

# Product Information

Chemotrade GmbH



Radioactive & Stable Isotopes



# Introduction



Chemotrade GmbH



Since 1989, Chemotrade GmbH has been the trusted supplier of stable and radioactive isotopes, and other engineered materials, to the leading names in Europe's research community, as well as to manufacturers of medical devices, radiopharmaceuticals, scientific instruments, industrial sources and calibration standards. Offering a product catalogue of over 100 accelerator and reactor produced isotopes in addition to a comprehensive list of stable isotopes, Chemotrade provides its Customers an on-time and reliable supply of high grade materials in a streamlined manner, enabled by well-established and efficient logistics.

With headquarters in Düsseldorf, Germany and affiliate commercial offices and support laboratories in Berlin and Los Angeles, USA, Chemotrade is a prominent and accessible presence in the world isotope markets. The company benefits from network of over three dozen manufacturing partners in ten nations for its supply of primary materials. Working in close coordination with its partners, Chemotrade is able to tailor products to its Customer's specific technical requirements. Three decades of industry experience endow Chemotrade with a command of international transportation logistics for radioactive materials, thus assuring Customers of punctual deliveries.



## Cyclotron Produced Radioactive Isotopes

Beryllium 7
Bismuth 207
Cadmium 109
Cerium 139
Cobalt 56
Cobalt 57
Gallium 67
Germanium 68
Gold 195
Indium 111

Iron 55
Palladium 103
Sodium 22
Strontium 85
Thallium 201
Titanium 44
Tungsten 181
Yttrium 88
Zinc 65

## Reactor Produced Radioactive Isotopes

Aluminum 26
Americium 241, 242, 243
Antimony 124
Arsenic 76
Barium 131, 133
Berkelium 249
Bromine 82
Cadmium 109, 115
Calcium 45
Californium 249, 252
Carbon 14
Cesium 131, 134, 137
Chromium 51
Cobalt 58
Cobalt 60
Copper 64
Curium 244
Curium 244, 245, 248
Europium 152, 152+154
Gadolinium 153
Gold 198
Holmium 166
Indium 114m
Iodine 125, 131
Iodine 129
Iridium 192
Iron 55, 59
Krypton 85
Lanthanum 140
Lutetium 177
Manganese 54

Molybdenum 99
Neodymium 147
Neptunium 237
Nickel 63
Phosphorus 32, 33
Plutonium 242
Polonium 210
Radium 226
Rhenium 186
Rubidium 86
Ruthenium 103, 106
Samarium 153
Scandium 46
Selenium 75
Silver 110m
Sodium 22, 24
Strontium 82, 89, 90
Sulfur 35
Technetium 99
Terbium 160
Thallium 204
Thulium 170
Tin 113, 119m
Tungsten 188
Uranium 232
Uranium 236
Xenon 127
Xenon 133
Ytterbium 169
Yttrium 90
Zinc 65

## Stable Isotopes

Antimony 121, 123
Argon 36, 38, 40
Barium 130, 132, 134, 135, 136, 137, 138
Cadmium 106, 108, 110-114, 116
Calcium 40, 42, 43, 44, 46, 48
Carbon 13
Cerium 136, 138, 140, 142
Chromium 50, 52, 53, 54
Copper 63, 65
Deuterium 2
Dysprosium 156, 158, 160, 161, 162, 163, 164
Erbium 162, 164, 166, 167, 168, 170
Europium 151, 153
Gadolinium 152, 154, 155, 156, 157, 158, 160
Gallium 69, 71
Germanium 70, 72, 73, 74, 76
Hafnium 174, 176, 177, 178, 179 180
Indium 113
Iridium 191, 193
Iron 54, 56, 57, 58
Krypton 78, 80, 82, 83, 84, 86, 124, 126, 128, 129
Lanthanum 138, 139
Lead 204, 206, 207, 208
Lithium 6, 7
Lutetium 175, 176
Magnesium 24, 25, 26

Molybdenum 92, 94, 95, 97, 98, 100
Neodymium 142, 143, 144, 145, 146, 148, 150
Nickel 58, 60, 61, 62, 64
Osmium 184, 186-190, 192
Oxygen 18
Palladium 102, 104, 105, 106, 108, 110
Potassium 39, 40, 41
Rhenium 185, 187
Rubidium 85, 87
Samarium 144, 147, 148, 149, 150, 152, 154
Selenium 74, 76, 77, 78, 80, 82
Silicon 28, 29, 30
Silver 107, 109
Strontium 84, 86, 87, 88
Sulfur 32, 33, 34, 36
Tellurium 120, 122, 123, 124, 128, 130
Thallium 203, 205
Tin 112, 116, 117, 118, 119, 120, 122, 124
Titanium 46, 48, 49, 50
Tungsten 180, 182, 183, 184, 186
Vanadium 50, 51
Xenon 124, 126, 128-132, 134, 136
Ytterbium 168, 170, 171, 172, 173, 174, 176
Zinc 64, 66, 67, 68, 70
Zinc-depleted
Zirconium 90, 91, 92, 94, 96

## Stable Isotopes in Gas Form

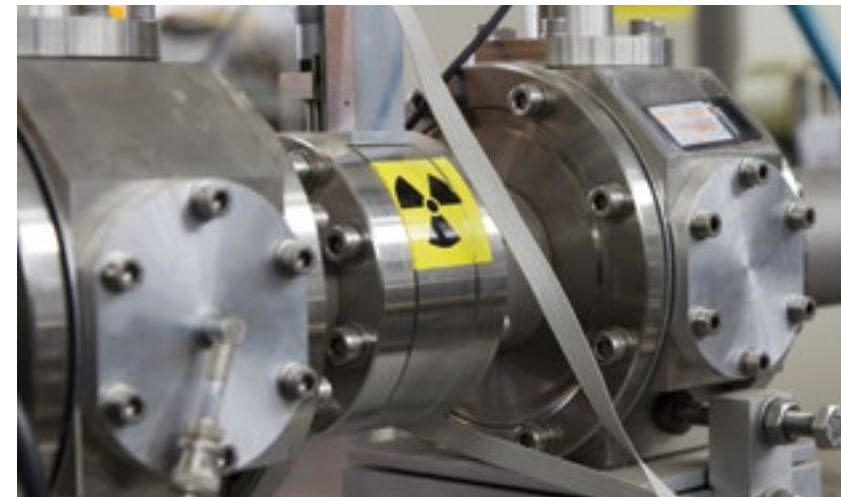
Carbon 13
Deuterium
Helium 3
Krypton 78, 80, 82, 83, 84, 86
Neon 20, 22
Nitrogen 15
Oxygen 18
Xenon 124, 126, 128-132, 134, 136

## Mössbauer Sources

Cobalt 57 Rh, Pd, Pt, Cr
Tin 119m CaSnO3



# General Information



## License Requirements

A copy of the Customer's radiation handling license, issued by the Customer's State regulatory authority, is required for processing of all orders of regulated materials. In addition, International Customers may be required to provide an End-use Statement, as required by law (forms may be provided by Chemotrade).

Compliance with applicable local, national and international regulations concerning possession and use of radioactive materials is the responsibility of the Customer.

## Availability

Most catalogue items are typically shipped in 14 to 45 days from the receipt of the Customer's order. More precise shipping information will be provided at the time of order placement. First orders may be subject to additional delay if special export authorizations are required by the government of the country of manufacture of the ordered material.

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## Shipping

Shipments are expedited ex-works (Free On Board) from the international airport located in the country of origin or from a Chemotrade facility in Europe or the USA. Unless otherwise agreed with the Customer and arranges transportation and Customs clearance and delivery to the Customer site, pre-paying associated transport costs. These charges may be included in unit pricing or may be added as line items for reimbursement on the Customer invoice.



# Terms & Conditions

## General Business and Delivery Terms and Conditions

### 1 GENERAL

(1) These "General Business and Delivery Terms and Conditions of Chemotrade GmbH" (hereinafter referred to as "Terms and Conditions") are a direct component of the contractual agreements concluded between the company and our customers regarding our services. Unless otherwise agreed, all offers, acceptances and services are conducted exclusively on the basis of these Terms and Conditions. Within the frame-work of an existing business relationship with the customer, the Terms and Conditions are also part of the agreement even if we do not once again expressly make reference to their inclusion.

(2) The following applies to existing agreements: The customer will be notified in writing of amendments to these Terms and Conditions. If the customer agreed to correspond with us via an electronic communication channel within the framework of the business relationship, the amendments may also be communicated in this way, if the type of communication allows the customer to save or print out the amendments in a readable format. They are considered approved if the customer does not object in writing or in any other agreed electronic mode of communication. The notification will include explicit reference to this consequence. The customer must send us the objection within six (6) weeks of the notification of amendment.

(3) Deviating terms and conditions of the customer are hereby objected to; these are also not deemed to be accepted during execution of the agreement. Sentence 1 also applies to possible provisions on contractual penalties. Other agreements, in particular guarantees, amendments and supplementary agreements, only take effect if we expressly agree to such.

### 2 OFFERS/ORDERS

(1) Our offers are non-binding and subject to change unless otherwise indicated in the offer.

(2) Drawings and images, if any, included as part of the offer are to be regarded as approximate only unless otherwise expressly designated as binding in the offer. Offers are subject to changes that are standard in the industry as well as changes that represent technical improvements provided that the use as stipulated in the contract is not impeded.

(3) We retain ownership of all offer documents. The offer documents may not be duplicated or made accessible to third parties without our consent. Copyright and other rights to intellectual property remain unaffected.

(4) The agreement takes effect only upon written order confirmation by us. If an order confirmation is not sent, the agreement takes effect upon delivery of the goods and our invoice subject to all necessary import and/or export permits. The agreement only takes effect if the customer presents the permit required for handling radioactive substances and/or the standard declaration from its competent authorities as per EC Regulation No. 1493/93 for handling radioactive substances outside of Germany and within the EU. With regard to outside the EU, the agreement also only takes effect upon presentation of the required permit for handling radioactive substances pursuant to the country's law. The permit must be submitted in German or English. Any costs related to the submission of the permit are borne by the customer.

(5) As far as the order, and thus the production of the goods, is based on the customer's request before the required permission and/or proof of the handling permit has been presented, the customer bears all risks associated with the agreement not being concluded as per § 2 (4).

(6) If an increase in our production costs occurs between conclusion of the contract and delivery (e.g. due to increased material or salary costs, exchange rate changes for imported goods, tax increases, etc.), we are entitled to adjust the prices accordingly.

### 3 DELIVERY AND SHIPPING CONDITIONS

(1) Dates and deadlines for deliveries and services are to be regarded as approximate only unless such have been agreed upon in writing. With regard to the start date of deadlines for deliveries and services, the date of our order confirmation or the receipt of payment in cases where the customer is obliged to issue advance payment shall prevail. If fixed delivery dates are agreed upon, we hereby object to provisions of the customer regarding possible contractual penalties in the case of non-compliance with the delivery date.

(2) The customer must ensure that the acceptance of goods is performed by an authorized recipient according to the current valid legal provisions, including as per the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).

(3) If the delivery is delayed for reasons that the customer is responsible for, delayed acceptance and transfer of performance risk takes effect as soon as we inform the customer that the shipment is ready for delivery. We are entitled to invoice the customer for all incurred costs, e.g. related to storage. Sentence 2 also applies if the delivery is delayed because the necessary permission and/or proof of handling permit are not available.

(4) The customer is entitled to withdraw from the agreement pursuant to the statutory provisions only if we are responsible for the delay in delivery and the customer sets a reasonable deadline for delivery according to the legal provisions and we do not comply with this deadline. The right to withdraw from the agreement according to Sentence 1 is excluded if the customer is solely or predominantly responsible for the circumstance that would entitle the customer to withdraw, or when the circumstance arises at a point in time at which the customer is in default of acceptance. Claims for damages are excluded in the above cases. We are obliged to notify the customer immediately in every event of lack of availability of deliveries and services.

(5) Excess or shortfalls in deliveries that are standard in the industry are permissible as far as a specific amount is not required. Partial deliveries are also permissible to a reasonable extent. In this context, each partial delivery is considered an independent legal transaction.

(6) Upon conclusion of the contract, the customer commissions us with shipment or transport of the goods on behalf of the customer. This does not apply if the customer objects in writing to the shipment/transport by us within one week of receipt of our order confirmation.

(7) The Incoterms 2010 agreed in the order confirmation apply. If the delivery is delayed for reasons that the customer is responsible for, the risk is transferred to the customer from the point at which the shipment is ready for dispatch.

(8) Packaging provided by us is to be used for shipping radioactive substances and other goods. We charge a usage fee if packaging on loan is used. The packaging on loan is to be returned to us within 30 days of shipment free of carriage charges to the address stipulated by us. If the loan duration as per Sentence 2 is extended, a loan fee will be charged for each month commenced. Returned packaging must be free of radioactive contamination. The customer is liable for all damages caused by improper handling or any decontamination expenses related to external contamination. Collection costs and additional costs incurred as a result of damages to the containers will be invoiced to the customer.

(9) Shipping takes place in accordance with the legal provisions regarding the transport of dangerous goods. We reserve the right to select the shipping route and mode of shipment. Incurred additional costs based on customer requests will be charged to the customer.

### 4 PRICES AND PAYMENT CONDITIONS

(1) The pricing for the agreed services is formed on the basis of our respective valid price list unless customer-specific price agreements exist. Our prices apply in accordance with Incoterms 2010. Prices are exclusive of the applicable value added tax (VAT). Costs for packaging, shipping, customs, transport and insurance costs, import and export taxes and other taxes will be charged separately.

(2) Remuneration is to be paid within 30 days of the invoice date without deductions unless otherwise agreed.

(3) In the event of customer payment default, we are entitled to apply default interest at the statutory rate until payment has been made in full. The assertion of further claims for damages is hereby not excluded.

(4) Regardless of the customer's provisions stating otherwise, we are entitled to first apply payments to the customer's earlier debts. The customer is only entitled to exercise its rights of retention or to offset if its counterclaim has been legally established by a court of law, is uncontested or is recognized by us in writing. The assertion of rights of retention that is not based on the same contractual relationship is excluded.

(5) The customer's payment obligation does not lapse if the goods cannot be delivered for reasons that the customer is responsible for and that are not subject to § 3 (3). This applies particularly in the case that documents which provide evidence of the authorization of the customer or of a third party supplied by the customer to receive the goods were not submitted to us or were not submitted in full or within the deadline.

### 5 RETENTION OF TITLE

(1) We reserve the right to retain ownership of the goods ("Retained Goods") until the purchase price has been paid in full even if the goods are to be built into equipment or are to be transferred (extended retention of title).

(2) In the event of customer payment default, we are entitled to prohibit the customer from using Retained Goods or to take them back. Taking back the goods represents a withdrawal from the agreement only if we expressly declare such in writing. Additional costs arising from taking back the goods will be invoiced to the customer. Additional costs within the meaning of Sentence 3 include costs related to verification of receipt, assessment or disposal.

(3) Any processing of Retained Goods by the customer will be conducted exclusively on our behalf without any resulting obligation for us. Retained Goods also remain our property if they have been processed. Sentence 2 also applies to Retained Goods which have been processed into a new item.

(4) Retained Goods also include independent detachable installations or installations with special rights if Retained Goods are combined with items of the customer or a third party. If Retained Goods are combined with items that do not belong to the customer, or if the special rights are lost, we acquire joint ownership of the new item proportionate to the value of Retained Goods to the other combined items at the time of combination.

(5) If the customer is not in default, the customer is entitled to sell Retained Goods within the framework of ordinary business. The customer, however, assigns to us the claims to which it is entitled arising from the sale including all supplementary agreements. The customer is to ensure that the resulting claims are transferred to us. The customer is entitled to call in the surrendered claims in its own name and on its own account until revoked. Provided that the customer fulfills its payment obligations arising from the business relationship, we are not entitled to revoke this authorization. If the conditions for revocation exist and we have issued declaration of such, the customer is obliged to notify us of the unpaid claims and their debtors, to provide the information required for collection and to notify the debtor of the assignment without delay.

(6) If a third party gains access to Retained Goods, in particular by means of seizure of assets, the customer will notify the third party of our ownership of Retained Goods and inform us without delay. The customer is not permitted to pledge or assign Retained Goods as security.

### 6 WARRANTY

(1) We guarantee that the goods delivered are free of material defects at the time of transfer of risk. The goods are free of material defects if they are of the contractually agreed quality. If we are obliged to assemble the goods, a material defect also exists if the assembly is not conducted properly. We also guarantee that services are performed in proper professional quality.

(2) Warranty is excluded for goods that have been repaired or changed by parties other than those authorized by us, have been improperly used or subject to an infringement of duty of care or an accident, or have been operated, maintained or inspected in a manner contrary to the operating instructions provided by us.

(3) The goods delivered are to be inspected with due care for obvious defects by the customer without delay upon receipt. The goods are deemed approved if we do not receive a written notification of defects within three (3) calendar days after receipt. If defects could not be detected despite diligent inspection, this deadline shall apply after the defect is detected. It is mandatory that damages to the packaging and other recognizable transport damages to the goods are reported to the carrier, freight forwarder or other person commissioned to perform the shipment at the time of delivery. Defects that are not obvious are to be reported in writing without delay upon appearance, at the latest, however, within one year of transfer of risk. § 377 of the German Commercial Code (HGB) also applies.

(4) With regard to defects, we are obliged at our discretion to either eliminate defects or to deliver goods free of defects within a reasonable deadline. The customer is entitled to withdraw from the agreement or reduce the purchase price only if this subsequent performance is unsuccessful or is not performed within a reasonable deadline.

### 7 LIABILITY

(1) Our liability regarding claims for damages, in particular based on the infringement of obligations arising from this contractual relationship as well as on the basis of statutory provisions, is limited in cases of slight negligence to compensation for typical, foreseeable damage, as far as this does not involve a breach of fundamental contractual obligations (essential obligations). The restriction is also not applicable to injury to life, limb or health of persons as well as to cases of strict no-fault liability as defined by law. The above-stated liability restriction applies to the same extent for the personal liability of our legal representatives and agents.

(2) Unless other limitation periods are mandatory under the law, the limitation period for liability claims against us is one (1) year, which commences upon the statutory start date of the limitation period.

### 8 FORCE MAJEURE/CANCELLATION OF PERMITS

(1) In cases of force majeure, or other hindrances that are not foreseeable at the conclusion of the agreement or for which we are not responsible, which significantly impede or make it impossible to render delivery and services, and in the event that the duration of the hindrance is not temporary, we are entitled to withdraw from the agreement without penalty. In the event of temporary hindrance, the deadlines and dates of deliveries and services are extended or postponed by the duration of the hindrance plus an appropriate lead time. Cases of force majeure particularly include labor disputes, serious transportation disruptions or operational disruptions of any kind, difficulties in procuring materials, electricity, or deliveries from suppliers, governmental measures and natural disasters.

(2) If the official permits which are required for the performance of our services are cancelled, we are entitled to revoke binding orders and withdraw from agreements without penalty.

### 9 DETERIORATION OF CUSTOMER'S FINANCIAL SITUATION

(1) If, after conclusion of the agreement, we become aware of circumstances that call the customer's solvency into question, we are entitled to request full payment or an appropriate security before further execution of the contract, or to withdraw from the agreement after providing a reasonable deadline for the full payment or security.

(2) Circumstances that call the customer's solvency into question particularly include repeated seizure of assets or other enforcement measures and the opening of insolvency proceedings.

### 11 FINAL PROVISIONS

(1) The place of jurisdiction for all disputes arising from the contractual relationship is the registered office of our company.

(2) Our legal transactions with the customer are subject exclusively to the laws of the Federal Republic of Germany. The UN Convention on Contracts for the International Sale of Goods (CISG) does not apply.

(3) If individual provisions of these Terms and Conditions are or become ineffective in part or in whole, the effectiveness of the other provisions shall remain unaffected. A legally effective provision that comes as close as possible to the economic purpose intended by the ineffective provision as far as legally permissible shall be deemed agreed upon to replace the ineffective provision or ineffective part of the provision. This also applies in the event that the agreement is incomplete.



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