

KEY INTERMEDIATES 2017

(1st edition, valid from April 1st, 2017)



Ionic Liquids Technologies GmbH

Salzstraße 184
D-74076 Heilbronn
Germany
Phone: +49-(0)-7131-89839-0
Fax: +49-(0)-7131-89839-109
Email: info@iolitec.de
Internet: www.iolitec.de

IOLITEC – The Company

IOLITEC, founded in May 2003, is an award-winning, dynamic, innovative and goal-oriented company whose activities go far beyond the production and sale of ionic liquids and nanomaterials. With more than **3000 customers** and **6'500 readers** of our **email bulletin "Ionic Liquids Today"**, we are one of the **global leading specialized companies in the field of ionic liquids** and **leading experts in the field of nano-dispersion technology**.



IOLITEC's HQ @ Heilbronn, Germany.



Batch production on the ton's scale.



IOLITEC @ Tuscaloosa, USA (Sales).



Quality control for best quality.



Continuous-flow-production.



High-quality ionic liquids.

With **solid experience in project management** and a **skilled team** of currently eight PhD-level chemists and engineers IOLITEC is in the strong position to give **reliable answers** and to deal with customer requests from many different sectors in a professional, efficient and goal-oriented way. Our **services include consulting and feasibility studies** as well as the development of marketable products and applications based on ionic liquids. For these purposes we can utilize a **compound library** of more than **600 ionic liquids** and an **extensive database of physical and chemical properties** compiled from data published in scientific journals and checked as well as supplemented with our own numerous measurements.

Our Philosophy

IOLITEC is with all consequences a customer-oriented company: The customer is in the center of all our activities.

IOLITEC enjoys working hand in hand with customers and partners in a friendly and open, but also focused way. Requests are handled always confidential and they are processed fast. We like to give reliable scientific answers on the highest possible level.

IOLITEC collects, measures, interprets and refines physico-chemical data of ionic liquids, following our philosophy to present our customers necessary information to design or to construct methods, processes or devices using ionic liquid technology.

IOLITEC is driven by technology and innovation. Based on reliable data, we identify by our own research or by co-operations with partners new applications and technologies. In co-operations, we share our knowledge with partners openly and combine it in interdisciplinary research. We define ourselves as specialists in translating selected properties into the molecular structure of ionic liquids.

IOLITEC wants to combine the best available quality with reasonable prices. Our customers shall have as soon as possible a monetary benefit, if we identified more efficient synthetic methods or if we scaled up our capacities.

IOLITEC is an independent producer, supplier and distributor of ionic liquids. We like to present our customers the broadest variety of materials, covering the most common classes of ionic liquids. These facts enable our customers to choose the most suitable products for their specific needs from our comprehensive portfolio. We offer those materials, which are not part of our actual portfolio, as custom synthesis, as long as IP of others is not infringed.

Our Products & Services

On our site at Heilbronn, Germany, we operate at well-equipped research and production facilities. The implementation of **state-of-the-art microreaction technology** enables IOLITEC to produce selected ionic liquids in a **continuous-flow-process** in quantities **of up to 250 kg per week** while meeting the highest quality standards.

IOLITEC offers today

- a standard portfolio of more than **300 selected ionic liquids**,
- **ionic-liquid-test-kits** for screening purposes,
- **50** ionic liquid related **key intermediates**,
- **custom syntheses** of those compounds that are not covered by IPR of third, and
- **custom R&D** based on our ionic liquid technology (on request exclusivity is possible).

IOLITEC's materials are available from the lab-scale (25 g to 5 kg) up to bulk quantities (>5 kg to 5 metric tons) for industrial applications.

Co-operations

IOLITEC has put a strong focus on R&D services and custom syntheses in the field of ionic liquids since its formation in 2003. IOLITEC works with partners not only in the chemical industry but also in many other different sectors, e.g. engineering, electrical and automotive industries. IOLITEC's international customers are small and medium-sized companies as well as global players.

IOLITEC's own expertise is complemented by the company's close collaborations with various institutes of the Fraunhofer Gesellschaft and a number of leading research groups at universities in Europe and abroad. This network enables IOLITEC to offer a wide range of analytical methods and measurements at competitive rates. As an independent company, IOLITEC can guarantee its customers unconditional confidentiality and the best product at the best price.

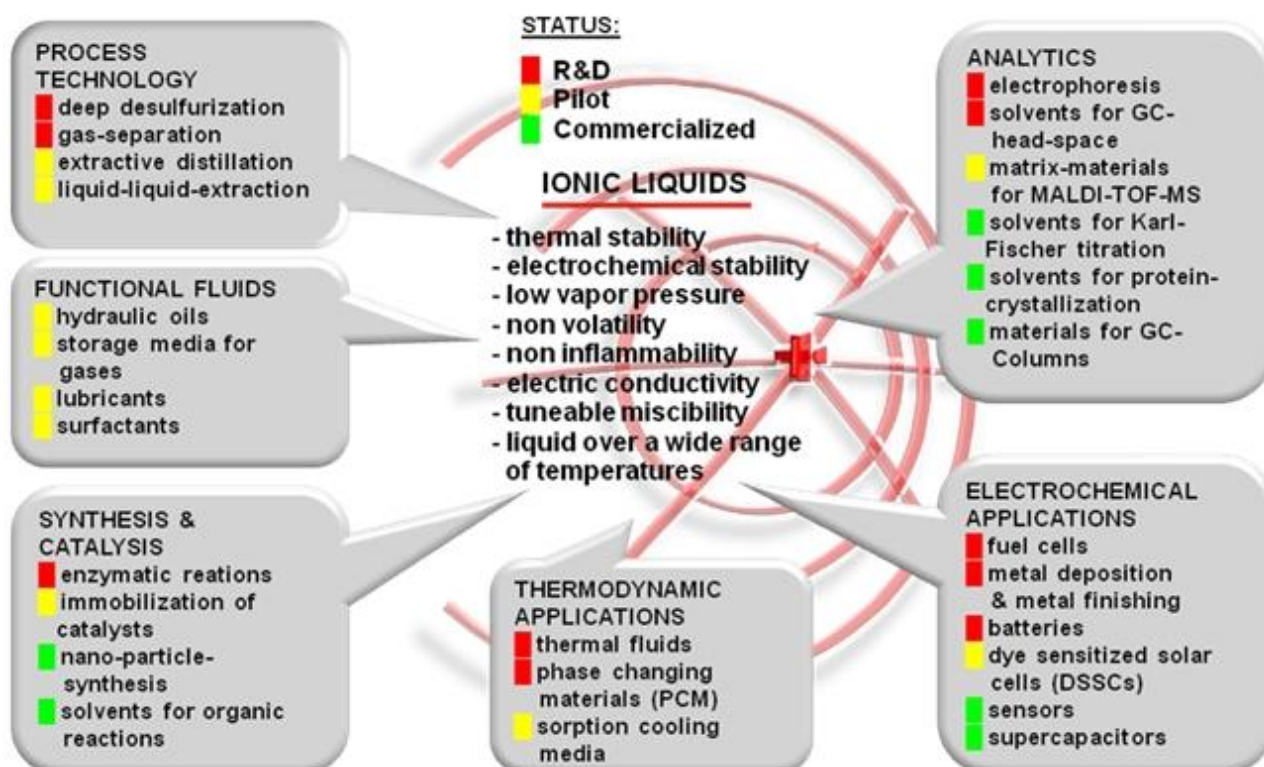
In addition to R&D services and custom syntheses, IOLITEC actively pursues its own internal R&D projects to identify new applications and open up new markets for ionic liquids and products derived therefrom. In order to protect its ideas and products IOLITEC has already filed seven patent applications in different fields and holds the rights for five registered trademarks.

Applications

Today a number of potential applications of ionic liquids were described in literature and a couple of are already realized in industrial applications. As mentioned above, we identify new applications by our own research activities based on our core-technology.

We summarized interesting applications in our Application Sheets that are available on request. The following Application Sheets are available:

- Solvents Karl-Fischer-Titration
- Protein Crystallization
- Electrolytes for Lithium- and Lithium-ion-batteries
- Ready-to-use electrolyte for Dye Sensitized Solar Cells
- Electrodeposition
- Ionic Liquids for Inorganic Synthesis and Stabilization of Nanoparticles
- Ionic Liquids in Polymer Chemistry
- Weakly Coordinating Anions
- Organic Synthesis



Information available at

www.iolitec.de

Trading units

IOLITEC offers its products in **standard quantities**. Trading units other than those given in this publication are not available, but may be combined by available package sizes. If you wish to purchase any product in **bulk quantity** (above 5 kg up to 5 metric tons), please feel free to contact us for a quotation.

Prices

All prices listed in this publication are **net prices** and given in Euro (€). **Shipping and handling charges** are to be added to your account (see below). **Any additional regional charges, taxes and duties are payable by the customer.**

Prices are subject to change. Please contact us for a firm quotation. All previously published price information will become void after March 31th, 2017.

Shipping and handling

Germany:

Shipments are routinely made by **UPS** (www.ups.com). A handling charge of € 16.50 applies for all orders under € 250.00. Orders over € 250.00 are free of charge; exception: shipments containing dangerous goods!

All other destinations:

Shipments are routinely made by **FedEx** (www.fedex.com) where possible. Shipping and handling charges apply. These depend on the destination as well as on the actual gross weight of the shipment and therefore have to be determined individually. Alternatively, shipment can be arranged through any other courier service of your choice. Please provide your account number with your preferred courier service when ordering.

Terms of payment are stated on your quotation and/or purchase order confirmation. All deliveries are subject to our *General Terms and Conditions* which can be found at the end of this publication and on our website (www.iolitec.de).

Contact and Order Information:

You will receive a **purchase order confirmation by email or fax within 48 hours of receipt of your order**. Please let us know if you do not receive a purchase order confirmation within this time. No release of chemicals to private persons, business customers and research institutions only.



World

Asia/Pacific

World@iolitec.de

**South America, Middle East
& Europe (non EU)**

WORLD@iolitec.de



EU

**European Union (except Austria,
Germany & Switzerland)**

EU@iolitec.de



Germany, Austria & Switzerland

DACH@iolitec.de

World, EU & DACH:

Payment by wire-transfer or cheque.

EU: Please add your VAT-ID-number
to all orders.

IOLITEC

Ionic Liquids Technologies GmbH

Global Headquarters

Salzstraße 184

D-74076 Heilbronn, Germany

phone: +49 (0) 7131 89839 0

fax: +49 (0) 7131 89839 109

info@iolitec.de

www.iolitec.com



NAFTA

USA, Canada & Mexico

Dr. Peter von Czarnecki

Czarnecki@iolitec.com

Payment by Credit Card, Cheque

Wire Transfer is possible.

IOLITEC

Ionic Liquids Technologies Inc.

720 2nd Street, AIME

Tuscaloosa, AL 35401, USA

phone: +1 (205) 348 2831

fax: +1 (205) 348 3510

info@iolitec-usa.com

www.iolitec-usa.com

Contents

3M Novec and 3M Fluoriniert	8
1-Alkylimidazoles	10
1-Alkyl-2-methylimidazoles	12
Other Heterocycles	13
Triflic Acid Derivatives	14
1,1,2,2-Tetrafluoroethane Sulfonic Acid Derivatives	15
Perfluorobutane Sulfonic Acid Derivatives	16
Weakly Coordinating Anions	17
Miscellaneous Compounds	18
General Terms and Conditions	19

3M NOVEC AND 3M FLUORINIERT Products 2017



**Novec 7100,
>99%**

FL-0001-HP	[--]	--	--
------------	------	----	----

100 g
250 g
500 g
1 kg
2.5 kg
5 kg
15 kg (33 lbs)

Produced by 3M.

**FC-40,
>99%**

FL-0005-HP	[--]	--	--
------------	------	----	----

100 g
250 g
500 g
1 kg
2.5 kg
5 kg
20 kg

Produced by 3M.

**Novec 7200,
>99%**

FL-0002-HP	[--]	--	--
------------	------	----	----

100 g
250 g
500 g
1 kg
2.5 kg
5 kg
15 kg (33 lbs)

Produced by 3M.

**FC-43,
>99%**

FL-0006-HP	[--]	--	--
------------	------	----	----

100 g
250 g
500 g
1 kg
2.5 kg
5 kg
20 kg

Produced by 3M.

**Novec 7300,
>99%**

FL-0003-HP	[132182-92-4]	$C_7H_5F_{13}O$	MW 350.08
------------	---------------	-----------------	-----------

100 g
250 g
500 g
1 kg
2.5 kg
5 kg
15kg (33 lbs)

Produced by 3M.

**FC-770,
>99%**

FL-0007-HP	[--]	--	--
------------	------	----	----

100 g
250 g
500 g
1 kg
2.5 kg
5 kg
20 kg

Produced by 3M.

**Novec 7500,
>99%**

FL-0004-HP	[297730-93-9]	$C_9H_5F_{15}O$	MW 414.01
------------	---------------	-----------------	-----------

100 g
250 g
500 g
1 kg
2.5 kg
5 kg
18 kg (40 lbs)

Produced by 3M.

**FC-3283,
>99%**

FL-0008-HP	[--]	--	--
------------	------	----	----

100 g
250 g
500 g
1 kg
2.5 kg
5 kg
20 kg

Produced by 3M.

3M NOVEC AND 3M FLUORINIERT Products 2017



**FC-72,
>99%**

FL-0009-HP	[--]	--	--
------------	------	----	----

100 g
250 g
500 g
1 kg
2.5 kg
6 kg
20 kg

Produced by 3M.

**Novac 649
>99%**

FL-0010-HP	[--]	--	--
------------	------	----	----


100 g
250 g
500 g
1 kg
2.5 kg
5 kg

Produced by 3M.

Imidazole, >98%

KI-0035-HP [288-32-4] C₃H₄N₂ MW 68.08

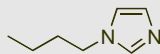
250 g
500 g
1 kg
2.5 kg
5 kg
10 kg



1-Butylimidazole, >98%

KI-0004-HP [4316-42-1] C₇H₁₂N₂ MW 124.18


25 g
50 g
100 g
250 g
500 g
1 kg



1-Methylimidazole, >98%

KI-0017-HP [616-47-7] C₄H₆N₂ MW 82.10

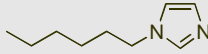
250 g
500 g
1 kg
2.5 kg
5 kg
10 kg



1-Hexylimidazole, >98%

KI-0005-HP [33529-01-0] C₉H₁₆N₂ MW 152.24

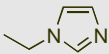
25 g
50 g
100 g
250 g
500 g
1 kg



1-Ethylimidazole, >98%

KI-0003-HP [7098-07-9] C₅H₈N₂ MW 96.13


100 g
250 g
500 g
1 kg
2.5 kg
5 kg
10 kg



1-Octylimidazole, >98%

KI-0006-HP [21252-69-7] C₁₁H₂₀N₂ MW 180.29

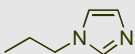
25 g
50 g
100 g
250 g
500 g
1 kg



1-Propylimidazole, >98%

KI-0030-HP [35203-44-2] C₆H₁₀N₂ MW 110.16

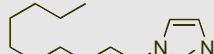
25 g
50 g
100 g
250 g
500 g
1 kg



1-Decylimidazole, >98%

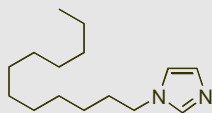
KI-0007-HP [33529-02-1] C₁₃H₂₄N₂ MW 208.34

25 g
50 g
100 g
250 g
500 g
1 kg



1-Dodecylimidazole
>98%


KI-0027-HP [4303-67-7] $C_{15}H_{28}N_2$ MW 236.40



25 g
50 g
100 g
250 g
500 g
1 kg

**2-Methylimidazole,
>98%**

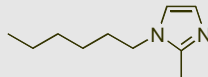
KI-0036-HP [693-98-1] $C_4H_6N_2$ MW 82.10



250 g
500 g
1 kg
2.5 kg
5 kg
10 kg

**1-Hexyl-2-methylimidazole,
>98%**


KI-0011-HP [82410-68-2] $C_{10}H_{18}N_2$ MW 166.26



25 g
50 g
100 g
250 g
500 g
1 kg

**1,2-Dimethylimidazole,
>98%**

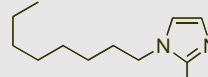
KI-0037-HP [1739-84-0] $C_5H_8N_2$ MW 96.13



250 g
500 g
1 kg
2.5 kg
5 kg
10 kg

**2-Methyl-1-octylimidazole,
>98%**

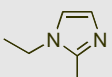
KI-0012-HP [60964-49-0] $C_{12}H_{22}N_2$ MW 194.32



25 g
50 g
100 g
250 g
500 g
1 kg

**1-Ethyl-2-methylimidazole,
>98%**

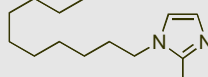
KI-0009-HP [21202-52-8] $C_6H_{10}N_2$ MW 110.16



25 g
50 g
100 g
250 g
500 g
1 kg

**1-Decyl-2-methylimidazole,
>98%**

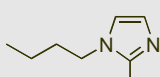
KI-0013-HP [42032-30-4] $C_{14}H_{26}N_2$ MW 222.37



25 g
50 g
100 g
250 g
500 g
1 kg

**1-Butyl-2-methylimidazole,
>98%**

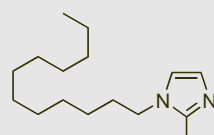
KI-0010-HP [13435-22-8] $C_8H_{14}N_2$ MW 138.21



25 g
50 g
100 g
250 g
500 g
1 kg

**1-Dodecyl-2-methylimidazole,
>98%**


KI-0026-HP [5709-29-5] $C_{16}H_{30}N_2$ MW 250.43



25 g
50 g
100 g
250 g
500 g
1 kg

1-Methylpyrrolidine,
>98%

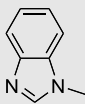
KI-0034-HP [120-94-5] $C_5H_{11}N$ MW 85.14



250 g
500 g
1 kg
2.5 kg
5 kg
10 kg

1-Methylbenzimidazole,
>98%

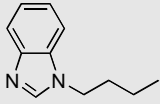
KI-0050-HP [1632-83-3] $C_8H_8N_2$ MW 132.16



25 g
50 g
100 g
250 g
500 g
1 kg

1-Butylbenzimidazole,
>98%

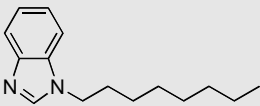
KI-0041-HP [4886-30-0] $C_{11}H_{14}N_2$ MW 174.25



25 g
50 g
100 g
250 g
500 g
1 kg

1-Octylbenzimidazole,
>98%

KI-0045-HP [42032-46-2] $C_{15}H_{22}N_2$ MW 230.35

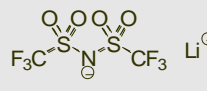


25 g
50 g
100 g
250 g
500 g
1 kg

Lithium bis(trifluoromethylsulfonyl)imide, 99%

KI-0001-HP [90076-65-6] C₂F₆LiNO₄S₂ MW 287.19

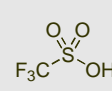
100 g
250 g
500 g
1 kg
5 kg
10 kg



Trifluoromethanesulfonic acid, 99%

KI-0008-HP [1493-13-6] CHF₃O₃S MW 150.08

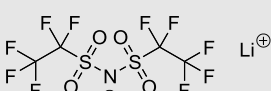
100 g
250 g
500 g
1 kg
2.5 kg
5 kg



Lithium bis(perfluoroethylsulfonyl)imide, 99%

KI-0016-HP [132843-44-8] C₂F₆LiNO₄S₂ MW 387.10

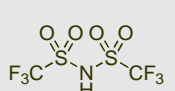
25 g
50 g
100 g
250 g
500 g
1 kg
5 kg



Bis(trifluoromethylsulfonyl)imide, 99%, 80% aqueous solution

KI-0029-HP [82113-65-3] C₂HF₆NO₄S₂ MW 281.16

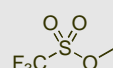
100 g
250 g
500 g
1 kg
2.5 kg
5 kg



Methyl trifluoromethanesulfonate, >98%

KI-0002-HP [333-27-7] C₂H₃F₃O₃S MW 164.10

100 g
250 g
500 g
1 kg
2.5 kg
5 kg

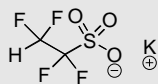


1,1,2,2-Tetrafluoroethane Sulfonic Acid Derivatives Products 2017



Potassium 1,1,2,2-tetrafluoroethanesulfonate, 98%

KI-0043-HP [905298-71-7] $C_2F_4HKSO_3$ MW 219.92



25 g
50 g
100 g
250 g
500 g
1 kg

Potassium perfluorobutane sulfonate,

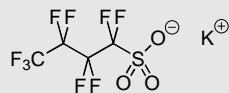
>98%

KI-0044-HP

[29420-49-3]

C₄F₉KSO₃

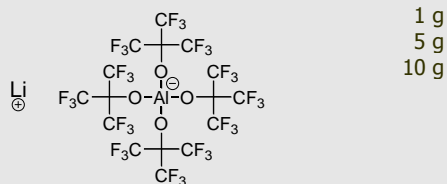
MW 338.19



100 g
250 g
500 g
1 kg
2.5 kg
5 kg

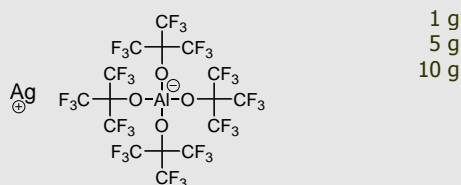
Lithium tetrakis(perfluoro-t.-butoxy) aluminate, 99%

KI-0018-HP [274933-96-9] $C_{16}F_{36}LiAlO_4$ MW 974.03



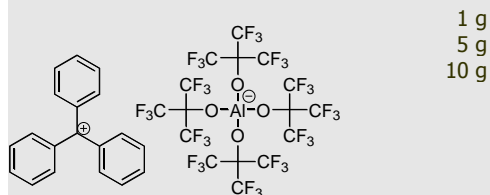
Silver tetrakis(perfluoro-t.-butoxy) aluminate, 99%

KI-0019-HP [263880-36-0] $C_{16}F_{36}AlAgO_4$ MW 1074.9



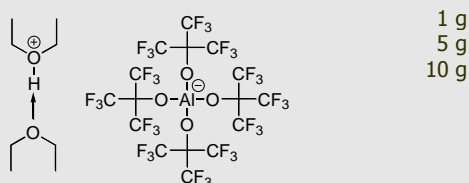
Triphenylcarbenium tetrakis(perfluoro-t.-butoxy) aluminate, 99%

KI-0020-HP [263880-38-2] $C_{35}H_{15}F_{36}AlO_4$ MW 1210.4



Diethyloxonium tetrakis(perfluoro-t.-butoxy) aluminate, 99%

KI-0021-HP [868971-45-3] $C_{24}H_{21}F_{36}AlO_6$ MW 1116.3



Potassium hexafluorophosphate, 99%			
KI-0031-HP	[17084-13-8]	F ₆ KP	MW 184.06
		250 g	
		500 g	
		1 kg	
		2.5 kg	
		5 kg	
		10 kg	
$K^{\oplus} \ominus PF_6$			

Sodium tricyanomethanide, 98%			
KI-0049-SG	[36603-80-2]	C ₄ N ₃ Na	MW 113.05
		25 g	
		50 g	
		100 g	
		250 g	
		500 g	
		1 kg	
		5 kg	
$Na^{\oplus} \ominus C(CN)_3$			

Potassium tetrafluoroborate, 98%			
KI-0042-HP	[14075-53-7]	BF ₄ K	MW 125.90
		250 g	
		500 g	
		1 kg	
		2.5 kg	
		5 kg	
		10 kg	
$K^{\oplus} \ominus BF_4$			

Sodium dicyanamide, >97%			
KI-0015-SG	[1934-75-4]	C ₂ N ₃ Na	MW 89.03
		250 g	
		500 g	
		1 kg	
		2.5 kg	
		5 kg	
		10 kg	
$Na^{\oplus} \ominus N(CN)_2$			

Sodium tetrafluoroborate, >98%			
KI-0025-HP	[13755-29-8]	BF ₄ Na	MW 109.79
		250 g	
		500 g	
		1 kg	
		2.5 kg	
		5 kg	
		10 kg	
$Na^{\oplus} \ominus BF_4$			

GENERAL TERMS AND CONDITIONS

Products 2017



I. General

These General Conditions of Sale and Delivery shall be an integral part of the contract of purchase. Conflicting or deviating conditions of purchase or other reservations made by the Buyer shall not be effective unless the Seller has expressly accepted them in writing for a particular order.

II. Offers, Orders

1. The Seller's offers shall not be binding with respect to price, quantity, delivery time and availability. 2. The Buyer's orders shall become binding on the Seller upon receipt by the Buyer of the Seller's written order acknowledgment (or invoice or delivery note).

III. Invoicing

1. The prices invoiced shall be the Seller's prices effective at the time of delivery plus statutory sales tax.

2. Should the Seller, in the interval between conclusion of the contract and delivery, effect a general price increase, the Buyer shall have the right to withdraw from the contract within two weeks of having been informed thereof, unless the price increase is exclusively due to an increase in freight rates. The right of withdrawal shall not apply to long-term supply contracts (contracts for the performance of a continuing obligation).

3. The weight of the goods on which the invoiced amount is to be calculated shall be ascertained in the dispatch department of the Seller's plant from which the goods are supplied unless the Buyer wishes them to be weighted, at his expense, by the railway authorities at the station of dispatch.

IV. Payment

1. The handing in of bills of exchange shall be subject to the Seller's prior consent and shall not constitute payment. The maturity of bills shall not exceed 90 days from the invoice date. Discount expenses, bill charges, bill tax and similar expenses incurred in the period beginning 30 days after the invoice date shall be for the Buyer's account.

2. Where the Seller has reason to doubt the Buyer's solvency or credit worthiness and the Buyer is not prepared to effect advance cash payment or provide the Seller with security as requested, the Seller shall have the right to cancel that portion of the contract which he has not yet performed.

3. Deposits and advance payments shall be made inclusive of sales tax.

4. Payment shall not be deemed to have been effected until the amount has been cleared into one of the Seller's accounts.

5. The Seller reserves the right to use payments for the settlement of the invoices which have been outstanding longest, plus any interest on arrears and costs accrued thereon, in the following order: costs, interest, principal claim.

6. The Buyer shall not have the right to withhold payments. Counterclaims may only be offset if they are uncontested or have become res judicata.

V. Delivery

1. The Seller shall make every effort to effect delivery as early as possible. There shall be no fixed periods for delivery.

2. Should, notwithstanding the preceding paragraph, a fixed period for delivery have been agreed, and should the Seller default with the supply, the Buyer shall grant the Seller a reasonable respite, normally of four weeks.

3. Delivery shall be subject to punctual delivery of the appropriate goods by the Seller's own suppliers.

4. The day of delivery shall be the day on which the goods leave the Seller's plant or warehouse or, if that day cannot be ascertained, the day on which the goods are put at the Buyer's disposal.

5. The provision of packaging including tankers and tank containers by the Seller shall be subject to special conditions.

VI. Force Majeure, Impediments to Performance

Force majeure of any kind, unforeseeable production, traffic or shipping disturbances, fire, floods, unforeseeable shortages of labor, utilities or raw materials and supplies, strikes, lockouts, acts of government, and any other hindrances beyond the control of the party obliged to perform which diminish, delay or prevent production, shipment, acceptance or use of the goods, or make it an unreasonable proposition, shall relieve the party from its obligation to supply or take delivery, as the case may be, as long as and to the extent that the hindrance prevails. If, as a result of the hindrance, supply and/or acceptance is delayed by more than eight weeks, either party shall have the right to cancel the contract. Should the Seller's suppliers fail to supply him in whole or in part, the Seller shall not be under obligation to purchase from other sources. In such cases, the Seller shall have the right to distribute the available quantities among his customers while at the same time taking into account his captive requirements.

VII. Shipment

1. The Seller reserves the right to choose the route and the mode of transport. Any additional costs resulting from special shipping requests made by the Buyer shall be borne by the Buyer. Unless prepaid freight has been agreed, the Buyer shall also bear any increases in freight rates which become effective after the contract has been concluded, any additional costs resulting from re-routing a consignment, storage expenses, etc.

2. The risk of destruction, loss or damage shall pass to the Buyer upon dispatch of the goods or, if they are collected by the Buyer, at the time they are placed at the Buyer's disposal.

VIII. Retention of Title

1. Title to the goods shall not pass to the Buyer until he has fulfilled all liabilities arising from his business connection with the Seller, which shall include settling accessory claims and claims for damages and honoring cheques and bills. Title to the goods shall also remain with the Seller if the Seller's claims have been included in a current account and the balance of this account has been struck and acknowledged.

2. If the Buyer defaults in his obligations to the Seller, the Seller shall have the right, without granting a respite and without cancelling the contract, to demand the return of the goods to which he retains title. Acceptance of the returned goods shall not constitute cancellation of the contract unless the Seller has expressly declared this in writing. If the Seller cancels the Contract, he shall have the right to demand appropriate compensation for having permitted the Customer to use the item for a certain period.

3. If goods to which the Seller retains title are processed into new products, the Buyer shall be deemed to be effecting such processing on behalf of the Seller without

thereby acquiring any claims on the Seller. The Seller's title shall thus extend to the products resulting from the processing. If goods to which title is retained by the Seller are processed together with, mixed with or attached to goods to which title is retained by third parties, the Seller shall acquire co-ownership of the resulting products in the ratio of the invoice value of the goods owned by him to the invoice value of the goods owned by those third parties. If the goods, as a result of such mixing or attaching become part of a principal matter of the Buyer, the Buyer, by accepting these Conditions, assigns in advance his title to the new item to the Seller.

4. The Buyer shall be under obligation to provide, on behalf of the Seller, adequate storage of the goods to which the Seller retains title, to service and repair them at his expense and to insure them at his expense against loss and damage up to an extent which may reasonably be expected of a prudent businessman. By accepting these Conditions the Buyer assigns in advance to the Seller any claims which may accrue to him under the insurance policies.

5. As long as the Buyer duly meets his liabilities to the Seller, he shall have the right, in the normal course of business, to do as he wishes with the goods to which the Seller retains title. This shall not apply, however, if he and his customers have concluded an agreement according to which the Buyer must not assign his claims on them to third parties. The Buyer shall not have the right to pledge, chattel mortgage or otherwise encumber the goods to which the Seller retains title. When reselling the goods, the Buyer shall make the passing of the title subject to full payment of the goods by his customers.

6. By accepting these Conditions, the Buyer assigns in advance to the Seller any claims which may arise from a resale of the goods to which the Seller retains title, together with any incidental rights and security interests including bills of exchange and cheques, so as to provide the Seller with security for all claims he has on the Buyer as a result of the business connection. If goods to which the Seller retains title are sold together with other goods at a single price, the assignment shall be limited to the portion of the invoice value which covers the goods to which the Seller retains title. If the Buyer sells goods of which the Seller has co-ownership pursuant to clause VIII. 3., the assignment shall be limited to the portion of the invoice value which corresponds to the Seller's co-ownership. If the Buyer uses goods to which the Seller retains title for processing a third party's product on a contract basis, in accepting these Conditions he assigns in advance his contractual claim on the third party to the Seller in order to provide him with security for his claim. As long as the Buyer duly meets his liabilities to the Seller, he may collect claims from a resale or from contract processing himself. He shall not have the right to assign or pledge such claims as security.

7. If the Seller believes his claims to be at risk, the Buyer shall, at the Seller's request, inform his customers of the assignment of his claims to the Seller and supply the Seller with all necessary information and documents. Any acts of third parties aimed at seizing goods to which the Seller retains title or at appropriating claims assigned to him shall be brought to the Seller's attention by the Buyer immediately.

8. If the value of the security provided to the Seller exceeds the value of the claims to be safeguarded by more than 20 per cent, the Seller shall, at the Buyer's request, bring the excess coverage down to 20 per cent by releasing security of his own choice.

IX. Damages

1. No claims for compensation may be lodged by the Buyer - including those of a non-contractual nature - for any minor negligent breach of duty by the Seller, his executive staff or other agents, unless such breach concerns a duty that is crucial for the object of the contract.

2. The Seller shall only be liable for indirect damage or damage which could not be foreseen at the time of conclusion of the contract if such damage is due to a gross fault on the part of the Seller or one of his managerial employees.

3. The above limitations shall not apply to damage resulting from death, injury or damage to health. However, this shall not affect the applicability of compelling statutory liability regulations such as, for example, liability for the assumption of a guarantee or product liability law.

X. Notification of Defects

1. Notification of defects shall only be recognized if filed in writing within two weeks of receipt of the goods, together with supporting evidence, samples and packing slips, stating the invoice number and date, and the markings on the packaging.

2. Hidden defects must be notified to the Seller immediately upon discovery, but not later than five months after receipt of the goods. This shall not affect the periods of limitation. The burden of proving that a defect is a hidden defect shall rest with the Buyer.

3. Goods forming the subject of a complaint shall not be returned to the Seller except with the Seller's express consent.

XI. Buyer's Rights in the event of Defects

1. Warranty claims made by the Buyer shall only entitle the Buyer to be supplied with a replacement. If the replacement provided by the Seller is also defective, the Buyer may reduce the purchase price or opt to cancel the contract. Claims for damages as defined in Section IX shall remain unaffected by the above. Claims made by the Buyer due to expenses incurred as a result of reworking, in particular transport, travel, labor and material costs, shall be excluded where such expenses have been increased by the fact that the item was subsequently transported to a location other than the premises of the party placing the order, unless the goods were supplied to this location in line with their intended use.

2. In the event of recourse to the guarantee by the Buyer following a successful claim against the latter on the basis of the provisions governing the purchase of a consumer good, the claims under a right of recourse in accordance with the regulations on the purchase of consumer goods shall remain unaffected. Section IX shall apply to any claim for damages.

3. The Buyer must inform the Seller without delay of any case of recourse within the supply chain. Statutory claims under a right of recourse by the Buyer against the Seller shall not apply with respect to arrangements entered into by the Buyer with its customer over and above statutory warranty claims.

4. Any guarantee agreement must be made in writing. A statement of guarantee shall only be effective if it describes the content of the guarantee and the duration and physical scope of guarantee protection in sufficient detail.

XII. Periods of Limitation

In cases that fall under § 438, paragraph 1, no. 3 of the Federal Civil Code (BGB), warranty claims shall expire with effect from one year from the beginning of the statutory period of limitation. In cases that fall under § 438, paragraph 1, no. 2 of the Federal Civil Code (BGB) warranty claims shall expire with effect from two years from the beginning of the statutory period of limitation. Compelling regulations governing the statutory period of limitation or the question of liability, such as, for example, liability for the assumption of a guarantee, liability for willful intent and gross negligence, for death, physical injury or damage to health, for the violation of essential contractual obligations, liability in accordance with the product liability law and the provisions relating to the sale of consumer goods shall remain unaffected.

XIII. Properties of Goods, Technical Support, Use and Processing

1. The properties of the goods shall as a general rule only include the properties as stated in the product descriptions, specifications and labeling of the Seller. Public statements, claims or advertising shall not be classed as information on the properties of the item for sale.

2. Technical advice provided by the Seller verbally, in writing or by way of trials is given in good faith but without warranty, and this shall also apply where proprietary rights of third parties are involved. The Seller's technical advice shall not release the Buyer from the obligation to test the products supplied by the Seller as to their suitability for the intended processes and uses. The application, use and processing of the products are beyond the Seller's control and therefore entirely the Buyer's responsibility.

XIV. Trademarks

1. The Buyer shall not have the right to refer to the Seller's products when offering or supplying substitute products or, in price lists or similar business communications, to use the word "substitute" in conjunction with the Seller's - protected or unprotected product designations or list these designations together with any designations for substitute products.

2. When using the Seller's products for manufacturing purposes or when processing them into new products, the Buyer shall not have the right, without the Seller's prior consent, to use the Seller's product designations, especially his trademarks, on the resulting products or on the packaging therefore or in any relevant printed matter or advertising literature, particularly by mentioning the Seller's products as components of his own products. The supply of goods under a trademark shall not be deemed agreement to the use of this trademark for the products manufactured therefrom.

XV. Place of Performance and Jurisdiction, Invalidity of Individual Clauses

1. Place of performance for delivery shall be the Seller's dispatch department; place of performance for payment shall be "Heilbronn".

2. Place of jurisdiction for both parties shall be Heilbronn. The Seller shall furthermore have the right to sue the Buyer at the Buyer's general place of jurisdiction.

3. Should any clause in these General Conditions of Sale and Delivery be or become invalid, this shall not affect the validity of the remaining clauses or remaining parts of the clause concerned. The parties shall replace any invalid arrangement by an effective one which conforms as far as possible to the economic purpose of the invalid clause.

Heilbronn, April 2017