be clearly specified in the order.

3. Invoicing and payment

Prices remain subject to alteration by Riedel-de Haën up to 30 days prior to the agreed date of delivery. In the event of a price increase, the Buyer shall be entitled to withdraw from the unfulfilled part of the contract within 14 days of being notified of the increase. The right of withdrawal shall not operate in the case of increases due to higher transport charges. The weight of the goods at the time of dispatch is the weight to be invoiced. Incidental expenses, such as bank charges incurred in remittance and charges for the release of shipping documents, are for the Buyer's account.

Buyer may offset or withhold payment on the grounds of a counter claim only if such counter claim has been acknowledged by Riedel-de Haën or confirmed by final court decree.

Should the Buyer be in arrears with payments or should there be reasonable doubts as to the Buyer's solvency or credit worthiness, Riedel-de Haën – without prejudice to his remaining rights – shall be entitled to require payment in advance for deliveries not so far effected, and to require immediate payment of all claims arising from the mutual business relations.

4. Delivery of goods and acceptance of deliveries

Riedel-de Haën shall be relieved from the obligation to supply for as long as the Buyer is in arrears with a due payment. Agreed

delivery terms refer to the date the risk passes to the Buyer. Should the delivery date be exceeded due to Seller's fault, the Buyer shall be entitled to withdraw from the contract, under exclusion of any further rights, after expiry of a reasonable extension of time granted by the Buyer in writing, or to claim damages. Claims for damages by the Buyer on grounds of late delivery or non-delivery are however limited in amount to the invoice value of the quantity of goods delayed or not delivered, unless Riedel-de Haën is liable for deliberate or gross negligence under compulsory statutory legislation.

Unforeseen plant stoppages, delayed or non-deliveries from Riedel-de Haën's suppliers, labour shortages, power failures or raw material shortages, strikes, lockouts, difficulties in providing transport, transport delays, official restraints and any events of force majeure shall, for the duration of and to the extent of impact of such contingency, relieve the party thereby affected from any obligation to deliver or accept delivery as the case may be. Should, consequent upon such a contingency, delivery be delayed for more than one month, the Buyer shall be entitled, under exclusion of all further claims, to withdraw from the unfulfilled part of the contract; should acceptance of delivery be delayed for more than one month, Riedel-de Haën shall be entitled, under exclusion of all further claims, to withdraw from the unfulfilled part of the contract.

5. Shipment

Method of transport and route shall be at the option of Riedel-de Haën. Wishes of the Buyer shall be taken into consideration by Riedel-de Haën as far as possible, any additional costs being for the Buyer's account.

6. Assignment of risk

Unless otherwise agreed, risk shall finally pass to the Buyer when the goods are dispatched from the supply works or – should the Buyer require a delay in delivery date – from the date Riedel-de Haën is ready to dispatch the shipment.

7. Notification of defects

The Buyer shall check whether the goods delivered are of contractual quality and suitable for the intended purpose. If this is not done at all or not carried out in the appropriate manner, or if patent or obvious defects are not promptly reported to Riedel-de Haën, at the latest within 14 days of receipt of the goods, the goods shall be considered as approved in respect of such defects. Latent defects shall be deemed approved if such defects are not reported to Riedel-de Haën as soon as discovered, but at the latest within 6 months of the dispatch of the goods from the point of shipment. Complaints shall be notified in writing and include date of order and invoice and dispatch number. Goods under complaint shall not be returned except with Riedel-de Haën's express consent.

In the case of properly notified and justified complaints Riedel-de Haën shall only be obliged, at its discretion, having due regard to the Buyer's interests, to reduce the price, remedy the defect, exchange the goods or take them back refunding the purchase price. Should Riedel-de Haën not fulfil this obligation, the Buyer shall have the right to choose from these remedial measures. Further claims by the Buyer are, as far as legally permitted, excluded; this applies particularly to compensation claims for damages not arising directly from the goods themselves (consequential damages).

8. Liability, withdrawal from contract

The Buyer shall be entitled to claim compensation or to withdraw from the contract only in such cases and to such an extent as are expressly stated in these Conditions of Sale. Riedel-de Haën shall have no other or further liability whatsoever, whether in contract or under the law of torts, unless, due to wilfulness or gross negligence on the part of Riedel-de Haën, Riedel-de Haën is liable without limitation under any applicable compulsory statutory legislation.

9. Reservation of proprietary rights

The goods shall become the property of the Buyer only after he has settled all his obligations arising from the mutual business transactions. The Buyer shall collaborate in all measures which Riedel-de Haën wishes to take to protect its proprietary rights in the goods delivered. If a third party should try to assert or substantiate rights in the goods, the Buyer shall inform Riedel-de Haën immediately.

10. Trademarks

If products which carry a trademark are to be re-packaged, processed further, or mixed with other substances etc., such trademarks may be used in conjunction with the goods re-packaged or further processed by the Buyer only with the express written agreement of the trademark owner.

11. Packaging

Non-returnable containers and packagings shall be re-used in the course of business only after the company logo and name and the trademarks and designations used by Riedel-de Haën have been obliterated. It is the User's own responsibility to observe the packaging classification. Additional packaging conditions issued by Riedel-de Haën apply to large containers with contents exceeding 5 kg/litre.

12. Incoterms

In addition to the foregoing conditions, the "Incoterms" issued by the International Chamber of Commerce in Paris apply; in each case the latest version at the time of the execution of the order shall be applicable.

13. Applicable law and legal domicile

All sales contracts shall be subject to the laws of the country in which Riedel-de Haën's head office is established. Unless otherwise provided under competent national legislation, the courts at the place of Riedel-de Haën's head office shall have jurisdiction. For actions by Riedel-de Haën the competent courts of the country in which the principal place of business of the Buyer is located shall also have jurisdiction.

September 1980

II. Explanations

Analytical data

The purity of analytical grade chemicals and specialities from Riedel-de Haën is indicated in the specifications by the data of guarantee analyses which show minimum ("min.") and maximum ("max.") contents.

For the remaining chemicals (including chemically pure chemicals and chemicals for synthesis processes) grade analyses (contents without the addition of "min." or "max.") are given. The data given in these specifications are averages from analyses of individual batches.

Pharmacopoeia qualities

When the chemical name is followed by the names of pharmacopoeias, the article meets the requirements of these pharmacopoeias. These articles frequently contain smaller quantities of impurities than those permitted by the respective pharmacopoeias; in these cases typical values for the impurities are given in the

specifications. Purity testing by Riedel-de Haën does not relieve the buyer or processor of the obligation to observe the provisions of the applicable drug laws. In particular in the manufacture of solutions for injection and infusion the guidelines of the pharmacopoeias with regard to preparation, sterilization and testing for pyrogens must be taken into account.

Labels

The analytical data are also shown on the labels.

These data are valid at the time this catalogue goes to press. Any later changes are taken into account on new labels. The authoritative data for the quality of a product are the specifications on the label.

Guarantee

The quality of our products is guaranteed under our General Conditions of Sale.

Riedelbox-System

quantity ordered	quantity to be supplied
a) if less than 1 "Riedelbox"	
up to 4 packages	quantity ordered
5-6 packages	1 "Riedelbox"
b) if more than 1 "Riedelbox"	
1-2 packages more	rounded off downward
3-5 packages more	rounded off upward

If this system is not wanted, corresponding prices will be charged for single packages or boxes.

III. Quality designations

The laboratory chemicals range of Riedel-de Haën AG contains preparations in different quality grades, in accordance with the requirements of the respective fields of application:

1. PURANAL®

is the trademark for high-purity chemicals. Testing of these products for any remaining impurities in the sub-ppm range is carried out by means of the most-up-to-date methods of trace analysis. The guarantee values for these trace impurities should be regarded as being the upper limit. The actual values are in many cases appreciably lower. Although the main field of application for this range is the manufacture of semiconductors, PURANAL® chemicals are also widely used in trace analysis and in research and development.

2. Analytical reagents

Chemicals in this purity grade conform to the requirements of the analyst. The minimum ("min.") or maximum ("max.") trace impurity contents indicated in the specifications are guarantee values, the observance of which is monitored by regular detailed analytical controls. Reagents that meet the purity requirements of the American Chemical Society, the International Organization for Standardization or the reagents section of the German Pharmacopoeia (comprising DAB 8 and the 3 volumes of the European Pharmacopoeia) carry the additional designations "Reag. ACS", "Reag. ISO" or "Reag. DAB 8" or "Reag. Ph. Eur. I" respectively.

3. PESTANAL®

is the trademark of chemicals and solvents used for analysis of pesticide residues. These very highly purified solvents contain no impurities which in the gas chromatogram (ECD) yield higher readings in the relevant volume ranges than 5×10^{-10} or 5 ng/litre pentachlorobenzene, α -HCH, Aldrin or DDT respectively.

4. SPECTRANAL® chemicals

are solvents and preparations for spectroscopy. The minimum permeabilities of these products, which are obtained by special purification methods, in some cases for exceed those guaranteed in the case of the corresponding CHROMASOLV® solvents.

5. CHROMASOLV® solvents

possess guaranteed permeabilities at specific wavelengths for liquid chromatography. They are suitable for analytical and preparative separations in high-pressure liquid, thin-layer and column chromatography.

6. PROSYNTH® chemicals

are primarily preparations for organic synthesis in analytical laboratory, technical laboratory and plant. This range meets the requirement of the organic chemist for as wide as possible a range of synthesis building blocks. Special mention can be made of a large selection of organic bromine and fluorine chemicals that are in some cases difficult to synthesize. The purity of these products is indicated in the form of a standard analysis stating content and a number of physical data.

A number of chemicals are identified by a trademark or by stating the specific field of application. The products in question have thus, for example, been allocated quality designations such as BIOSYNTH®, FIXANAL®, IDRANAL® or for chromatography, for microscopy, for scintillation, for extraction analysis, indicator, hydrogenation catalyst.

IV. Hazard indications, safety recommendation and hazard symbols

Hazard identification and safety recommendation for handling chemicals

In the member states of the European Economic Community certain dangerot chemicals must be identified by hazard symbols, risk descriptions ("R" phrases) and safety recommendations ("S" phrases). The hazard symbols for these chemicals and the numbers of the appropriate "R" and "S" phrases are used on our product labels and also in our catalogue. The text represented by each number and which must be observed when handling the products concerned is given below.

We apply this identification system not only to the substances listed in the EEC directive but also to other chemicals which; in our present experience, constitute a hazard in view of their properties and the quantities handled. The absence of "R" and "S" phrases does not imply that the chemicals concerned are harmless. The usual hygiene and safety precautions for the handling of chemicals must always be observed.

Nature of the special risk attaching to dangerous substances (R-phrases)

- R 1 Explosive when dry.
- R 2 Risk of explosion by shock, friction, fire or other sources of ignition.
- R 3 Extreme risk of explosion by shock, friction, fire or other sources of ignition.
- R 4 Forms very sensitive explosive metallic compounds.
- R 5 Heating may cause an explosion.
- R 6 Explosive with or without contact with air.
- R 7 May cause fire.
- R 8 Contact with combustible material may cause fire.
- R 9 Explosive when mixed with combustible material.
- R 10 Flammable.
- R 11 Highly flammable.
- R 12 Extremely flammable.
- R 13 Extremely flammable liquefied gas.
- R 14 Reacts violently with water.
- R 15 Contact with water liberates highly flammable gases.
- R 16 Explosive when mixed with oxidising substances.
- R 17 Spontaneously flammable in air.
- R 18 In use, may form flammable/explosive vapour-air mixture.
- R 19 May form explosive peroxides.
- R 20 Harmful by inhalation.
- R 21 Harmful in contact with skin.
- R 22 Harmful if swallowed.
- R 23 Toxic by inhalation.
- R 24 Toxic in contact with skin.
- R 25 Toxic if swallowed.
- R 26 Very toxic by inhalation.
- R 27 Very toxic in contact with skin.
- R 28 Very toxic if swallowed.
- R 29 Contact with water liberates toxic gas.
- R 30 Can become highly flammable in use.
- R 31 Contact with acids liberates toxic gas.
- R 32 Contact with acids liberates very toxic gas.
- R 33 Danger of cumulative effects.
- R 34 Causes burns.
- R 35 Causes severe burns.
- R 36 Irritating to eyes.
- R 37 Irritating to respiratory system.

- R 38 Irritating to skin.
- R 39 Danger of very serious irreversible effects.
- R 40 Possible risks of irreversible effects.
- R 42 May cause sensitization by inhalation.
- R 43 May cause sensitization by skin contact.

Combination of R-phrases

- R 14/15 Reacts violently with water liberating highly flammable gases.
- R 15/29 Contact with water liberates toxic, highly flammable gas.
- R 20/21 Harmful by inhalation and in contact with skin.
- R 21/22 Harmful in contact with skin and if swallowed.
- R 20/22 Harmful by inhalation and if swallowed.
- R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
- R 23/24 Toxic by inhalation and in contact with skin.
- R 24/25 Toxic in contact with skin and if swallowed.
- R 23/25 Toxic by inhalation and if swallowed.
- R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
- R 26/27 Very toxic by inhalation and in contact with skin.
- R 27/28 Very toxic in contact with skin and if swallowed.
- R 26/28 Very toxic by inhalation and if swallowed.
- R 26/27/28 Very toxic by inhalation, in contact with skin and if swallowed.
- R 36/37 Irritating to eyes and respiratory system.
- R 37/38 Irritating to respiratory system and skin.
- R 36/38 Irritating to eyes and skin.
- R 36/37/38 Irritating to eyes, respiratory system and skin.
- R 42/43 May cause sensitization by inhalation and skin contact.

Safety precautions (S)

- S 1 Keep locked up.
- S 2 Keep out of reach of children.
- S 3 Keep in a cool place.
- S 4 Keep away from living quarters.
- S 5 Keep contents under water.
- S 5a Keep contents under paraffin oil.
- S 5b Keep contents under petroleum.
- S 6 Keep under ... (inert gas to be specified by the manufacturer).
- S 7 Keep container tightly closed.
- S 8 Keep container dry.
- S 9 Keep container in a well-ventilated place.
- S 10 Keep contents wet.
- S 11 Avoid contact with air.
- S 12 Do not keep the container sealed.
- S 13 Keep away from food, drink and animal feeding stuffs.
- S 14 Keep away from highly flammable substances.
- S 15 Keep away from heat.
- S 16 Keep away from sources of ignition – No smoking.
- S 17 Keep away from combustible material.
- S 18 Handle and open container with care.
- S 20 When using do not eat or drink.
- S 21 When using do not smoke.
- S 22 Do not breathe dust.
- S 23 Do not breathe vapour.

- S 24 Avoid contact with skin.
 S 25 Avoid contact with eyes.
 S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 S 27 Take off immediately all contaminated clothing.
 S 28 After contact with skin, wash immediately with plenty of water.
 S 28a After contact with skin, wash immediately with plenty of copper sulphate solution 2%.
 S 29 Do not empty into drains.
 S 30 Never add water to this product.
 S 31 Keep away from explosive materials.
 S 33 Take precautionary measures against static discharges.
 S 34 Avoid shock and friction.
 S 35 This material and its container must be disposed of in a safe way.
 S 36 Wear suitable protective clothing.
 S 37 Wear suitable gloves.
 S 38 In case of insufficient ventilation, wear suitable, respiratory equipment.
 S 39 Wear eye/face protection.
 S 40 To clean the floor and all objects contaminated by this material, use . . . (to be specified by the manufacturer).
 S 41 In case of fire and/or explosion do not breathe fumes.
 S 42 During fumigation/spraying wear suitable respiratory equipment.
 S 43 In case of fire, use water.
 S 43a In case of fire, use sand (Never use water).
 S 44 If you feel unwell, seek medical advice (show the label where possible).
 S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Combination of S-phrases

- S 1/2 Keep locked up and out of reach of children.
 S 3/9 Keep in a cool, well-ventilated place.
 S 7/9 Keep container tightly closed and in a well-ventilated place.

- S 7/8 Keep container tightly closed and dry.
 S 20/21 When using do not eat, drink or smoke.
 S 24/25 Avoid contact with skin and eyes.
 S 36/37 Wear suitable protective clothing and gloves.
 S 36/39 Wear suitable protective clothing and eye/face protection.
 S 37/39 Wear suitable gloves and eye/face protection.
 S 39/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Hazard warning symbols and hazard designations



Explosive



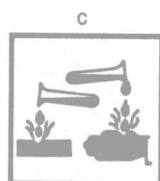
Oxidising



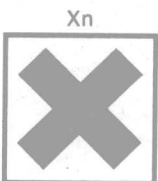
Toxic



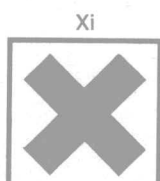
Highly flammable



Corrosive



Harmful



Irritant

V. Waste disposal procedures

Instructions for the disposal of small quantities of laboratory chemicals

Large quantities of waste chemicals must be treated as set out in the provisions of the German Disposal of Waste Materials Act (Abfallbeseitigungsgesetz). Small quantities of waste laboratory chemicals can, in some instances, be chemically converted to ecologically acceptable or even harmless compounds. Depending on their chemical properties, these substances must be modified – for example by neutralization, oxidation or reduction – in such a way that their end products, when disposed of into the waste water or to approved landfill dumping sites, do not constitute a hazard to the health of the general public or to the environment.

The working methods described hereafter are intended as a guide to assist trained staff in the disposal of small laboratory-scale quantities of harmful chemicals. We cannot accept any responsibility for the application of these methods. Local conditions and also official regulations may rule out the use of one or another of these methods.

The chemical reactions mentioned as examples are in each instance representative of a group of chemicals. They do not take into account the special properties of individual substances. In this respect, too, the described methods constitute noncommittal recommendations only. Furthermore, it is necessary to ascertain that the required conversion has gone to completion before its end products are disposed of into the waste water or to an approved landfill dumping site.

In connection with these methods we would also draw attention to the Accident Prevention Regulations and the relevant Data Sheets published by the Employers' Liability Insurance Institute of the German chemical industry (Berufsgenossenschaft der chemischen Industrie) as well as to the hazard descriptions and the safety data sheets drawn up in accordance with the German regulations on dangerous substances classification or to EEC directives, which are also stated in this catalogue.

Examples of methods for the disposal of waste chemicals

1. **Inorganic acids and acid solutions** are first diluted with water and then slowly neutralized (to pH 6–8) by adding sodium hydroxide solution (cat. No. 05211). The resultant salt solution can be usually disposed of into the waste water – possibly after further dilution. The maximum permissible concentrations should be observed.

Spillages of acids are sprinkled with excess calcium hydroxide and/or sodium bicarbonate powder (cat. No. 12038 and 13433). When the reaction has gone to completion, the spillage can be mopped up with a damp cloth and the affected area washed down with a large volume of water.

2. **Salts which react acid in aqueous solution** are, if necessary, first mixed with sodium bicarbonate or sodium carbonate powder (cat. No. 13433 or 13419), then dissolved in plenty of water and usually disposed of into the waste water in neutralized form. The maximum permissible concentrations should be observed.

3. **Inorganic, water-soluble hydroxides, alkaline solutions and organic bases** are slowly neutralized with dilute (sulphuric) acid (cat. No. 07208) and disposed of into the waste water as a dilute aqueous salt solutions (pH 6–8). The maximum permissible concentrations should be observed.

Spillages of alkaline solutions and alkaline-reacting liquids can be sprinkled with excess sodium bisulphate powder (cat. No. 13437) and mopped up with a damp cloth; the affected area should then be washed down with a large volume of water.

4. **Basic salts** are, if necessary, first mixed with solid sodium bisulphate (cat. No. 13437), dissolved in water and disposed of into the waste water as dilute, neutralized solutions (pH 6–8).
5. **Readily volatile low-hazard organic compounds** can be freely allowed to evaporate in small quantities if premises are provided with effective fume extraction equipment or evaporation is in the open air. The formation of flammable vapour/air mixtures must be avoided. Naked flames and other sources of ignition must be excluded from the site.
6. **Flammable liquids such as hydrocarbons, alcohols, esters and ketones** must be destroyed in a combustion unit with post-combustion.

Small volumes, e. g. also solvent residues, can be absorbed with filter paper or another absorbent combustible material and burnt or allowed to evaporate in an open vessel in the open air (see method 5).

For compounds of this type, recovery, e. g. by method 13, should be considered.

7. **Combustible organic halogen compounds** are mixed with sodium carbonate and/or calcium hydroxide powder (cat. No. 13419 and No. 12038) before burning them. Liquid organic halides should first be taken up with an absorbent material, sprinkled with calcium hydroxide powder and then burnt in a approved manner.
8. **These relatively non-hazardous substances** can be disposed of direct to the waste water after they have been diluted with a large volume of water. The maximum permissible concentrations should be observed.
9. **These dangerous substance are difficult to convert** and should be disposed of to a special licenced dumping site.
10. Even small amounts of these **highly toxic chemicals** are not easy to dispose of. They must therefore be deposited with an approved and controlled dumping site for toxic waste materials or collected separately for recovery.
11. These compounds, e. g. **liquid inorganic halides**, should be added with special safety precautions – behind a safety shield or in a fume cupboard – to a mixture of sodium carbonate and calcium hydroxide (cat. No. 13419 and 12038). After the reaction has gone to completion, the mixture is slowly stirred into a large volume of water and, after neutralization, generally disposed of into the waste water.
12. **These substances** are slowly poured onto ice in a laboratory fume cupboard and neutralized. After dilution the mixture can usually be disposed of into the waste water.

13. These **liquids, which generally produce toxic fumes**, should, if possible, be cleansed and recovered, e. g. by distillation. Alternatively they can be disposed of by method 5, 6 or 7.
14. The **aldehydes** are blanketed with sodium sulphite (cat. No. 13471) and then mixed with a small amount of water. After the reaction has gone to completion, the product is diluted with a large volume of water and then usually disposed of into the waste water. In certain circumstances these compounds can also be carefully evaporated or combusted in a laboratory fume cupboard (see methods 5 and 6).
15. **Nitriles and mercaptans** are oxidized with a max. 15% aqueous solution of chloride of lime (cat. No. 12103). The reaction must be assisted by prolonged vigorous stirring. The mixture should then be neutralized and well diluted before it is disposed of into the waste water.
16. **Oxidizing, combustion-supporting compounds** are thoroughly mixed with reducing agents in solid form, e. g. sodium thiosulphate or sodium sulphite (cat. No. 13481 or 13471). A small amount of water is then added with stirring. If necessary, the reaction should be accelerated by careful addition of dilute sulphuric acid (cat. No. 07208). After neutralization, the liquid can be flushed with a large volume of water into the waste water system.
17. **Metal azides and azo compounds** must be oxidized on ice with a dilute solution of ammonium cerium (IV) nitrate (cat. No. 31823). After the reaction has gone to completion, the organic phase should if necessary, be separated and combusted. The residue can be diluted with a large volume of water and then usually disposed of into the waste water.
18. **Substances dissolved** in organic solvents are disposed of by method 6 or 7; alcohol is added to increase combustibility.
19. **Amines** can be neutralized by method 3 or combusted by method 6 or 7.
20. **These compounds** must be combusted or evaporated only in small quantities and after special safety precautions have been taken (see method 5).
Alternatively they can be separately collected and recovered in accordance with method 13.
21. **Organic acids and acid halides** should be neutralized, e. g. by method 1 or 2, or combusted by method 6 or 7.
22. **Inorganic cyanides** are treated with sodium hydroxide solution (cat. No. 05211) and chloride of lime solution (cat. No. 12103), which are allowed to act for an extended period. The cyanate solution which forms can usually be disposed of to the waste water after dilution with a large volume of water.
23. Non-combustible **organic halogen compounds** should be collected and recovered by distillation. Alternatively they can be mixed with combustible solvents and burnt using method 7.
24. The **metal** content of these compounds should be recovered or converted to water-insoluble compounds. The solutions prepared, for instance, by the addition of an acid, are carefully neutralized with ammonium hydroxide solution; the metal is then precipitated as a hydroxide, carbonate or sulphate by adding suitable precipitating agents. The precipitate is washed, filtered and dried before it is recycled or disposed of to a special approved dumping site for toxic waste materials.
Small quantities can be disposed of to the waste water after they have been diluted (see also method 26).
25. Radioactive compounds – even small residues – must be carefully collected separately from other waste materials for disposal to a specially approved dumping site or for recycling.
26. To recover the **metal** content, the salt is dissolved in hydrochloric acid (cat. No. 07104); after dilution and possible neutralization, the solution is saturated with hydrogen sulphide in a fume cupboard to precipitate the metal sulphides. After washing and drying the precipitate should be either recycled or disposed of to a special approved dumping site for toxic waste materials (see also method 24).
27. **Hydrofluoric acid and inorganic fluorine compounds**, even in relatively small quantities, are treated with calcium hydroxide powder (cat. No. 12038) or milk of lime to precipitate insoluble calcium fluoride from the aqueous solution. After washing and drying, the precipitate must be disposed of to an approved dumping site. The solutions should, if necessary, be treated by method 24.
28. **Alkali and alkaline earth metals** and certain organometallic compound are first covered dry with anhydrous sodium carbonate (cat. No. 13419) Butanol (cat. No. 24124) can then be added in a fume cupboard, care being taken first to eliminate all sources of ignition. After reaction has gone to completion – on the following day – the reaction product is carefully diluted with a large volume of water and neutralized before it is disposed of into the waste water.
29. **Phosphorus and metal phosphides** are oxidized with dilute solutions of, for instance, chloride of lime (cat. No. 12103) in sodium hydroxide solutions (cat. No. 05211). Some of these substances and their reaction products are highly flammable and should be handled under a nitrogen blanket in a fume cupboard. The substances are introduced in small portions into the well-chilled oxidizing solution, which serves as the receiver. The precipitated, possibly toxic, reaction products can be combusted according to method 7.

VI. Abbreviations, conventional signs and pharmacopoeiae

B.T.N.	=	Brussels tariff number
A.	=	ampoule, vial
AL./ALU.	=	aluminium can
BA.	=	carboy
BL.	=	metal container
BLT.	=	metal drum
EKL.	=	metal can (light)
EKS.	=	metal can (heavy)
F.	=	drum
FL.	=	glass bottle
FPD.	=	plastic drum
FPF.	=	plastic drum
FTP.	=	fibre drum
K.	=	carton
KA.	=	can
PF.	=	plastic bottle
PKM.	=	plastic container
S.	=	bag
SF.	=	steel cylinder
STP.	=	drum
TS.	=	carboy in special iron drum
WG.	=	glass bottle (wide)
ZK.	=	tin can
pack	=	standard package
kg	=	kilogramme
g	=	gramme
mg	=	milligramme
ml	=	millilitre
L	=	litre
D	=	density
R.G.	=	reagent grade
GC	=	gas chromatography
ϵ	=	molar extinction coefficient
n	=	refractive index
$[\alpha]_D^{20}$	=	specific rotation
nm	=	nanometer
C.I.No.	=	number of colour index 2nd edition 1956
S.No.	=	number of Schultz' colour scale 7th edition
®	=	registered trade mark, indication that the TM is registered in one or more countries. (Names not marked are not necessarily nonproprietary names.)
1 L $\approx$... kg	=	The weight figures are given as references for calculations. They do not represent an exact scientific figure.
†	=	subject to being unsold, packing size to be cancelled

The numbers appearing below the article numbers indicate the hazard class with class code number and/or UN number (* = assimilated), including data on the pack group of the following transport regulations:

- A) RID/ADR** = Règlement international concernant le transport des marchandises dangereuses par chemin de fer/Accord européen relatif au transport international des marchandises dangereuses par route (International regulation on the transport of hazardous goods by rail/European agreement on the international transport of hazardous goods by road)
- B) GGVE/GGVS** = Gefahrgutverordnung Eisenbahn/Straße (Hazardous goods regulation rail/road)

C) IMDG-CODE (GGVSee) = International maritime dangerous goods code (Gefahrgutverordnung See/Hazardous goods regulation sea)

Class 1	=	explosive substances
Class 2	=	compressed or liquefied gases or gases dissolved under pressure
Class 3	=	inflammable liquids
Class 4.1	=	inflammable solids
Class 4.2	=	spontaneously inflammable substances
Class 4.3	=	substances which in contact with water generate inflammable gases
Class 5.1	=	substances with igniting (oxidizing) action
Class 5.2	=	organic peroxides
Class 6.1	=	poisonous substances
Class 7	=	radioactive substances
Class 8	=	substances causing chemical burns
Class 9	=	miscellaneous dangerous goods

Reference to special permit (AG)

AG 521	}	Product exempted from transport regulations
AG 38/78		

Some of the indicated flash points are from the literature. Where the RID/ADR and GGVE/GGVS classifications of a substance coincide, the common classification is expressed only under "A".

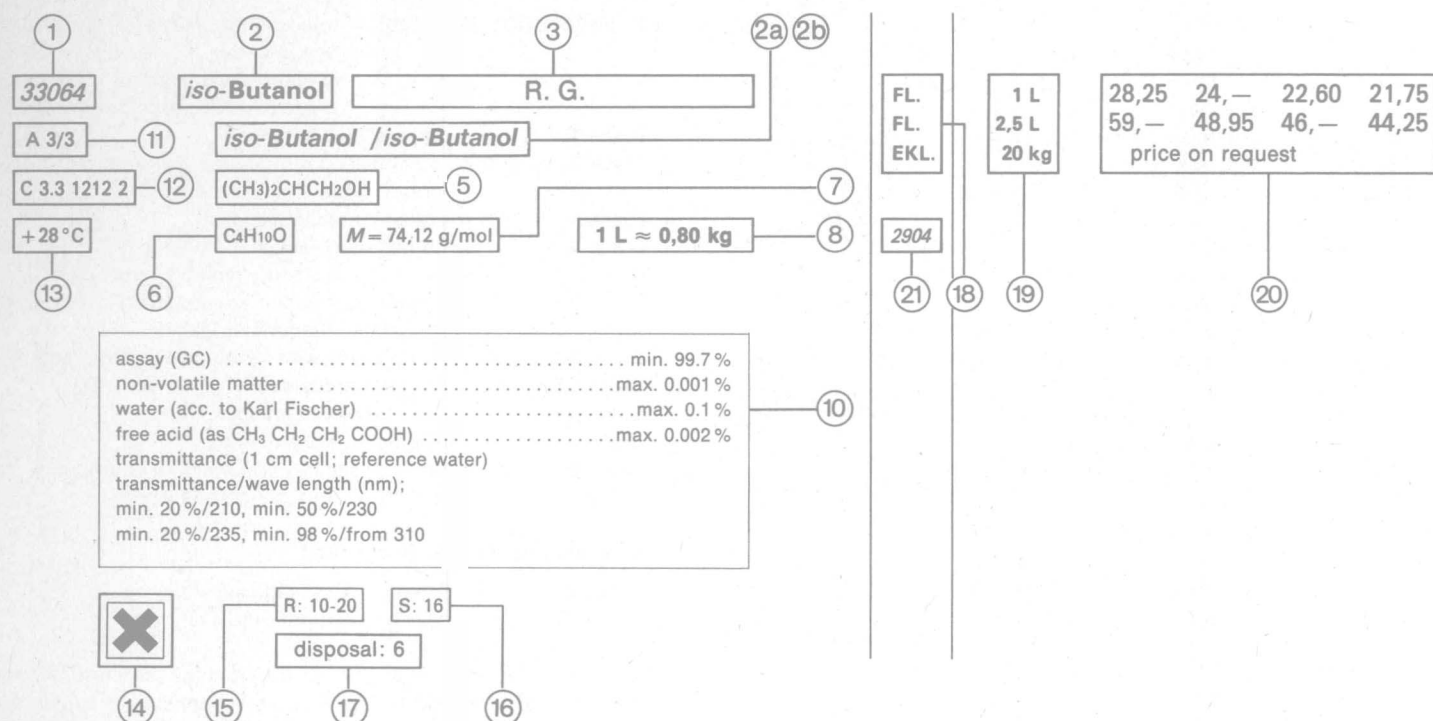
It is absolutely forbidden to ship dangerous goods by post.

Pharmacopoeiae

DAB	=	Deutsches Arzneibuch
DAC	=	Deutscher Arzneimittel Codex
Erg.B.	=	Ergänzungsbuch zum Deutschen Arzneibuch
B.P.	=	British Pharmacopoeiae
B.P.C.	=	British Pharmaceutical Codex
Cod.Franc.	=	Codes Français
N.F.	=	The National Formulary
ÖAB	=	Österreichisches Arzneibuch
Ph.Belg.	=	Pharmacopée Belge
Ph.Eur.I	=	European Pharmacopoeia, Vol I, II, III
Ph.Franc.	=	Pharmacopée Française
Ph.Ned.	=	Pharm. Nederlandica
Ph.Nord.	=	Pharm. Nordica
U.S.P.	=	United States Pharmacopoeia

This information is based on our present state of knowledge and is intended to provide general notes on our products and their uses. It should not therefore be construed as guaranteeing specific properties of the products described or their suitability for a particular application. Any existing industrial property rights must be observed. The quality of our products is guaranteed under our General Conditions of Sale.

VII. Key to text appearing on product labels



1. Reference number
2. Substance name, 2a French, 2b Spanish
3. Description of product range: general quality characteristics; indication of uses; form in which supplied; names of stabilizers.
5. Stoichiometric structural formula
6. Empirical formula
7. Relative molar mass
8. Mass of 1 litre in the case of liquids (approximate value)
10. Specifications (physical constants)
11. Hazard class (for transport under ADR/RID)
12. Hazard class IMDG Code, U.N. number and packaging group
13. Flash point
14. Danger symbol (German ArbStoffV = EEC classification of dangerous substances)
15. Risk descriptions (EEC 'R' phrases)
16. Safety recommendations (EEC 'S' phrases)
17. Instructions for the disposal of small quantities of the substance
18. Type of packaging (abbreviated description)
19. Size of pack
20. Price scale
21. Brussels Nomenclature Tariff Number (BTN)

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I. Conditions générales de vente à l'exportation

Ce tarif est destiné à la clientèle de Riedel-de Haën et ne contient que les prix auxquels Riedel-de Haën fournit la marchandise à ses clients. Dans la mesure où d'après contrat les clients revendent la marchandise fournie par Riedel-de Haën, ils ne sont aucunement liés à ce tarif dans la fixation de leurs propres cotations. Ce tarif ne contient pas non plus de recommandations pour la revente.

1. Conditions applicables

Les conditions ci-après sont applicables, sauf conditions particulières établies par Riedel-de Haën pour le pays d'origine de l'acheteur et communiquées à ce dernier; dans ce cas, les conventions particulières priment.

Les conditions générales d'achat de l'acheteur ne sont valables que lorsqu'elles sont confirmées par écrit par Riedel-de Haën.

2. Offres et commandes

Toutes les offres de Riedel-de Haën s'entendent sans engagement de sa part. Les commandes ou conventions verbales n'engagent Riedel-de Haën que dans la mesure où elles ont été confirmées par écrit ou par formulaire ou par livraison de marchandises et facturation conforme.

Riedel-de Haën n'effectue de livraison, emballage inclus, franco frontière de la République fédérale d'Allemagne ou fob Bremen, Hamburg ou Lübeck qu'à partir d'une valeur minimum de DM 1500 net. Les commandes inférieures à cette valeur ne peuvent pas être exécutées pour des raisons de rationalisation.

La mention (comme précédemment) n'engage pas Riedel-de Haën. Elle ne peut se rapporter ni à la qualité ni au prix.

Les articles qui, selon le tarif de Riedel-de Haën, sont commercialisés en qualités différentes doivent être exactement spécifiés dans la commande.

3. Facturation et règlement

Jusqu'à 30 jours avant la date de livraison convenue, Riedel-de Haën pourra modifier ses prix. En cas d'augmentation des prix, l'acheteur est en droit de résilier le contrat dans les 15 jours qui suivent la communication de cette hausse, pour la partie non encore exécutée. Le droit de résiliation n'est pas applicable si la hausse des prix résulte d'une augmentation des tarifs de transport. Pour la facturation, le poids constaté au départ de l'usine sera seul pris en considération. Les frais annexes, tels que les frais bancaires occasionnés par le virement du montant de la facture ainsi que les frais d'acquit des documents, en cas de transport maritime, seront à la charge de l'acheteur.

L'acheteur ne pourra opposer à la créance de Riedel-de Haën une compensation ou un droit de rétention que lorsque la contre-créance de l'acheteur aura été expressément ou juridiquement reconnue.

En cas de retard de règlement ou si la solvabilité de l'acheteur devient douteuse, Riedel-de Haën sera en droit, sans qu'il soit pour autant porté préjudice à ses autres droits, d'exiger des acomptes pour les livraisons à venir et le règlement immédiat de toutes les créances.

4. Livraison et réception

L'obligation de livrer de Riedel-de Haën est suspendue aussi longtemps que l'acheteur est en retard de paiement. Les dates de livraison convenues détermineront le transfert des risques à

l'acheteur. En cas de retard de livraison, imputable à Riedel-de Haën, l'acheteur peut – sous exclusion de tous autres droits – se désister du contrat ou exiger des dommages et intérêts après avoir fixé par écrit au vendeur un délai raisonnable.

Cependant, les demandes de dommages et intérêts formulées par l'acheteur, en raison de retard ou de non-exécution, sont limitées à la valeur de facturation des marchandises non livrées ou livrées en retard, à moins que la responsabilité de Riedel-de Haën ne soit pas illimitée, d'après des lois impératives, par suite de faute intentionnelle ou négligence grave.

Les perturbations dans l'exploitation, dépassement des délais de livraison ou absence de livraison imputables aux fournisseurs de Riedel-de Haën, de même que la pénurie de main d'oeuvre, d'énergie ou de matières premières, grèves, lock-out, difficultés pour trouver des moyens de transport, perturbations de trafic, décisions des pouvoirs publics et cas de force majeure dégagent la partie qui en est victime, et ses obligations de livraison ou de réception, pour toute la durée des troubles et l'étendue de leurs conséquences.

Si, du fait de tels troubles, le délai de livraison ou de réception se trouve remis de plus d'un mois, chacune des parties est en droit de résilier le contrat pour la partie non encore exécutée, à l'exclusion de toute autre revendication.

5. Expéditions

Le mode d'expédition et l'itinéraire sont fixés par Riedel-de Haën. Riedel-de Haën s'efforcera, dans la limite de ses moyens, de tenir compte des désirs de l'acheteur; les frais supplémentaires qui en résulteraient seraient à la charge de l'acheteur.

6. Transfert des risques

Sauf convention contraire, le transfert des risques à l'acheteur a lieu définitivement au moment où la marchandise quitte l'usine du vendeur ou, dans la mesure où l'acheteur ne se trouve pas en état de recevoir la marchandise, à la date à laquelle Riedel-de Haën est prêt à l'expédier.

7. Réclamations

L'acheteur doit vérifier si la qualité de la marchandise livrée est conforme aux stipulations contractuelles et si elle convient à l'usage auquel elle est destinée. S'il néglige ce contrôle ou s'il n'est pas fait comme il se doit ou si des vices apparents ne sont pas signalés à Riedel-de Haën immédiatement – et au plus tard dans les quinze jours qui suivent la réception de la marchandise – celle-ci sera réputée conforme. Les vices cachés sont considérés comme acceptés s'ils ne sont pas signalés à Riedel-de Haën dès leur constatation – et au plus tard six mois après la date d'expédition de la marchandise de son lieu de départ. Toutes les réclamations doivent être formulées par écrit avec indication des dates de commande et des numéros de facture et de bon d'expédition. Une marchandise contestée ne pourra être retournée qu'avec l'accord exprès de Riedel-de Haën.

En cas de réclamation justifiée et régulièrement formulée, Riedel-de Haën a le choix, compte tenu des intérêts de l'acheteur, entre une remise de prix, la réparation, l'échange de la marchandise ou encore sa reprise au prix d'achat. Si Riedel-de Haën ne remplit pas cet engagement, l'acheteur est en droit de choisir entre ces possibilités. Les autres revendications de l'acheteur – pour autant que ce soit légalement admis – sont exclues, notamment en ce qui concerne le dédommagement de préjudices autres que ceux survenus à la marchandise elle-même.

8. Responsabilité, résolution

L'acheteur ne pourra résilier le contrat ou prétendre à des dommages et intérêts que dans la limite et pour les cas stipulés aux présentes conditions; une plus ample responsabilité de Riedel-de Haën – pour quelque raison juridique que ce soit et même s'il y a violation des obligations contractuelles accessoires ou agissements illicites – est exclue, à moins que Riedel-de Haën ne soit entièrement responsable, suivant les lois en vigueur, pour faute intentionnelle ou négligence grave.

9. Réserve de propriété

Les marchandises livrées ne deviennent la propriété de l'acheteur que lorsque celui-ci a rempli toutes les obligations prévues dans les conventions commerciales réciproques. L'acheteur est tenu de coopérer à toutes mesures que Riedel-de Haën désire prendre quant à la protection de sa propriété sur la marchandise livrée. Si des tiers justifient ou font valoir leur droit sur la marchandise, l'acheteur doit en informer immédiatement Riedel-de Haën.

10. Marques

Si des produits identifiés par une marque sont reconditionnés, transformés ou mélangés à d'autres substances, etc., lesdites marques ne peuvent être utilisées en corrélation avec les produits reconditionnés ni fabriqués par l'acheteur qu'avec l'autorisation expresse, écrite et préalable du titulaire de la marque.

11. Conditionnement

Les récipients et emballages non-retour ne peuvent être réutilisés par Riedel-de Haën qu'une fois rendus méconnaissables les raisons sociales et symboles ainsi que les marques et désignations. Il incombe à la responsabilité de l'utilisateur de tenir compte des prescriptions concernant le conditionnement. Pour les grands récipients dépassants 5 kg/l des conditions d'emballage complémentaires de Riedel-de Haën sont appliquées.

12. Incoterms

En complément des présentes conditions, les incoterms, édités par la Chambre de Commerce Internationale de Paris, sont valables dans la dernière version en vigueur au moment de l'exécution de la commande.

13. Droit applicable et compétence juridique

Tous les contrats de vente sont régis par le droit applicable au lieu du siège principal de Riedel-de Haën. A moins que des prescriptions légales et contraignantes ne s'y opposent, la juridiction compétente sera celle du lieu du siège principal de Riedel-de Haën; pour les revendications de Riedel-de Haën, la juridiction compétente peut être celle du siège principal de l'acheteur.

Septembre 1980

II. Explications

Indications analytiques

La pureté des produits chimiques pour l'analyse des qualités spéciales de Riedel-de Haën est décrite par l'indication d'analyses de garantie – teneur minimale («min.») et teneur maximale («max.») dans les spécifications.

Pour les autres produits chimiques (entre autres ceux chimiquement purs et ceux pour la synthèse), on indique des analyses type (teneurs sans additif «min.» ou «max.»). Les indications figurant dans ces spécifications sont des valeurs moyennes résultant des analyses des différents lots.

Qualités pharmaceutiques

Lorsque la désignation des produits chimiques est accompagnée d'une indication d'une pharmacopée, l'article en question correspond aux exigences de ladite pharmacopée. Ces articles contiennent fréquemment des quantités d'impuretés plus faibles que celles autorisées par les pharmacopées respectives; les spécifications indiquent dans ces cas des valeurs spécifiques pour les

impuretés. Le contrôle de pureté effectué par Riedel-de Haën ne dispense pas l'acheteur ou le transformateur d'observer lui-même les dispositions des lois sur les produits pharmaceutiques valables de cas en cas. Notamment lors de la fabrication de solutions destinées à l'injection et à l'infusion, il est recommandé de tenir compte des directives des pharmacopées en matière de préparation, de stérilisation et de pyrogénéation.

Étiquettes

Les indications analytiques figurent aussi sur les étiquettes. Elles correspondent à la situation valable au moment de l'impression de ce catalogue. D'éventuelles modifications seront prises en considération sur les nouvelles étiquettes. Les spécifications figurant sur l'étiquette sont déterminantes pour la qualité d'un produit.

Garantie

La garantie dépend de nos conditions générales de vente.



Riedelbox-Système

Quantité commandée:

1 à 4 emballages

5 à 6 emballages

1 à 2 emballages en plus de «Riedelbox» complets

3 à 5 emballages en plus de «Riedelbox» complets

Quantité livrée:

quantité commandée

1 «Riedelbox», soit 6 emballages

diminution à des «Riedelbox» complets

augmentation à des «Riedelbox» complets

Dans le cas où ce système ne serait pas être demandé nous facturerions les prix correspondants des «Riedelbox» et des unités.

III. Qualifications

La gamme des produits chimiques pour laboratoire de Riedel-de Haën AG comprend des produits en différents degrés de pureté, conformément aux exigences des domaines d'application respectifs:

1. PURANAL®

est la marque déposée pour les produits chimiques de haute pureté. L'examen de ces produits en vue de déterminer des impuretés résiduelles encore présentes de l'ordre du sup-ppm s'effectue suivant les méthodes analytiques les plus modernes pour oligoéléments. Les valeurs indiquées dans la garantie doivent être considérées comme valeurs maximales de ces traces d'impuretés. Les valeurs réelles sont souvent très sensiblement inférieures. Le domaine d'application principal de cette gamme est la fabrication des semi-conducteurs, mais les produits chimiques PURANAL trouvent aussi une vaste application dans l'analyse des oligo-éléments, la recherche et le développement.

2. Réactifs pour analyse

Les produits chimiques de ce degré de pureté répondent aux exigences des analystes. Les teneurs minimales («min.») ou maximales («max.») en traces d'impuretés indiquées dans les spécifications sont des valeurs garanties dont la stricte observation est surveillée par des contrôles analytiques approfondis et réguliers. Les réactifs répondant aux exigences de pureté de l'American Chemical Society, de l'International Organisation for Standardization ou de la partie concernant les réactifs de la pharmacopée allemande (comprenant la DAB 8 ainsi que les 3 volumes de la pharmacopée européenne) sont munis des références complémentaires «Reag. ACS», «Reag. ISO» ou «Reag. DAB 8» ou «Reag. Ph. Eur. I».

3. PESTANAL®

est la marque déposée pour les produits chimiques et pour les solvants utilisés pour l'analyse des résidus de pesticides. Ces solvants, ayant subi une purification très poussée, ne contiennent pas d'impuretés provoquant dans les plaques volumiques de rétention correspondantes des signaux plus grands que $5 \times 10^{-10}\%$ ou 5 ng/l de pentachlorobenzène, d' α -HCH, d'aldrine ou de DDT.

4. Les produits chimiques SPECTRANAL®

sont des solvants et des produits pour spectroscopie. Les perméabilités minimales de ces produits obtenues par application de procédés spéciaux de purification dépassent en partie considérablement celles garanties chez les solvants CHROMASOLV® correspondants.

5. Les solvants CHROMASOLV®

pour chromatographie en phase liquide ont des perméabilités garanties pour certaines longueurs d'onde. Ils conviennent aux séparations analytiques et aux séparations en vue de préparer des produits se basant sur la chromatographie sur colonne, en couches minces ou en phase liquide sous haute pression.

6. Les produits chimiques PROSYNTH®

sont en premier lieu des produits destinés à la synthèse organique en laboratoire, en atelier-pilote et en atelier. Cette gamme répond aux desiderata de l'organicien souhaitant disposer d'un éventail aussi large que possible d'éléments de synthèse. Il faut souligner particulièrement le grand choix des produits chimiques bromés et fluorés en partie difficiles à obtenir. La pureté de ces produits est caractérisée par leur analyse indiquant la teneur ainsi que quelques données physiques.

Un certain nombre de produits chimiques sont caractérisés par une marque ou par l'indication du domaine d'application spécial. C'est ainsi que les qualifications telles que BIOSYNTH®, FIXANAL®, IDRANAL® ou pour chromatographie, pour microscopie, pour scintillation, pour analyse par extraction, pour indicateur, pour catalyseur d'hydrogénation sont affectées aux produits correspondants.