



INNOVATIVE FABRIC FOR FACE MASK APPLICATIONS



MOGUL

Diversity in Nonwovens

- A Turkish-based family-owned international nonwoven manufacturer
- A top global 40 nonwoven company, with 130 million USD sales in 2018
- Major technologies – spunbond, spunlace, meltblown, and composite
- Certified by ISO 9001, ISO 14001, OHSAS 18001, ISO 13485, ISO 22716, and ISO 5000
- Major markets – PPE, filtration, wipe, automotive, home textile, medical, hygiene, cleaning, spill control, etc.
- Competitive advantages – Unique functional nonwovens, quality consistence, cost effective, and satisfactory service



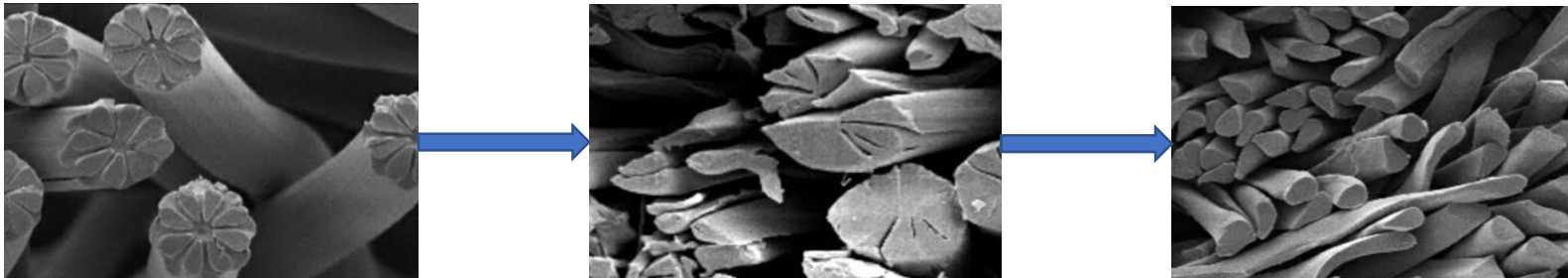
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Diversity in Nonwovens

- Mogul launched Madaline™ in new Luleburgaz facility in 2016
- US patented technology – bi-component PET/PA6 microfilament fabric
- Microfilament size down to 0.2 denier, 100 times thinner than human hair
- Eco-friendly manufacturing process without adding binder, solvent, and PVC



Segmented-pie filament splitting process into microfilament



Madaline™ Unique Properties



- Physical barrier blocks most bacterial, allergens, and bedding mite – dense and micropore structure
- Breathable – micro channels allow air and vapor penetration
- Moisture management – capillary effect instantly transfers and absorbs water, sweat and moisture
- Thermal Insulation – dense and microspore structure resists wind and reduces heat transfer
- Quick drying – huge internal surface area promotes drying process, 2 – 3 times faster than terry cotton
- Softness – microfilament nature
- Lint free – composed of endless microfilament
- Like traditional woven fabric – similar comfort hand feel and easy to convert into finished products
- Durable and machine washable
- Good 3D shape memory

Disposable Face Masks Application

- We recommend using 100 gsm Madaline like PP meltblown to make disposable face masks
- Nelson Lab test results on 100 gsm Madaline by itself
 - Up to 90% BFE (ASTM F2101-19 and EN 14683:2019, Annex B)
 - Up to 98% PFE (ASTEM F2299) tested
- Finished 3-ply disposable face masks made of 100 gsm Madaline and inner/outer layer of PP spunbond
 - 94.3% BFE (ASTM F2101-19 and EN 14683:2019, Annex B) by Nelson Lab
 - Passed Type IIR face mask requirement (98% BFE, EN 14683 + AC2019), tested by EUROLAB, Turkey
- Safe in contact with skin (even for children)
 - OEKO-TEX Standard 100 certified
 - ECARF certified
- Breathable
- Softness and comfort
- Possible to reduce inner PP spunbond bond and save cost
- Good 3D shape memory for making cup shaped face masks



Business Case

- 3-ply disposable face masks made of 100 gsm Madaline (as filtration layer) and PP spunbond (inner and outer layers) by a Turkish company



Reusable/Washable Cloth Face Masks Application



- The US CDC recommends wearing cloth face masks in public settings where other social distancing measures are difficult to maintain, especially in areas of significant community-based transmission.
- The use of cloth face masks can slow the spread of the virus and help people who may have the virus and do not know if from transmitting it to others
- Recently the Madaline™ microfilament cloth has been selected by the French government and recommended for making reusable and washable face masks for the general public.
- Per the General Directorate of Armament (DGA), 100 gsm Madaline™ microfilament cloth (after 10 machine-washing cycles) has an air permeability and a performance in terms of protection efficiency against aerosols of 3 µm compatible with use as a category 1 mask (individual mask for use by professionals in contact with the public).

Reusable/Washable Cloth Face Masks Application



- Reusable/washable face masks are normally made of traditional woven fabric. We recommend using 120 gsm Madaline for reusable/washable cloth face mask application
- Madaline has the following unique advantages, better than traditional woven fabric, for making cloth face masks
 - Up to 90% BFE and up to 98% PFE
 - Lint-free
 - Good moisture management
 - Good thermal insulation
- 3 options available
 - 120 gsm Madaline roll goods
 - Ready-to-sell finished reusable/washable cloth face masks
 - Ready-to-sell “cut sheet” for DIY market
 - Masterbatch colors and one-sided printing available



Business Case

- Esquire Brand finished reusable/washable face masks made in Turkey
- “Cut Sheet” promoted in Japanese DIY market
- 120 gsm Madaline roll goods sold to reusable/washable face mask maker in Japan and Hong Kong



תודה
Dankie Gracias
Спасибо شكراً
Merci Takk
Köszönjük Terima kasih
Grazie Dziękujemy Dékojame
Ďakujeme Vielen Dank Paldies
Kiitos Täname teid 谢谢
Thank You Tak
感謝您 Obrigado Teşekkür Ederiz
Σας Ευχαριστούμ 감사합니다
ඔබට
Bedankt Děkuje vám
ありがとうございます
Tack

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Diversity in Nonwovens

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