

MOCOM

Hygienic Materials

(Alperform[®] HM & Alcom[®] HM)

Historic background

- Silver has been used since 2000BC when the Phoenicians used silver jugs to store wine
- Being born with a silver spoon in your mouth was the sign of a healthier baby
- Early cowboys would drop silver dollars into their water canteens to prevent water contamination



Hygienic materials from MOCOM

Hygienic (antibacterial) products from MOCOM

❖ **Alperform[®]** ➔ antibacterial masterbatches

❖ **Alcom[®]** ➔ antibacterial compounds

- Products from MOCOM based on Biomaster technology (silver ions) of Addmaster (UK)
- Products are used in various applications and industries since more than 10 years



Hygienic materials from MOCOM in a nutshell

- ✓ Alperform® HM and Alcom® HM offer high antibacterial effectiveness and provide durable antibacterial protection
- ✓ Alperform® HM and Alcom® HM contain non-leaching and non-migrating antibacterial additives
- ✓ Alperform® HM and Alcom® HM contain no nanoparticles
- ✓ Easy handling and processing of Alperform® HM and Alcom® HM
- ✓ Alperform® HM masterbatches are registered with the German BAuA
- ✓ Independent testing service of antibacterial effectiveness for customers
- ✓ Full customer support on regulatory (e.g., FDA, EPA, etc.) and product labeling acc. to EU 528/2012



Source: Pixabay

Hygienic materials from MOCOM use silver ions

Silver is not silver!

- **Metallic or elemental silver** (particle sizes: macro-, micro- or nano silver) ➔ silver ions are released from metal silver surface by moisture
- **Organic silver compounds** (e.g., silver bound to proteins)
- **Silver salts** ➔ silver ions are dissolved in the salt und can be released to surface by moisture



Alperform® HM and Alcom® HM are...

- based on dissolved silver ions!
- **NOT** based on metallic or elemental silver!
- **NOT** based on nanosilver!
- **NOT** based on organic silver compounds!

Effectiveness of silver ions



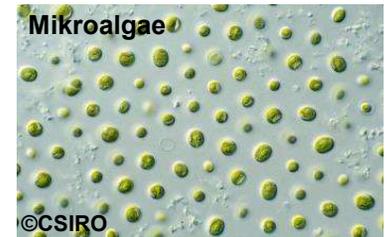
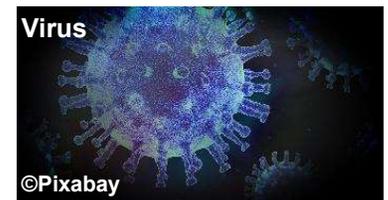
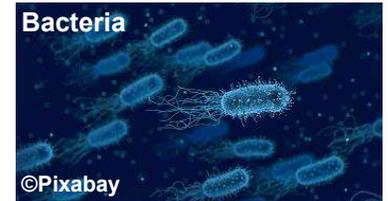
Different terms – synonymous use BUT different meaning!

- **Antibacterial** ➔ effective mainly against bacteria and only limited or even not effective against multicellular organisms (e.g. fungi) or viruses.
- **Antimicrobial** ➔ effective against wide range of microbes including bacteria, mold, fungi and can be even effective against viruses.
- **Antiviral** ➔ effective mainly against viruses and viral infections.

Effectiveness of silver ions

Microbe		Efficacy of silver ions (Alperform® HM and Alcom® HM)*
Bacteria	✓✓✓	<ul style="list-style-type: none"> Fast and durable efficacy Efficacy even at low dosage
Fungi	✓✓	<ul style="list-style-type: none"> Effectively working against single-celled fungi (e.g., yeast) Less effective against multi-celled fungi (e.g., mold) Often very effective only at the contact surface, especially for multi-celled fungi Initially very effective, but especially for multi-celled fungi, growth is often only retarded, and not completely stopped as with single-celled fungi
Algae	✓	<ul style="list-style-type: none"> Moderately effective against algae, especially for multi-celled macroalgae only limited efficacy
Virus	✓✓ to ✓✓✓✓	<ul style="list-style-type: none"> Efficacy depends on the virus type On porous surfaces (e.g., textiles, foams) good to very good efficacy due to the large specific surface area (= allows rather easy release of silver ions) Less effective on smooth surfaces (e.g., plastic) due to more impervious and smooth surfaces as well as smaller specific surface area (= reduces release rate of silver ions)

***The efficacy of Alperform® HM and Alcom® HM must always be tested individually for each application/product and for each material!**



Effectiveness of silver ions

Efficacy at a glance

- Silver ions have very effective **antibacterial** effects (fast, durable and low dosage)
- Antibacterial protection by silver ions over lifetime of plastic products (tests after **15 years give still 100 % antibacterial performance**)
- Silver ions have fair to good **antimicrobial** effects (single-celled microorganisms mostly good, multiple-celled microorganisms rather fair)
- Silver ions have good to very good **antiviral** activity (depending on virus type and surface properties)
- **Efficacy** of silver ions **must be tested** individually for **each case**
- Application is safe for converter and end user (Alperform[®] HM and Alcom[®] HM are **non-toxic**)

Mode of antibacterial action of silver ions

- 3 mode of antibacterial action of Biomaster additive (silver ions) in Alperform[®] HM and Alcom[®] HM



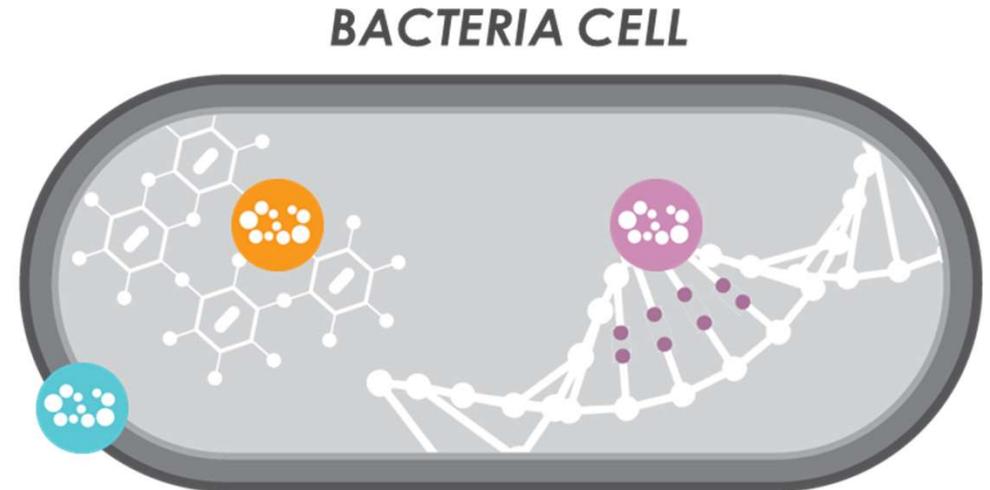
SILVER IONS BIND TO THE CELL SURFACE;
THIS DISRUPTS THE CELL WALL AND PREVENTS GROWTH.



THE SILVER IONS ARE ATTRACTED TO THE CELLS ENZYMES;
THIS PREVENTS THE BACTERIUM PRODUCING ENERGY.

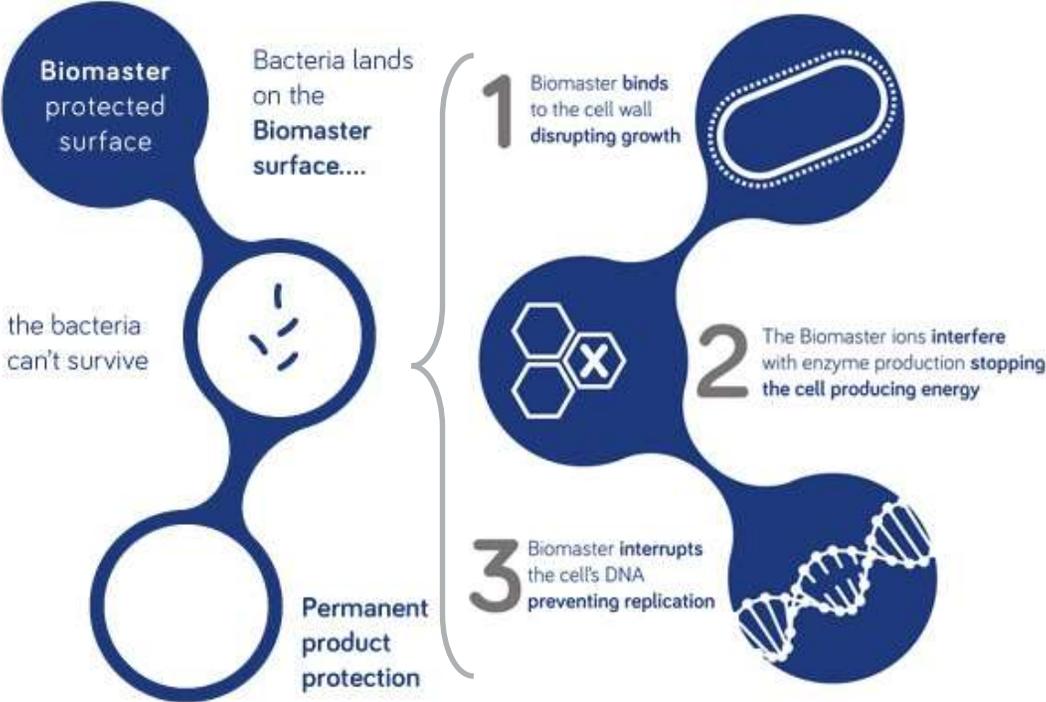


SILVER IONS INTERRUPT THE CELL DNA;
THIS PREVENTS DNA REPLICATION AND NEW CELL FORMATION.



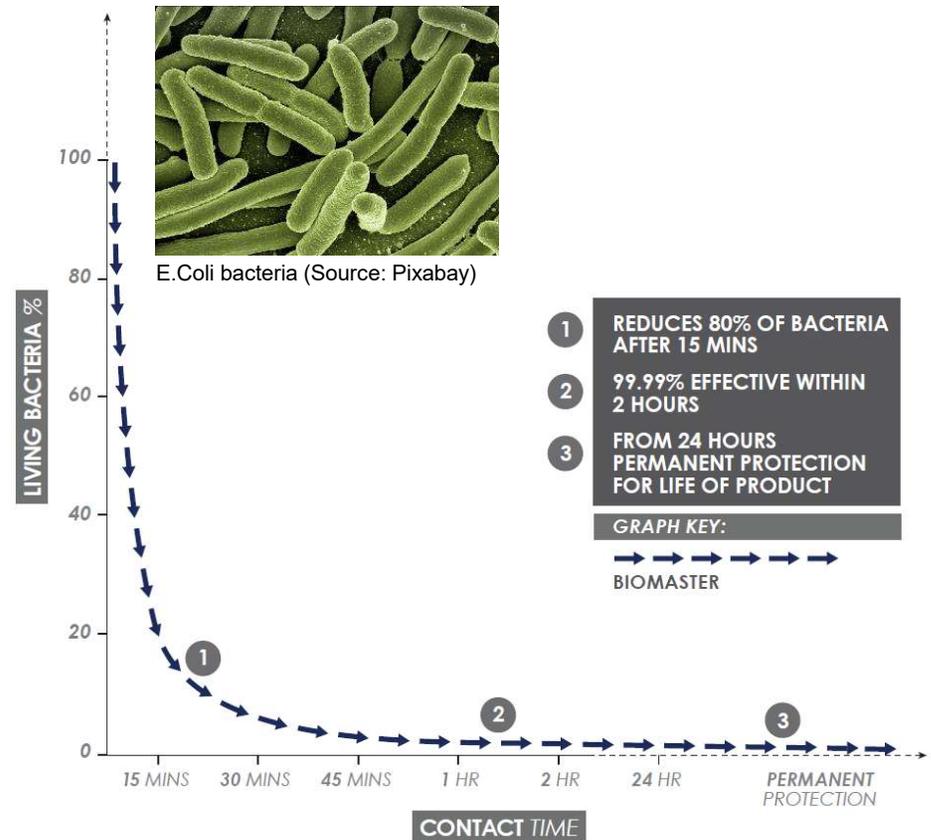
Mode of antibacterial action of silver ions

- Biomaster additive (silver ions) in Alperform[®] HM and Alcom[®] HM provide durable antibacterial protection of product surfaces



Antibacterial effectiveness of silver ions

- Effectiveness of Biomaster additive tested vs. more than 50 bacteria species
 - Quickly reduces bacteria by up to 99.99 % (e.g., growth of MRSA, E.Coli, Campylobacter, Legionella, Salmonella, and over 50 others)
- Effectiveness of Biomaster additive tested in more than 2.000 applications
- Remarkably quick mode of action
- Permanent protection for life cycle of the product
- **Test service acc. to ISO 22196:2011 for our customers**

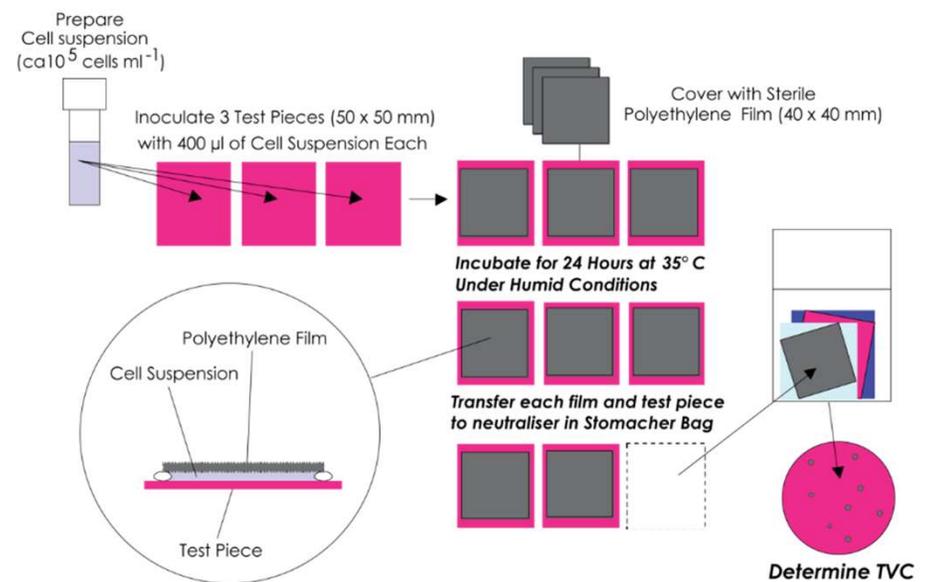


Testing antibacterial effectiveness of silver ions

- Testing antibacterial effectiveness acc. to ISO 22196:2011
 - Standard stock cultures: MRSA and E.Coli (purchased from ATCC)
 - Samples are inoculated using known amount of E. Coli and MRSA cultures and incubated for 24 h at 37 °C ➔ CFU (Colony Forming Units) of bacteria are then recorded and percentage of reduction is calculated
 - Testing is done by **independent** laboratory (Industrial Microbiological Services Ltd.)

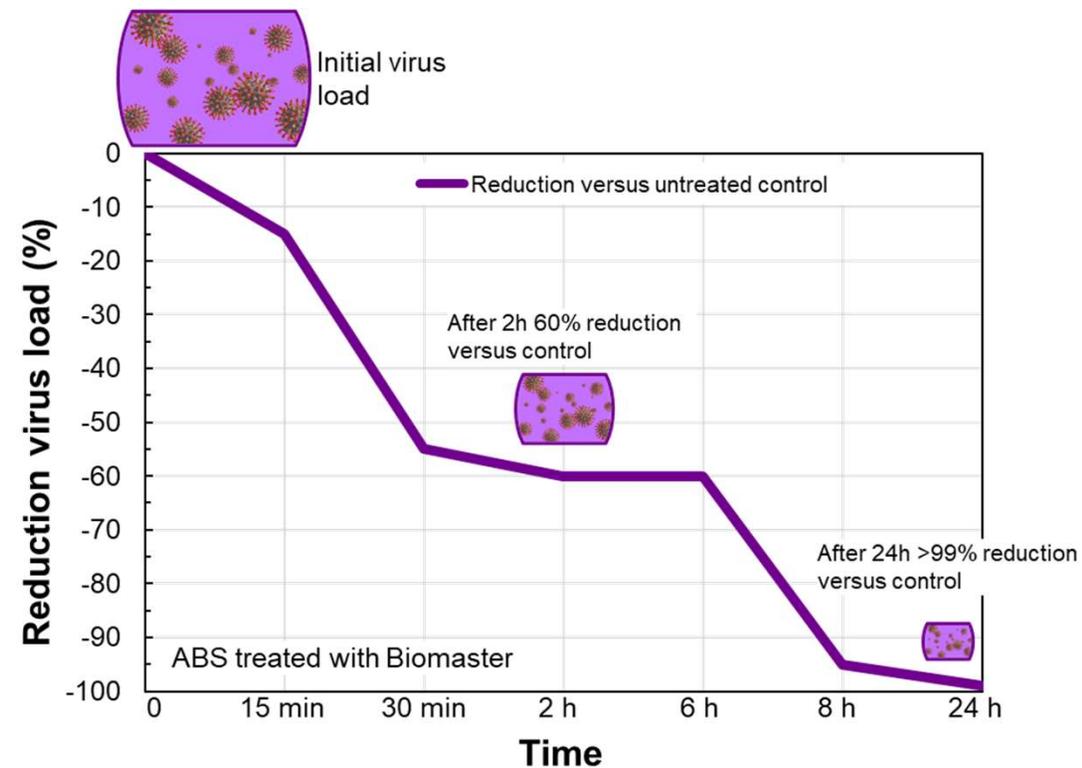
Testing service for our customers

- Acc. to ISO 22196:2011 incl. report and/or certificate
- Ask us for more details and guideline



Antiviral effectiveness of silver ions

- Effectiveness of Biomaster additive successfully tested against SARS-CoV-2
 - Testing on non-porous (smooth) surfaces of ABS compounds
 - Reduction of viral load by 60% after 2h compared to untreated control sample by treating ABS with silver ions (Biomaster)
- Permanent protection for life cycle of the product
- **Test service acc. to ISO 21702:2019 for our customers**

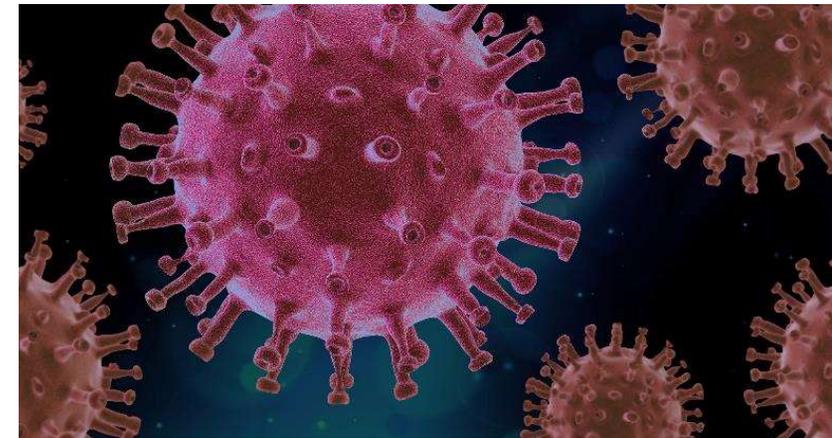


Testing antibacterial effectiveness of silver ions

- Testing antibacterial effectiveness acc. to ISO 21702:2019
 - **Requirement: Successful antibacterial effectiveness test acc. to ISO 22196:2011 (or not older than 3 years)**
 - Test cultures: SARS-CoV-2
 - Testing is done by **independent** laboratory

Testing service for our customers

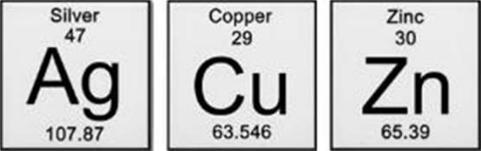
- Acc. to ISO 21702:2019 incl. report and/or certificate
- Ask us for more details and guideline



SARS-CoV-2 (Source: Pixabay)

Benchmark of silver ions

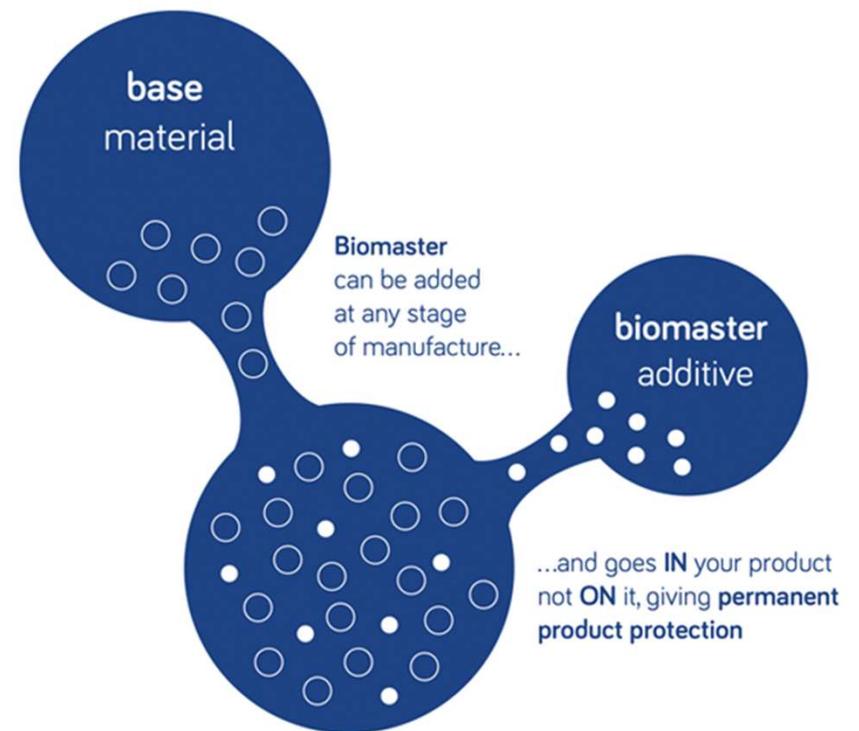
- Performance of silver ions against other established active metal ions



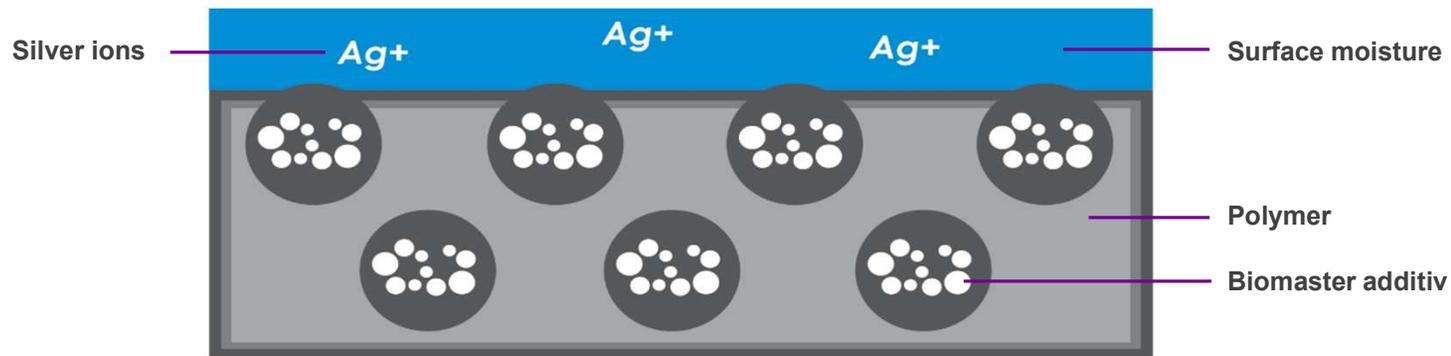
Good efficacy	✓	✓	✓
Low toxicity	✓	✓	✗
Regulations	✓	✗	✓
Cost effective	✓	✗	✓
All applications	✓	✗	✗

Incorporation of silver ions into polymers

- Alperform® HM and Alcom® HM are based on Biomaster additives (silver ions)
- Silver ions are incorporated in glass salt matrix (= like a filler) and added to the base polymer
 - Biomaster is dispersed throughout the entire polymer
 - Biomaster becomes an integral part of the polymer
 - Biomaster is **non-leaching**, **non-volatile**, and **non-migrating**
- Alperform® HM and Alcom® HM contain **no nanosilver** (Biomaster = silver ions in glass salt matrix!)
 - Particle size of Biomaster is ca. 5-10 µm



How does silver ions migrate to polymer surface?



- Silver ions (Ag+) in Alperform[®] HM and Alcom[®] HM are only active on polymer surface ➔ controlled silver ion migration out of glass salt matrix due to surface humidity
- No migration through polymer matrix ➔ AB structures advantageous for cost reasons
- Equilibrium at 3-20 ppm silver ions
- Effective only in direct contact (single-cell germs)

Typical industries for hygienic materials

- Medical and healthcare
- Sport and leisure
- Food industry
- Household
- Furniture
- Construction
- Public sector
- Sanitary



Example applications for hygienic materials



PHILIPS – BIKINI PERFECT



DYSON – AIRBLADE



ETI – THERMAPEN



GARDMAN – FUTTERHÄUSCHEN



ANOKIMOBİ – TELEFONKASTEN



ICI – STERISHIELD

Example applications for hygienic materials



BYTEC – SMART CART



COLEX – NEUVEND SI



INNERVISION – TOUGH-PAC



DYCEM – CC MATS



BEACONMEDAES – GEM10



DATA PLASTICS – MUNDSCHUTZ



Alperform[®] HM

Alperform® HM - Core portfolio



Alperform® HM Biomaster Protected			Antibacterial activity acc. to ISO 22196:2011 (reduction of inoculated bacteria cultures)			Remark
Masterbatch	Carrier	Use in	MRSA	E.Coli	Control	
APF PE HM AT 596	PE	<ul style="list-style-type: none"> ■ Polyolefins (e.g., PE, PP) ■ TPE (e.g., TPO, TPV, TPS) 	99.9 %	99.9 %	0 %	LOG 3 tested in PE
APF SAN HM AT 673	SAN	<ul style="list-style-type: none"> ■ Styrenics (e.g., ABS, SAN, PS) ■ PC/ABS 	99.9 %	99.9 %	0 %	LOG 3 tested in SAN
APF PA HM AT 774	PA	<ul style="list-style-type: none"> ■ Polyamides (e.g PA6, PA6.6) 	99.9 %	99.9 %	0 %	LOG 3 tested in PA6
APF PC HM AT 1000	PC	<ul style="list-style-type: none"> ■ Polycarbonates (e.g., PC, PC/ABS) 	99.9 %	99.9 %	0 %	LOG 3 tested in PC

- Effective from 1 % masterbatch dosage
- LOG 3 and LOG 4 achievable
- Further Alperform® HM masterbatches (e.g., based on TPU, PMMA, PLA or POM) available upon request

Alperform[®] HM - Antibacterial effectiveness



- Antibacterial effectiveness of Alperform[®] HM masterbatches in different polymers acc. to ISO 22196:2011

Material	Polymer	Alperform [®] HM	Dosage	E.Coli		Staphylococcus Aureus	
				LOG 10	Reduction	LOG 10	Reduction
Terluran GP 22	ABS	APF SAN HM AT 673	1.5 %	1.10	92.35 %	2.77	99.83 %
Terluran GP 22	ABS	APF SAN HM AT 673	2.0 %	2.40	99.61 %	2.77	99.83 %
Styrolution 495 N	HIPS	APF SAN HM AT 673	1.0 %	3.26	99.94 %	3.26	99.94 %
Styrolution 495 N	HIPS	APF SAN HM AT 673	1.5 %	4.61	99.99 %	2.81	99.85 %
Makrolon 2405	PC	APF PC HM AT 1000	1.0 %	3.26	99.94 %	2.30	99.47 %
Makrolon 2405	PC	APF PC HM AT 1000	1.5 %	4.89	99.99 %	2.78	99.83 %
Makrolon ET 3113	PC	APF PC HM AT 1000	1.5 %	4.78	99.99 %	2.20	99.41 %
Makrolon ET 3113	PC	APF PC HM AT 1000	2.0 %	3.26	99.94 %	1.70	98.10 %
Bayblend T65XF	PC/ABS	APF SAN HM AT 673	1.5 %	0.70	81.50 %	2.81	99.85 %
Bayblend T65XF	PC/ABS	APF SAN HM AT 673	2.0 %	3.26	99.94 %	2.70	99.82 %
Moplen HP500N	PP Homo	APF PE HM AT 596	1.5 %	4.70	99.99 %	2.51	99.73 %
Moplen HP500N	PP Homo	APF PE HM AT 596	2.0 %	3.26	99.94 %	3.26	99.94 %
Moplen EP300K	PP Copo	APF PE HM AT 596	1.0 %	3.26	99.94 %	3.26	99.94 %
Moplen EP300K	PP Copo	APF PE HM AT 596	1.5 %	4.76	99.99 %	2.93	99.88 %
Alfater XL A70I 4FC0010 NC	TPV	APF PE HM AT 596	1.0 %	0.80	83.91 %	2.30	99.55 %
Alfater XL A70I 4FC0010 NC	TPV	APF PE HM AT 596	3.0 %	4.74	99.99 %	3.37	99.96 %

Alperform[®] HM - Major characteristics

Alperform[®]

- Broad range of Alperform[®] HM masterbatches guarantees use in wide range of polymers (e.g., polyolefins, styrenics, polyamides, etc.)
- Full customer service incl. testing of antibacterial effectiveness, product labeling and regulatory
- Alperform[®] HM masterbatches are non-leaching and non-migrating
- Alperform[®] HM masterbatches provide effective and durable antibacterial protection of plastics
- Transparent and colored applications possible (must be checked case by case)
- Alperform[®] HM masterbatches show no negative impact on...
 - Mechanical properties of the polymer
 - Thermal stability and heat ageing resistance of the polymer



Source: Pixabay

Alperform[®] HM - Processing guidelines



■ Dosage

- Granular form enables easy dosing / handling
- Typical dosage
 - 1 - 2 % of Alperform[®] HM Masterbatch
 - Higher dosage may be necessary, e.g., for filled and reinforced (e.g., GF) compounds or "problematic" polymers such as ABS

■ Storage (**ATTENTION:** UV can cause silver discoloration)

- **UV** is **critical** for pure Alperform[®] HM masterbatch (high silver concentration) ➔ storage of Alperform[®] HM masterbatch in closed bags, dry and protected from direct UV / sunlight
- UV is not critical in final end product (silver concentration is strongly diluted) ➔ no impact of UV should be expected (UV stability then depends on the base polymer of which the finished product is made)

■ Migration stability in the end product

- Silver as active ingredients of Alperform[®] HM masterbatches are non-migrating through polymer matrix ➔ no restrictions on shelf life and efficacy in the product (like the use of migrating antistatic agents or organic biocides)

Alperform[®] HM - Processing guidelines



- Thermal stability of Alperform[®] HM masterbatches
 - High thermal stability (up to 600 °C) of the antibacterial agent (silver dissolved in glass salt matrix)
 - Limiting factor for thermal stability is usually the carrier polymer or the resin used
 - Alperform[®] HM masterbatches does not limit the temperature stability of the resin used
 - Same active material (silver ions) can be used in PE as well as in PC or PMMA
- Sulfur containing additives (**ATTENTION:** sulfur can react with silver and cause discoloration)
 - Wherever possible avoid sulfur-containing additives or ingredients
 - Check and avoid sulfur-containing antioxidants like thiosulfates
 - Check and avoid sulfur-containing color pigments (e.g., for red tones, ultramarine or gold tones)
 - Check and avoid peroxides
- Antistatic agents (e.g., in ABS or polyolefins)
 - Antistatic agents can form complexes with silver ions, which binds silver ions and can thus reduce their antibacterial efficacy
 - Avoid antistatic agents in the resins or use higher Alperform[®] HM masterbatch dosage

Alperform[®] HM - Processing guidelines



■ Lubricants and processing aids

- So far, no negative influence on antibacterial efficacy of the silver ions known

■ **ATTENTION:**

External lubricants or release aids (e.g., demolding spray) can influence the antibacterial efficacy, because they will likely act as a protecting film which hinders access of moisture to plastic surface (this surface moisture is necessary to release the silver ions to the plastic surface)

■ Fillers and reinforcing materials

- Filled plastics (e.g., GF or mineral) can require slightly higher amount of Alperform[®] HM → filler can “compete” with the silver ion release Alperform[®] HM (Example: for non-filled PP mostly 1 % dosage is already sufficient while filled PP mostly requires around 1.5 - 2 % dosage)

■ Example:

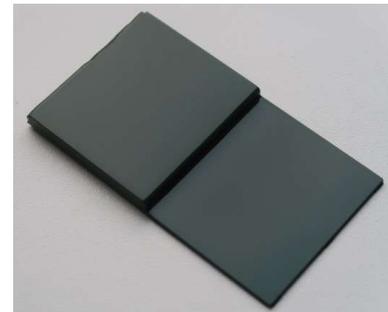
For non-filled PP mostly 1 % dosage of Alperform[®] HM is already sufficient while filled PP mostly requires around 1.5 - 2 % dosage of Alperform[®] HM

Alperform[®] HM - Processing guidelines



■ Colorants / color pigments

- So far, no negative influence of color masterbatches on antibacterial efficacy of the silver ions known
- **ATTENTION:**
 - White coloring (mostly done with TiO₂ → photo active) could need stabilization with antioxidants
 - Avoid sulfur-containing color pigments as far as possible (discoloration possible) → see information on "sulfur-containing additives" (slide 26)



Alperform[®] HM - Processing guidelines



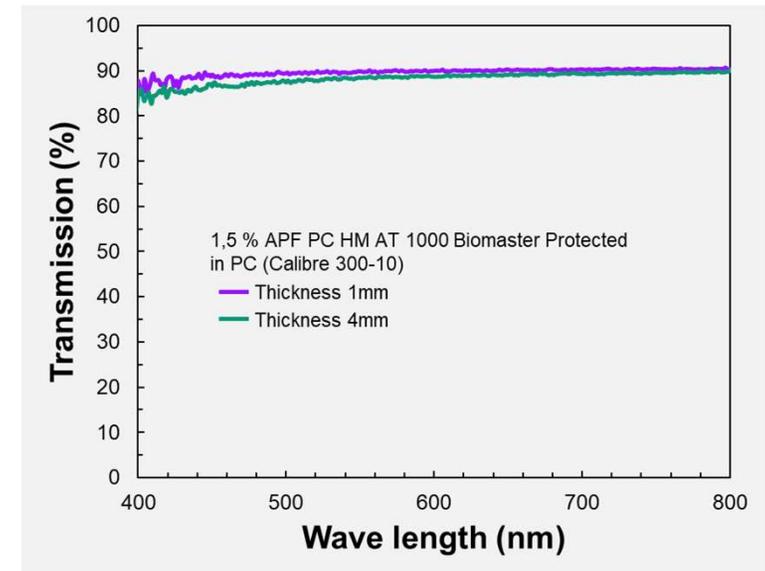
- Coloring and transparency of the resin in presence of Alperform[®] HM Masterbatch
 - So far, no negative influence of Alperform[®] HM on coloring and color appearance of the resin is known

- **ATTENTION:**

In the case of transparent resins, the transparency can change slightly (e.g., slight greyish haze can occur depending on angle of incidence)

Example:

- Thickness 1 mm: 89 - 90 % Transmission
- Thickness 4 mm: 88 - 89 % Transmission
- CALIBRE 300-10: 89 % Transmission (TDS value)



Alperform[®] HM - Processing guidelines



- Surface pretreatment (e.g., via Corona treatment)
 - Surface pretreatment is done e.g., in packaging with PE films for better printing ➔ so far, no negative influence on antibacterial effectiveness of the silver ions known

- Regrinding of production waste
 - Possible without any restrictions concerning antibacterial effectiveness
 - Limitations are determined by thermal stability of carrier polymer
 - Feeding level of regrind should not exceed typical dosages (e.g., 10 - 20 %) ➔ **ATTENTION:** be sure that desired dosage of Alperform[®] HM in final product (e.g., 2 % batch) is guaranteed!

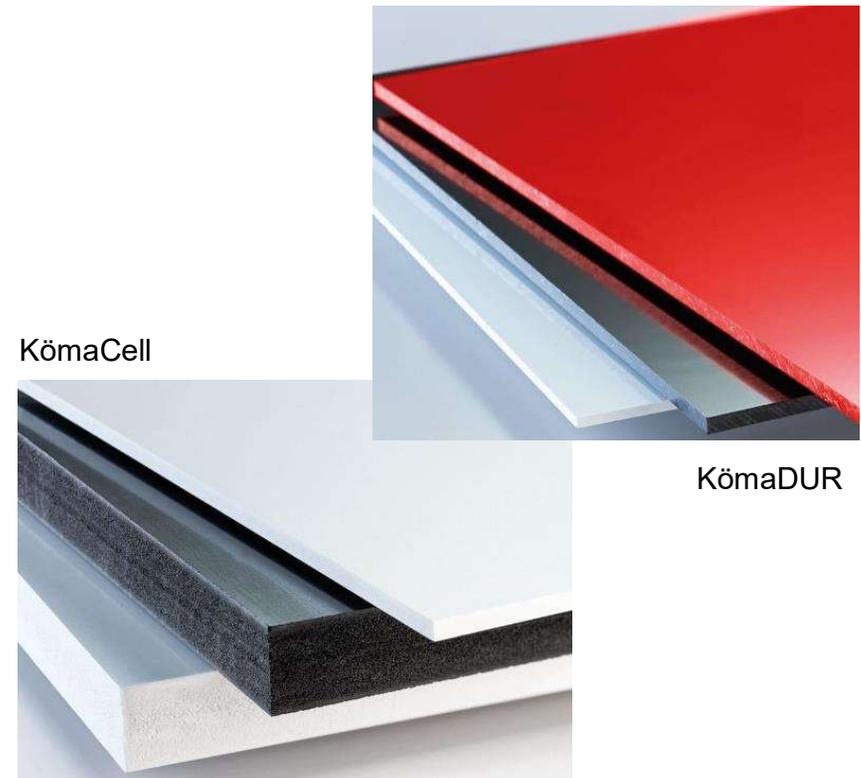
- Recycling of antibacterial products via external recycling streams
 - Basically possible
 - No legal restrictions known at the moment
 - No specific labeling or regulatory known at the moment

Alperform[®] HM - Case study

Alperform[®]

PVC + APF PVC HM 0259-18 Biomaster Protected

- Building & construction / Healthcare
 - Converter: Profine Group
 - OEM / Tier: Profine Group
- Application
 - Antibacterial protection of construction parts and panels
 - Use in buildings, hospitals, and healthcare area
- Benefits
 - **Permanent antibacterial protection**
 - Full customer service incl. product labeling
 - Easy handling and feeding during extrusion
 - Easy colorable
 - Foamed and compact sheet extrusion



Alperform[®] HM - Case study

Alperform[®]

PA6 + APF PA HM AT 774 Biomaster Protected

- Building & construction / Sanitary
 - Converter: Normbau GmbH
 - OEM / Tier: Normbau GmbH
- Application
 - Towel rails
 - Safety rails and setas for older persons
- Benefits
 - **LOG 3 with 1.5 % against S.Aureus & E.Coli**
 - Full customer service incl. product labeling
 - Easy handling and feeding
 - Great variety of colors possible due to easy colorability

**INTERNAL
USE ONLY!**



Alperform[®] HM - Use in compounding



- Easy feeding and mixing due to masterbatch form
 - Side reactions are prevented by the fact that the active ingredient is encapsulated by the carrier matrix
 - Pre-dispersion of active silver ions through the masterbatch (compounding can be done without special precautions)
- Water contact is no issue (e.g., underwater granulation)
 - Silver is a noble metal and does not oxidize upon contact with water and oxygen
- Attention must be paid on some additives
 - Sulfur-containing stabilizer and processing aids
 - Sulfur-containing fillers (e.g., sulfur-contaminated carbon black)
 - Peroxides

Alperform[®] HM - Compounding case study



- **APF PVC HM AT 1034 Biomaster Protected (APF UN HM AT 1034)**
- APF UN HM AT 1034 is based on PVC compatible UN carrier (phthalate free)
- Log 3 achievable with 1 % masterbatch dosage
- Rigid and flexible PVC applications as well as transparent applications possible
- Excellent antibacterial effectiveness (test acc. to modified JIS Z 2801:2000 as CFU/cm²)

Base polymer	APF PVC HM AT 1034 Biomaster Protected (APF UN HM AT 1034)	Organism	Contact time		Reduction	
			0 h	24 h	LOG 10	%
PVC formulation	1.0 %	E.Coli	1.7E+04	< 11.11	> 3.18	99.93%
PVC formulation	1.5 %	E.Coli	1.7E+04	< 11.11	> 3.18	99.93%
PVC formulation	0.0 %	E.Coli	1.7E+04	5.6E+05	-	-
PVC formulation	1.0 %	MRSA	1.8E+04	< 11.11	> 3.20	99.94%
PVC formulation	1.5 %	MRSA	1.8E+04	< 11.11	> 3.20	99.94%
PVC formulation	0.0 %	MRSA	1.8E+04	4.3E+03	-	-



Alcom[®] HM

Alcom[®] HM - Core portfolio



Antibacterial activity acc. to ISO 22196:2011
(reduction of inoculated bacteria cultures)

Alcom [®] HM Biomaster Protected	Color	MRSA	E.Coli	Control	Remark
ALCOM HM ABS 1000 AG 14077	NC	99.82%	99.99%	0 %	LOG 2 (MRSA) LOG 4 (E.Coli)
ALCOM HM PC 1000 AG 14078	NC	99.90%	99.99%	0 %	LOG 3 (MRSA) LOG 4 (E.Coli)
ALCOM HM PC+ABS 1000 AG 14082	NC	99.88%	99.99%	0 %	LOG 2 (MRSA) LOG 4 (E.Coli)
ALCOM HM PP 1000 AG 14079	NC	99.92%	99.99%	0 %	LOG 3 (MRSA) LOG 4 (E.Coli)

- 99 % reduction in all Alcom[®] HM grades against both germs
 - E.Coli → LOG 4 in all Alcom[®] HM grades against E.Coli
 - MRSA → ABS containing Alcom[®] HM grades with LOG 2 = 99.8% against MRSA

Alcom[®] HM - Major characteristics

- Alcom[®] HM Compounds provide effective and durable antibacterial protection of final product
- Full customer service incl. testing of antibacterial effectiveness, product labeling and regulatory
- Compound solution reduces handling/use of different masterbatches (e.g., color batch, hygienic batch, etc.)
- No additional feeding technologies required (as in case of masterbatches)
- Customized color matches possible
- Customized polymer base possible
- Customized compound properties possible



Source: Pixabay

Alcom[®] HM - Case study

ALCOM HM ABS 1000 AG 17161 WT1160-17

- Electronics
 - Converter: Schneider Electric
 - OEM / Tier: Schneider Electric
- Application
 - Light switches with antibacterial properties
- Benefits
 - **Customized white color combined with permanent antibacterial protection**
 - Very good surface appearance with high gloss
 - Full customer service incl. product labeling

**INTERNAL
USE ONLY!**





Regulatory

EU Biocide Regulation (EU 528/2012)

Key facts about the EU Biocide Regulation (EU 528/2012)

- Biocide regulation covers approval process and use of biocides in **the whole EU**
- Principle of biocide regulation: All active and used biocide products must be reviewed
- Biocide regulation is equal **to national law** ➔ no more regional exceptions in future
- All biocide products **must be mentioned in EU List (Annex I)** in order to be allowed for use
- Old actives (on market before 2000) on review list
- So far from 660 actives 70 are approved, 160 are under evaluation, 430 need to be still submitted
- **Silver is reviewed/approved by Sweden and hence on review list** ➔ final decision still open



EU Biocide Regulation (EU 528/2012)

What are **biocides** acc. to EU Biocide Regulation (EU 528/2012)?

- Substance or mixture made of or containing biocide actives (purely physical and mechanical mode excluded)
- Need to be approved according to EU 528/2012 in one ore more EU countries

What are **treated articles** acc. to EU Biocide Regulation (EU 528/2012)?

- If **biocide property is not the prime feature/property** a product is a **treated article**

Example: A kitchen sponge with antibacterial properties (= treated article) **BUT** a biocide foam which can also be used as a kitchen sponge (= biocide product)

- Articles, mixtures or substances treated with a biocide product (e.g., textiles, lacquers, waste-bags, cleaners, plastic products)
- **TREATED ARTICLES DO NOT NEED TO BE APPROVED**
- Only the used biocide product need to be approved and on the EU review list

Consequences of EU 528/2012

- Biomaster additives (Alperform[®] HM Biomaster Protected) are **biocides**
 - Are all on the review list → meaning final approval is pending
 - Biomaster is taking care on all relevant approval matters
 - **Are in compliance with EU BPR 528/2012 and are marketable without any restriction EU wide**
- Alcom[®] HM compounds are **treated articles**
- Our customers will market **treated articles (NO biocides)**
 - **BIOCIDE FUCTION IS NOT THE PRIMARY FEATURE**
 - No approval needed
 - **Product labeling required (see label beside)**
 - All biocides used in the final product must be approved or on review list

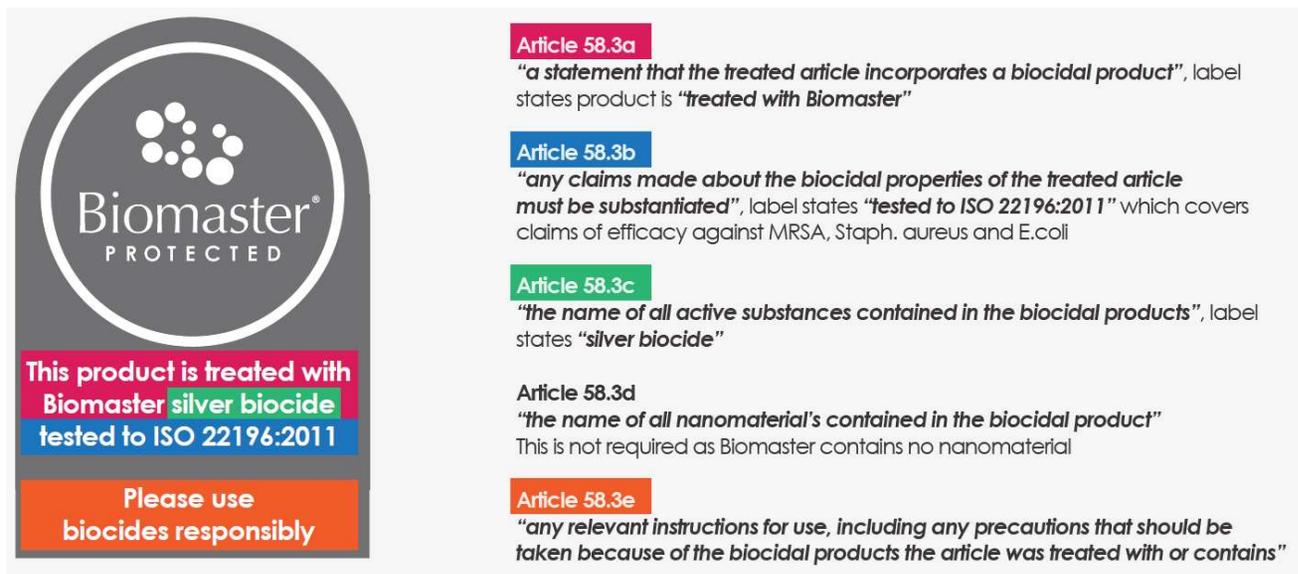


Proposal labeling for "treated articles"
(Source: Biomaster)

Consequences of EU 528/2012

Market as **treated articles** – What does it mean?

- Materials and products market as **treated articles must be labeled**
- Mandatory details on a product label are regulated in article 58 of the EU 528/2012 (see example below)



Article 58.3a
"a statement that the treated article incorporates a biocidal product", label states product is "treated with Biomaster"

Article 58.3b
"any claims made about the biocidal properties of the treated article must be substantiated", label states "tested to ISO 22196:2011" which covers claims of efficacy against MRSA, Staph. aureus and E.coli

Article 58.3c
"the name of all active substances contained in the biocidal products", label states "silver biocide"

Article 58.3d
"the name of all nanomaterial's contained in the biocidal product"
This is not required as Biomaster contains no nanomaterial

Article 58.3e
"any relevant instructions for use, including any precautions that should be taken because of the biocidal products the article was treated with or contains"

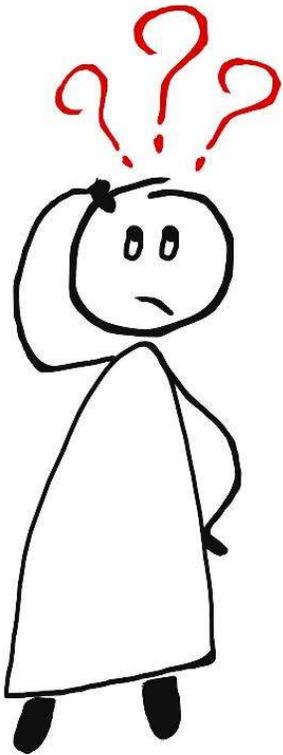
Proposal labeling for "treated articles"
(Source: Biomaster)

Hygienic materials from MOCOM have relevant approvals

- Biomaster additive (silver ions) in Alperform® HM and Alcom® HM are compliant to current status of EU Biocide Regulation (EU 528/2012)
- Alperform® HM masterbatches are registered at German BAuA (Federal Institute for Occupational Safety and Health = Bundesanstalt für Arbeitsschutz und Arbeitsmedizin) ➔ N-numbers to be found in our MSDS (**Note:** national registration in other EU countries may be necessary for Alperform® HM (biocidal product) if customer uses the Alperform® HM in its production in the respective EU country – this applies as long as the review process of silver in BPR 528 is not completed // for Alcom® HM such registrations are not necessary as it is already a treated article and not a biocidal product)
- US EPA Registration available (statement on request)
- Food contact approval available (confirmations on request)
- Skin contact compliance available (confirmations on request)



Interest or questions?



Source: Pixabay

In case of questions or for further details,
please contact your local Sales or
Technician!

Disclaimer

Note:

Any information given on the chemical and physical characteristics of our products, including technical advice on applications whether verbally, in writing or by testing the product, is given to the best of our knowledge. However, this information is given without obligation and does not exempt the buyer from carrying out own investigations and tests in order to ascertain the product's specific suitability for the purpose intended. The buyer is solely responsible for the application, utilization and processing of the products, and must observe the laws and government regulations and the consequential rights of any third party. At all times our Conditions of Sale apply. Our product lists include dangerous goods. The correct marking of such goods is described in the respective data sheets.

Thank You!

MOCOM