Specialized Filter Technology

백림화학주식회사

BAIKLIM Chemical Co., Ltd.



회사소개 Company Introduction

회사명 Company name

백림화학㈜ BAIKLIM Chemical Co., LTD.

본사주소 Address of head office

50936 경상남도 김해시 김해대로2636번길 33(안동)
33, Gimhae-daero 2636beon-gil, Gimhae-si, Gyeongsangnam-do, 50936, Rep. of KOREA

주요생산품 Main products

냉장고용 탈취 필터, 공기청정기용 탈취 필터, 미니공기청정기 '에어스파'
Deodorization Filter for refrigerator, Deodorization Filter for Air Cleaner, Mini Air Cleaner 'AIRSPA'

회사 연혁 Company history

1986. 08	백림산업사 창업 Establishment of BAIKLIM Industrial
1988. 08	백림화학 상호변경 및 업종변경(신발부품 → 탈취제) Changed company name to BAIKLIM Chemical and changed business type(shoe parts → deodorant)
1989. 01	LG전자 창원 냉장고 사업부 탈취제 납품 Supply of deodorant for LG Electronics Changwon refrigerator division
1990. 10	LG전자 에어컨 사업부 탈취필터 국내최초 개발 적용 Developed the first deodorization filter in Korea for LG Electronics air conditioner Division
1991. 12	#230저온촉매 공동개발 적용 – 발명특허(LG전자 공동) Co-development of #230 Low Temperature Catalyst – Patent of invention(LG Electronics Joint)
1995. 10	공장신축이전(현소재) Factory new construction and relocation(present location)
	일본 KURARAY 기술협력, 3D 탈취제 가공기술 이전 탈취제 성형방법 및 기술 실용신안 특허 Technology cooperation with KURARAY(Japan) and technology transfer for 3D deodorant processing Patent on a new device for deodorant molding method and technology
1996. 12	#230+Pd촉매 공동개발 적용(LG전자, KURARAY) – 발명특허(LG전자 공동) Joint development of #230 Catalyst + Pd(LG Electronics, KURARAY) – Patent of invention(LG Electronics Joint)
1998. 08	LG전자 냉장고용 정수필터 개발 적용(외장형) Development of water filter for LG refrigerator(external type)
2000. 01	LG전자 멕시코법인, 중국법인 탈취제 수출 Exports deodorant to LG Electronics Mexico, China corporation
2002. 01	LG전자 인도법인, 인도네시아법인 탈취제 수출 Exports deodorant to LG Electronics India, Indonesia corporation
2004. 01	냉장고 선도 유지용 비타민 필터 및 천연항균제를 이용한 항균 탈취필터 개발 Development of antimicrobial deodorization filter using vitamin and natural antibacterial agent for keeping freshness of refrigerator
2011. 05	공장 증축 및 기업부설연구소 설립 Expansion of factories and establishment of research institute
2013. 01	백림화학 주식회사 법인 설립 Establishment of BAIKLIM Chemical Co., Ltd.
2018. 03	SERI(냉장고 부품업체 단체) 회원사 Member of SERI(Supplier Ecosystem of Refrigeration Industry)

냉장고용 탈취 필터 Deodorization Filter for Refrigerator

저온금속촉매 Low-Temperature Metal Catalyst

Pd(Palladium), MnO_2(Manganese oxide), CuO(Copper oxide) 의 금속 촉매 담지

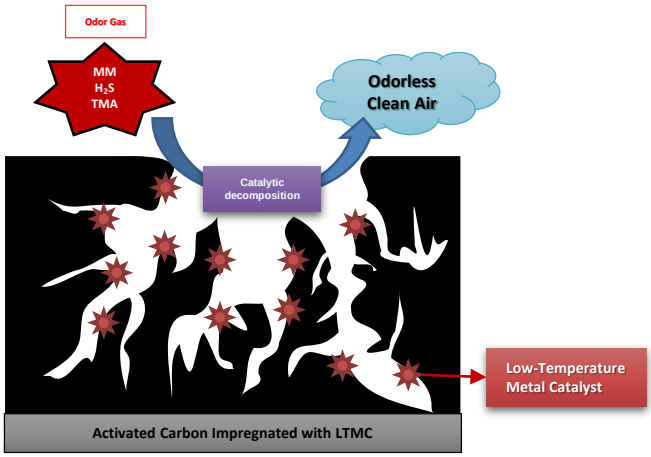
Impregnated with metal catalysts such as Pd(Palladium), MnO_2(Manganese oxide), CuO(Copper oxide)

실온 또는 그 이하의 낮은 온도 영역에서 작동 (-20℃~40℃)

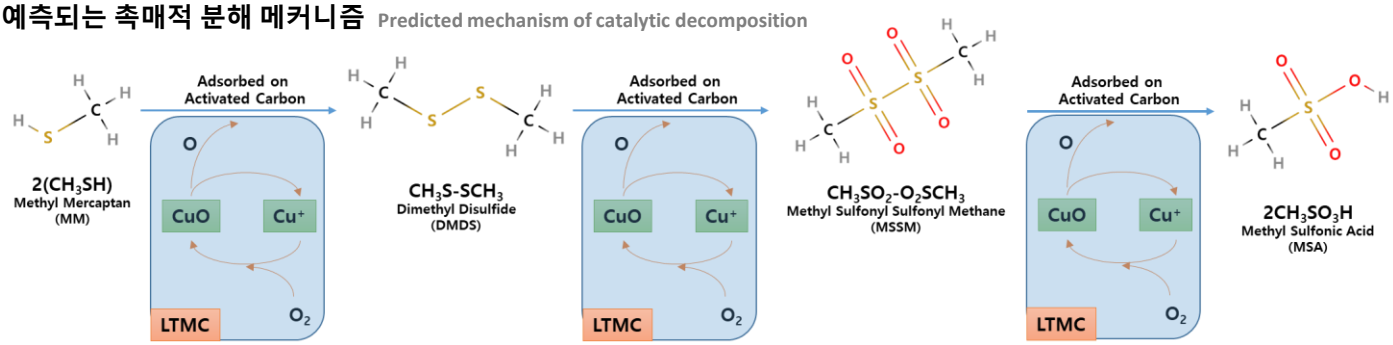
Activity in the low temperature region at or below room Temperature(-20℃~40℃)

다양한 악취 물질(Methyl Mercaptan, Hydrogen Sulfide, Trimethylamine)을 촉매의 산화 작용에 의해 효과적으로 분해 제거

Effectively decompose and remove various odor substances(Methyl Mercaptan, Hydrogen Sulfide, Trimethylamine) by oxidizing action of catalyst

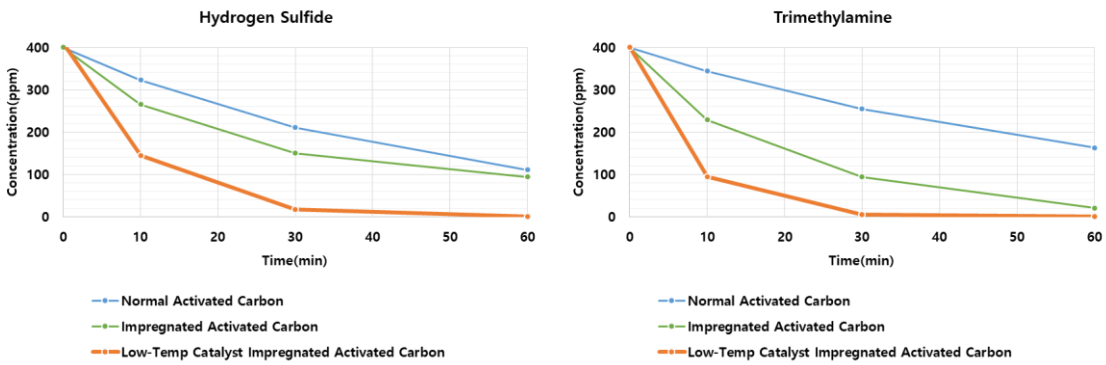


예측되는 촉매적 분해 메커니즘 Predicted mechanism of catalytic decomposition

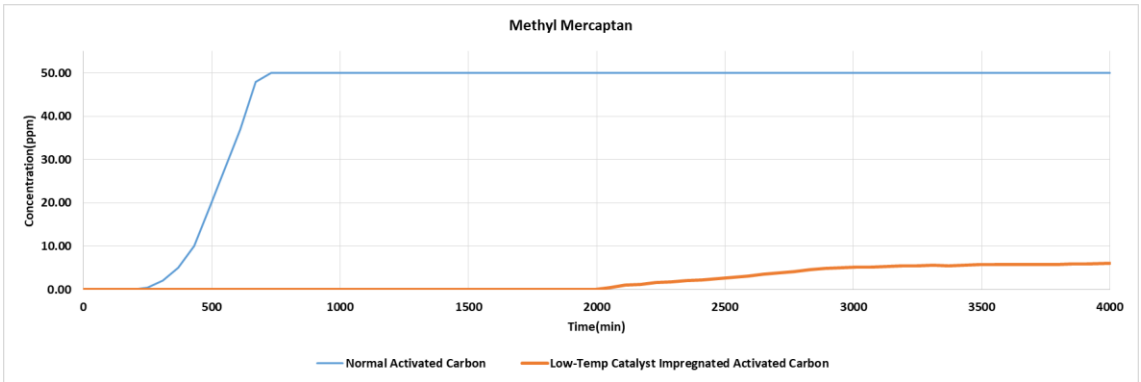


평가 결과 Test Results

100L 챔버 시험법 100 Liter chamber test method(H_2S Hydrogen Sulfide, TMA Trimethylamine)



U자관 시험법 U-tube test method(CH_3SH Methyl Mercaptan)



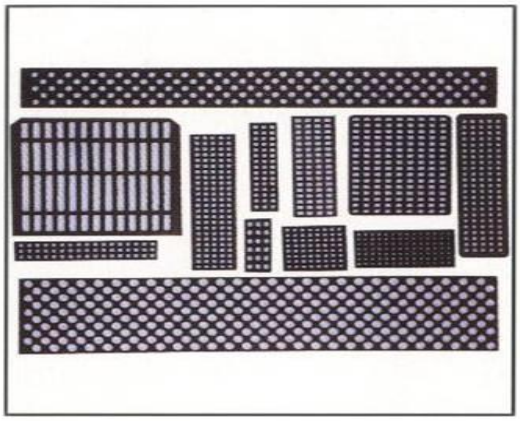
냉장고용 탈취 필터 Deodorization Filter for Refrigerator

3D 블록 탈취 필터 3D Block Deodorization Filter

백림화학㈜의 3D 블록 활성탄 필터는 일본 KURARAY와 공동으로 개발한 저온금속촉매가 담지된 활성탄을 사용하여 제작한 탈취필터로서 다음의 특징을 가진다.

3D block activated carbon filter of BAIKLIM Chemical Co., Ltd. is a deodorization filter fabricated by using activated carbon impregnated with Low-Temperature Metal Catalyst developed jointly with KURARAY(JAPAN) and has the following Characteristics.

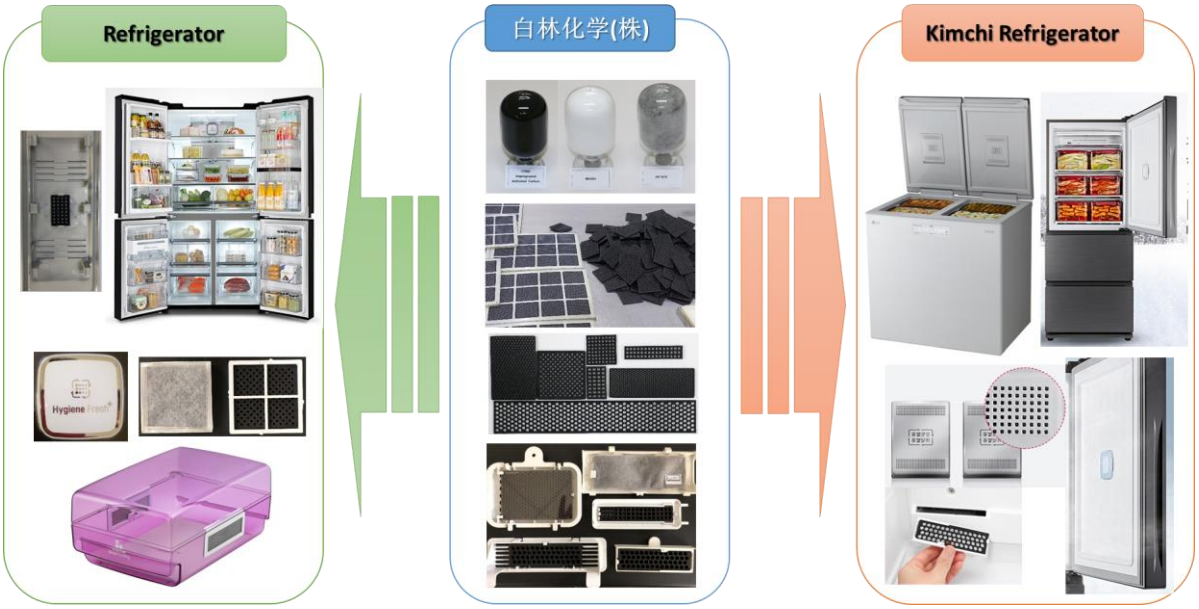
1. 낮은 압력손실과 빠른 흡착속도
   Low pressure drop & fast adsorption rate
2. 내열, 내식, 항균성
   Heat resistance, corrosion resistance, antibacterial property
3. 높은 체적당 흡착량
   High volumetric adsorption amount
4. 저온금속촉매 첨착에 의한 긴 수명
   Long life due to Low-Temperature Metal Catalyst impregnation
5. 다양한 형상으로의 작업이 용이
   Easy to work with various shapes and sizes



제조공정 Manufacture Process



제품활용 Application



냉장고용 탈취 필터 Deodorization Filter for Refrigerator

필터의 규격 결정 Determining the Specification of the Filter

백림화학㈜의 3D 블록 활성탄 필터는 실생활에서 냉장고내에 발생하는 다양한 냄새 성분의 종류와 농도 분석을 통하여 탈취 필터의 규격을 결정한다.

3D block activated carbon filter of BAIKLIM Chemical Co., Ltd. determines the deodorizing filter specification by analyzing the kind and concentration of various odor components generated in the refrigerator in real life.

1. 냉장고에서 발생되는 취기가스의 총량은 사용자의 사용조건에 따라 다양
   The total amount of odorous gas generated in the refrigerator varies according to the user's use conditions
2. 소비자의 감성에 따라 느끼는 취기강도는 모두 다름
   The intensity of the odor felt by consumers depends on their sensibility
3. 일본과 한국의 소비자들이 실제 사용하는 냉장고 내에서 발생하는 냄새 성분의 종류와 농도를 분석
   Analyzes the types and concentration of odor components in refrigerators used by Japanese and Korean consumers

냉장고 용량에 따른 최적 필터의 크기 Optimal Filter Size by Refrigerator Capacity

냉장고 용량 Refrigerator Capacity (L)		200	400	600	800	1000
악취물질 총제거량 기준(*) Estimated total amount of of odor substances to be removed	85% 이상 More than 85%	10,500 ㎣ (5 g)	21,000 ㎣ (10 g)	31,500 ㎣ (14 g)	42,000 ㎣ (19 g)	52,500 ㎣ (24 g)
	95% 이상 More than 85%	14,000 ㎣ (6 g)	28,000 ㎣ (13 g)	42,000 ㎣ (19 g)	56,000 ㎣ (26 g)	70,000 ㎣ (32 g)
	99% 이상 More than 85%	18,000 ㎣ (8 g)	36,000 ㎣ (17 g)	54,000 ㎣ (25 g)	72,000 ㎣ (33 g)	90,000 ㎣ (41 g)

(*) 악취물질 총제거량 기준: (日) HITACHI社 기준, 400리터급 냉장고에서 8년 동안 발생하는 취기 총량은 54,143 ppm 이다.

Estimated total amount of odor substances to be removed: total amount of odor generated in a 400 liter class refrigerator for 8 years based on HITACHI company is 54,143 ppm(1997)

냉장고내의 대표 냄새성분 Representative odor component in refrigerator

▷ 메틸메르캅탄(CH_3SH) Methylmercaptan

: 김치, 마늘, 양파, 부추, 무 등에서 발생하는 냄새 Odor from kimchi, garlic, onion, leek, radish etc.

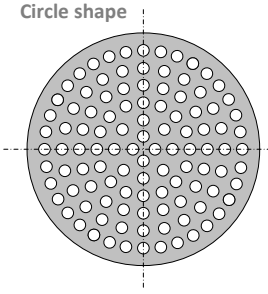
▷ 트리메틸아민($(CH_3)_3N$) Trimethylamine

: 어류, 소시지, 마늘, 단무지 등에서 발생하는 냄새 Odor from fish, sausage, garlic, radish etc.

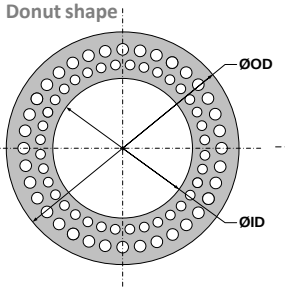
필터의 다양한 형상 The Various Shapes of the Filter

필터의 모양은 필터의 크기, 유로의 형상 등을 고려하여 최적의 효율을 가질 수 있도록 설계한다. 특히 고객의 요청에 따라 다양한 크기와 형상을 가질 수 있다. The shape of the filter is designed to have the optimum efficiency considering the size of the filter and the shape of the flow path. In particular, it can have various sizes and shapes according to customer's request.

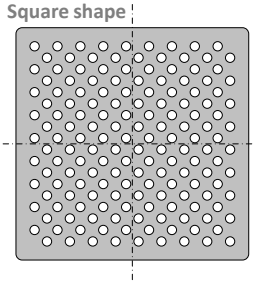
원형 Circle shape



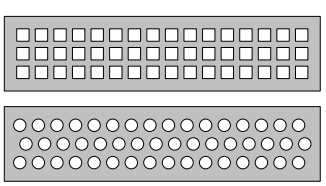
도넛형 Donut shape



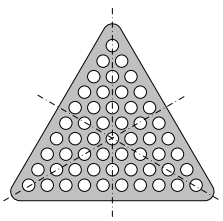
정사각형 Square shape



정사각형 Rectangular shape



삼각형 Triangle shape



냉장고용 하이진 필터 Hygiene Filter for Refrigerator

하이진 필터 모듈 Hygiene Filter Module

하이진 필터 모듈 어셈블리 및 특징 Hygiene filter module assembly and features



필터케이스
Filter Case



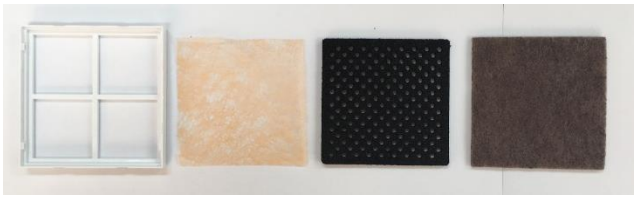
필터모듈
Filter Module



LED모듈
LED Module



DC팬
DC FAN

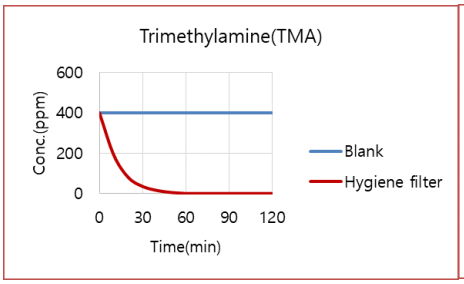


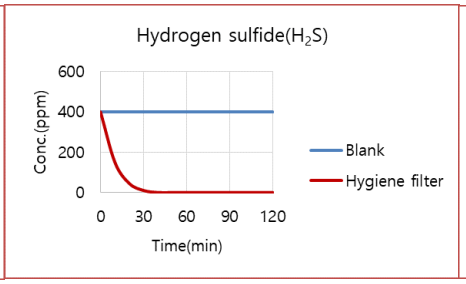
1. **음식물 냄새 제거** Removal of food odors
   황화수소(Hydrogen Sulfide, H_2S)
   메틸메르캅탄(Methyl Mercaptan, CH_3SH)
   트리메틸아민(Trimethylamine, $(CH_3)_3N$)

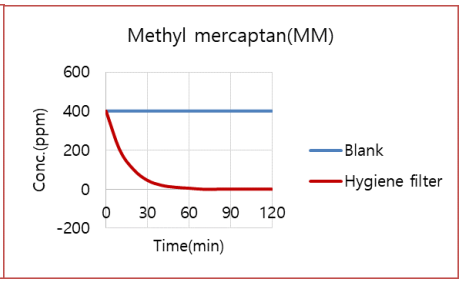
2. **광촉매에 의한 항균** Removal of bacteria by photocatalyst
   대장균 Escherichia coli ATCC 8739
   황색포도상구균 Staphylococcus aureus ATCC 6538P
   폐렴균 Klebsiella pneumoniae ATCC 4352
   살로넬라균 Salmonella aertrycke NICPBP 50115
   리스테리아균 Listeria monocytogenes NICPBP 54002

평가 결과 Test Results

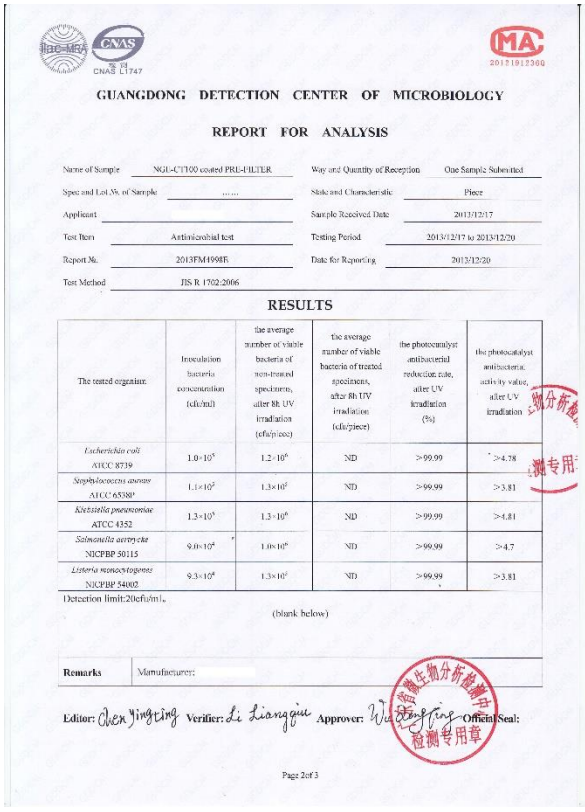
100L 챔버 시험법 100 Liter chamber test method(H_2S Hydrogen Sulfide, TMA Trimethylamine, CH_3SH Methyl Mercaptan)







광촉매의 항균 활성 및 효능 시험(JIS R 1702) Test for antibacterial activity of photocatalytic products and efficacy



GUANGDONG DETECTION CENTER OF MICROBIOLOGY

REPORT FOR ANALYSIS

Name of Sample: NGL-CT100 coated PRE-FILTER
Way and Quantity of Reception: One Sample Submitted
Spec and Lot No. of Sample: .....
State and Characteristic: Piece
Applicant:
Sample Received Date: 2013/12/17
Test Item: Antimicrobial test
Testing Period: 2013/12/17 to 2013/12/20
Report No.: 2013FM4998E
Date for Reporting: 2013/12/20
Test Method: JIS R 1702:2006

RESULTS

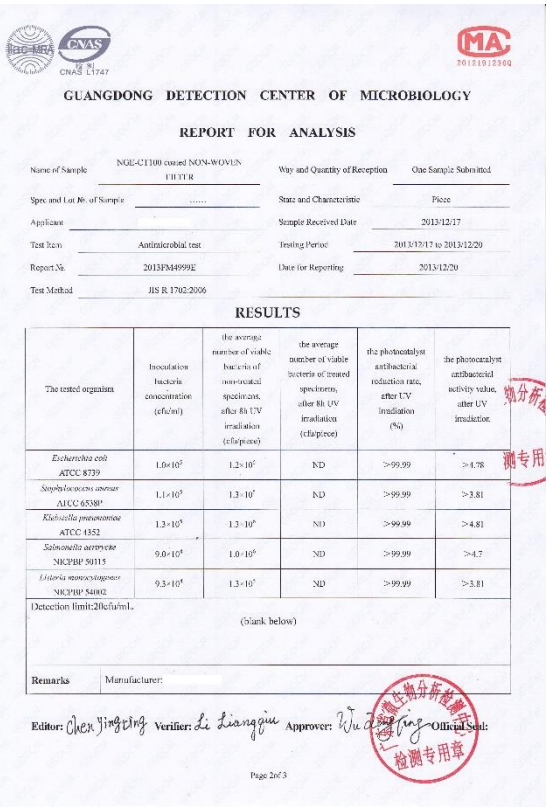
The tested organism	Inoculation bacteria concentration (cfu/ml)	the average number of viable bacteria of non-treated specimens, after 8h UV irradiation (cfu/piece)	the average number of viable bacteria of treated specimens, after 8h UV irradiation (cfu/piece)	the photocatalyst antibacterial reduction rate, after UV irradiation (%)	the photocatalyst antibacterial activity value, after UV irradiation
Escherichia coli ATCC 8739	1.0×10^5	1.2×10^6	ND	>99.99	>4.78
Staphylococcus aureus ATCC 6538P	1.1×10^5	1.3×10^5	ND	>99.99	>3.81
Klebsiella pneumoniae ATCC 4352	1.3×10^5	1.3×10^6	ND	>99.99	>4.81
Salmonella aertrycke NICPBP 50115	9.0×10^5	1.0×10^6	ND	>99.99	>4.7
Listeria monocytogenes NICPBP 54002	9.3×10^4	1.3×10^5	ND	>99.99	>3.81

Detection limit:20cfu/mL.
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Remarks: Manufacturer:

Editor: Chen Yingting Verifier: Li Liangqiu Approver: Official Seal:

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GUANGDONG DETECTION CENTER OF MICROBIOLOGY

REPORT FOR ANALYSIS

Name of Sample: NGL-CT100 coated NON-WOVEN FILTER
Way and Quantity of Reception: One Sample Submitted
Spec and Lot No. of Sample: .....
State and Characteristic: Piece
Applicant:
Sample Received Date: 2013/12/17
Test Item: Antimicrobial test
Testing Period: 2013/12/17 to 2013/12/20
Report No.: 2013FM4999E
Date for Reporting: 2013/12/20
Test Method: JIS R 1702:2006

RESULTS

The tested organism	Inoculation bacteria concentration (cfu/ml)	the average number of viable bacteria of non-treated specimens, after 8h UV irradiation (cfu/piece)	the average number of viable bacteria of treated specimens, after 8h UV irradiation (cfu/piece)	the photocatalyst antibacterial reduction rate, after UV irradiation (%)	the photocatalyst antibacterial activity value, after UV irradiation
Escherichia coli ATCC 8739	1.0×10^5	1.2×10^6	ND	>99.99	>4.78
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Klebsiella pneumoniae ATCC 4352	1.3×10^5	1.3×10^6	ND	>99.99	>4.81
Salmonella aertrycke NICPBP 50115	9.0×10^5	1.0×10^6	ND	>99.99	>4.7
Listeria monocytogenes NICPBP 54002	9.3×10^4	1.3×10^5	ND	>99.99	>3.81

Detection limit:20cfu/mL.
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Remarks: Manufacturer:

Editor: Chen Yingting Verifier: Li Liangqiu Approver: Official Seal:

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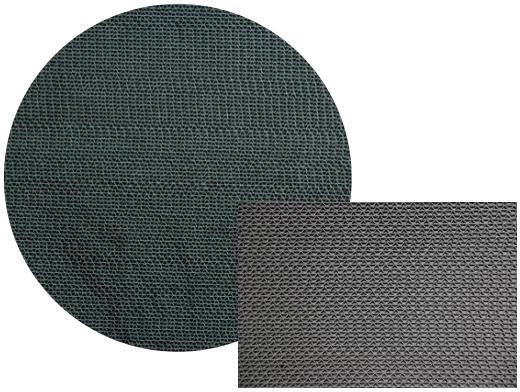
공기청정기용 탈취 필터 Deodorization Filter for Air Cleaner

콜게이트 탈취 필터 Corrugate Deodorization Filter

백림화학㈜의 콜게이트 탈취 필터는 종이나 부직포 등의 소재를 콜게이트 형상으로 제작 후 표면에 고기능성 흡착제를 코팅하여 제작하므로 높은 탈취효율과 낮은 압력손실을 가진다.

Corrugate deodorization filter of BAIKLIM Chemical Co., Ltd. Has high deodorization efficiency and low pressure loss because it fabricates material such as paper or nonwoven fabric in the form of corrugate and then coating with high functional adsorbent on the surface.

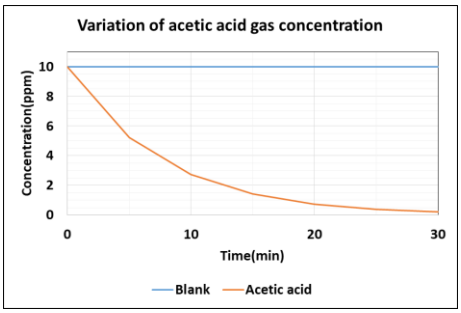
1. 낮은 압력손실과 빠른 흡착속도
   Low pressure drop & fast adsorption rate
2. 내열, 내식, 항균성
   Heat resistance, corrosion resistance, antibacterial property
3. 높은 체적당 흡착량
   High volumetric adsorption amount
4. 흡착제에 따른 다양한 악취에 대응
   Responds to various odors according to adsorbent
5. 뛰어난 가공성
   Excellent processability

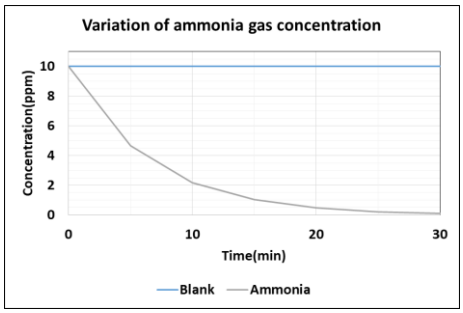


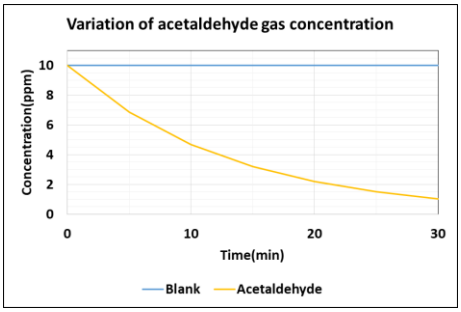
평가 결과 Test Results

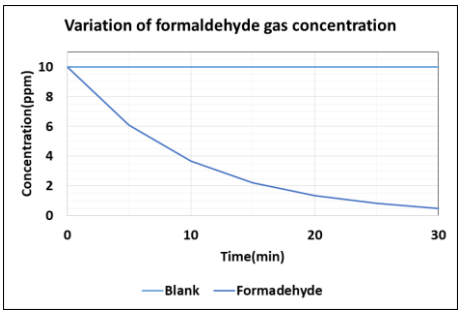
8 ㎥ 챔버 시험법(한국CA규격시험) 8 ㎥ chamber test method (Collective Quality Certification System for Indoor Air Cleaner in Korea)

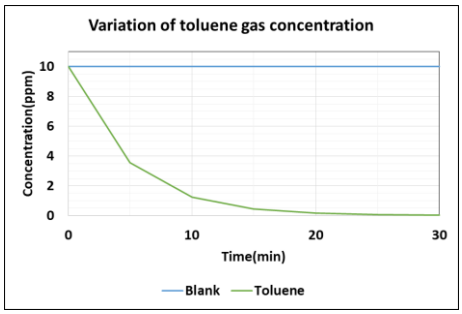
Target Gas	Initial Concentration (C_0)	Final Concentration (C_{30})	Deodorization Efficiency (%)
Blank	10	10	0
Acetic acd	10	0.2	98.0
Ammonia	10	0.1	99.0
Acetaldehyde	10	1.03	89.7
Formaldehyde	10	0.5	95.0
Toluene	10	0.02	99.8
Average			96.3











Test Method:
8 ㎥ Chamber toxic gas removal test
Target gas:
Acetic acid, Ammonia, Acetaldehyde, Formaldehyde, Toluene
Initial gas contentration:
10 ppm
Measuring instrument:
FT-IR & GC
Filter type:
Corrugate filter coated with impregnated activated carbon
Filter size:
300*465*10 mm





미니 공기청정기 '에어스파' Mini air cleaner 'AIRSPA'

'에어스파' 특징 Features of 'AIRSPA'

백림화학㈜의 미니 공기청정기 '에어스파'는 냉장고 냄새 탈취에 대한 특허 받은 고유 기술로 만든 제품입니다.

The mini air cleaner 'AIRSPA' of BAIKLIM Chemical Co., LTD is a patented unique technology for deodorization of refrigerator.

1. 저온금속촉매가 첨착된 야자각 활성탄으로 냄새를 흡착, 분해하여 완벽하게 탈취합니다.
   The coconut shell activated carbon impregnated with low temperature metal catalyst adsorbs and decomposes the odor and completely deodorizes it.
2. 야자각 활성탄 사용으로 안심하고 사용할 수 있습니다.
   Can be used with confidence by using coconut shell activated carbon.
3. 특수 DC FAN을 사용하여 소음이 거의 없으며 발열이 없습니다.
   With special DC FAN, there is little noise and no heat.
4. 탈취제 교환 없이 오래 사용할 수 있습니다(탈취제 수명: 7년).
   Can be used for long without deodorant replacement(Deodorant life time: 7 years).
5. '감' 추출물 항균필터를 적용하여 대장균, 황색포도상구균, 폐렴균 해결
   'Persimmon' extract antibacterial filter applied to solve Escherichia coli, Staphylococcus aureus, Klebsiella pneumoniae.
6. USB 충전 방식으로 인한 전기 적정 없음.
   No need to worry about electricity due to USB charging method.
7. LG화학 정품 리튬이온 Battery 사용
   Use genuine Li-ion batter from LG Chem.



AIR SPA

냉장고 / 신발장 / 옷장 / 화장실 / 차량

Refrigerator / Shoe shelf / Closet / Toilet / Vehicle

'에어스파' 제품의 필터 구성 Filter configuration of 'AIRSPA'





백림 기술연구소 BAIKLIM R&D Institute

기술연구소 R&D Institute

백림화학㈜ 기술연구소는 항균, 탈취에 대한 친환경 기능성 신소재개발과 기술혁신에 집중하고 있다. 각종 공기청정기용 필터소재 개발 및 성능평가를 통해 제품의 우수한 품질을 효과적으로 관리한다.

The R&D Institute of BAIKLIM Chemical Co., LTD. Focuses on the development of eco-friendly new materials and technology innovation for antibacterial and deodorization. Effective management of superior quality of products through development of filter materials for various air cleaners and performance evaluation.

연구영역 Research Area

실내 공기질 향상을 위한 다양한 에어필터 개발 Development of various air filter for indoor air quality improvement

신소재 개발 및 기술혁신 Development of new materials and technological innovation

산학연 공동 개발 Collaborative development of industry, academy and research institute





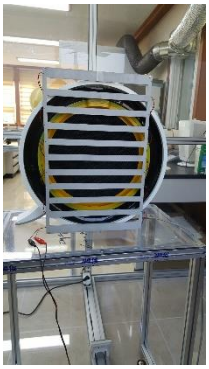


고효율의 촉매 소재 개발 Development of catalytic material with excellent efficiency

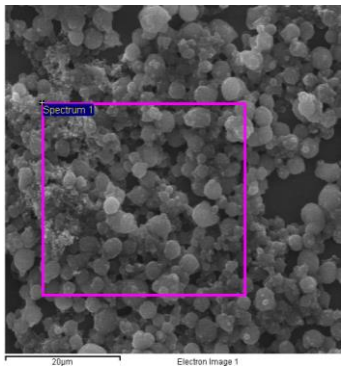
자외선 광촉매 UV photo-catalytic materials

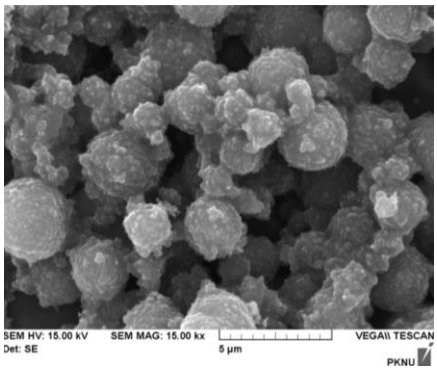
가시광선 광촉매 Visible photo catalytic materials

저온 금속 촉매 Low temperature metal catalytic materials







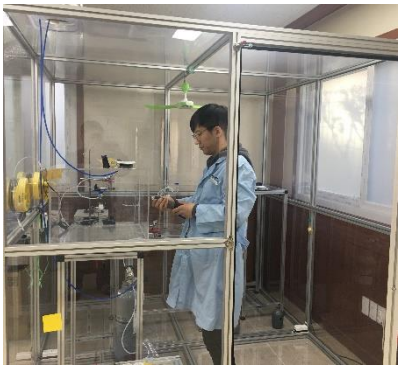


공기청정기 성능 평가 Air cleaner performance evaluation

한국 CA 성능 평가 Korea air cleaner performance test

중국 GB/T CADR & CCM 평가 China GB/T CADR and CCM test





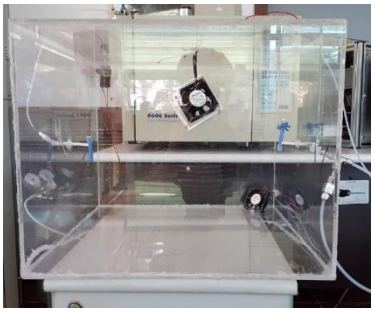


백림 기술연구소 BAIKLIM R&D Institute

보유장비 R&D Institute

시험챔버 Test chamber



샘플 및 시제품 제작 Making samples and prototypes



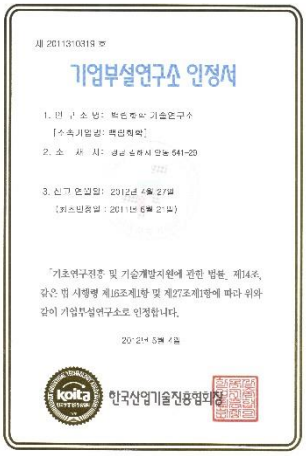





인증서 및 특허 Certificates and Patents















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