

Strategische autonomie voor supervezels

Future Festival ChemistryNL

Bart Keij
General Counsel

TEIJIN ARAMID

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Teijin Aramid BV (NL)

Teijin Ltd. (Jpn)

- Teijin Ltd.: Japans. Beursgenoteerd aan beurs Tokyo
 - Healthcare
 - Polyester & Resins
 - Carbon fiber
 - Aramid fiber
- Teijin Ltd.: 160+ bedrijven, > 20 landen
- Teijin Aramid BV: Nederlands. Dochter Teijin Ltd.

TEIJIN ARAMID



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Onze geschiedenis



1970

ENKA → AKU → Akzo → AkzoNobel
Leo Vollbracht polymeriseert aramide in Arnhem

Delfzijl & Emmen: nieuwe fabrieken gebouwd.
Twaron® begint te produceren



1985

Jaren 90

Begin met opwerken eigen spinafval tot grondstof



2000

Twaron® wordt onderdeel van de Japanse Teijin Groep



2017

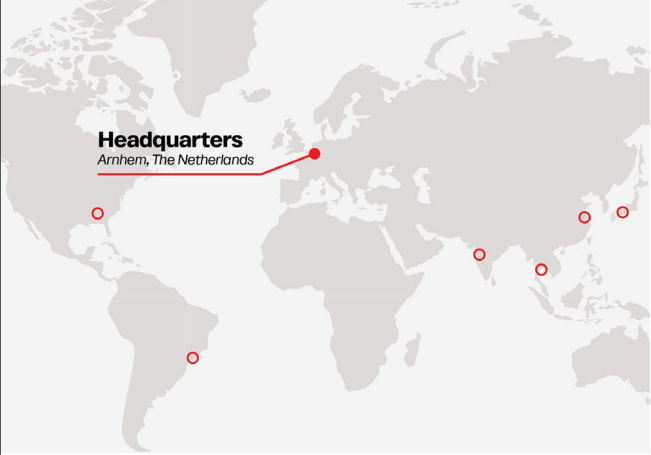
Succesvolle industriële proef: productie Twaron® met aandeel gerecycleerd materiaal

Twaron® Technora® onder NL management



2023

TEIJIN ARAMID



Headquarters
Arnhem, The Netherlands

Research & Development

Arnhem	Iwakuni
Wuppertal	Matsuyama
Shanghai	

Production facilities

Arnhem	Ayutthaya
Emmen	Iwakuni
Delfzijl	Matsuyama

Sales offices

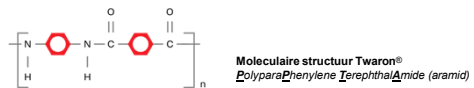
Wuppertal	Sao Paulo
Shanghai	Bangkok
Pune	Tokyo
Conyers	

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Productie Twaron: Nederland

Delfzijl:

- PPD monomeer & TDC monomeer plant
- PPTA Polymerisatie plant (PPD + TDC = PPTA)



Emmen:

- 's Werelds grootste p-aramide fabriek
- Pulp & nabewerkings fabriek

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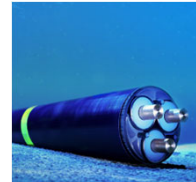
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Markten waarin we actief zijn

Luchtvaart



Onderzeese stroomkabels

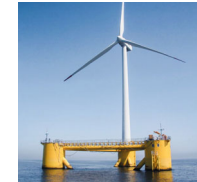


TEIJIN ARAMID

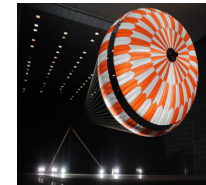
Luchtvracht containers



Verankering windmolens op zee



Ruimtevaart



Versterkte thermoplastische pijpen



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Markten waarin we actief zijn

Digitale infrastructuur



Bescherming tegen hitte



Automotive
(EV & CE, slangen, riemen, banden)



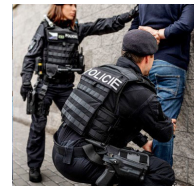
- Twaron®:
 - Lichtgewicht
 - Sterker
 - Veiliger
 - Betrouwbaar
- Recyclebaar: Einde levensduur aramide kan worden getransformeerd tot nieuwe garens.

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Markten waarin we actief zijn

Wetshandhaving

Ballistische bescherming



Militaire ballistische

Bescherming: Vesten / Helmen



Militaire ballistische

Bescherming: bepantsering



- Twaron® in ballistische bescherming:
 - High performance, zelfs na langdurig en zeer intensief gebruik en in veeleisende omgevingen
 - Lage trauma waarden (Back Face Signature)
 - Vlamwerend, Flexibel (weefsels vs. UD's)

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THE WORLD'S STRONGEST FIBER™

Future Festival ChemistryNL
25-11-2025
Richard Gunters
Sales Director PP EMEA
Avient Protective Materials





FACTS AND FIGURES

1,100+

employees worldwide

350+

registered trademark assets

30+

years of experience

5

manufacturing sites globally

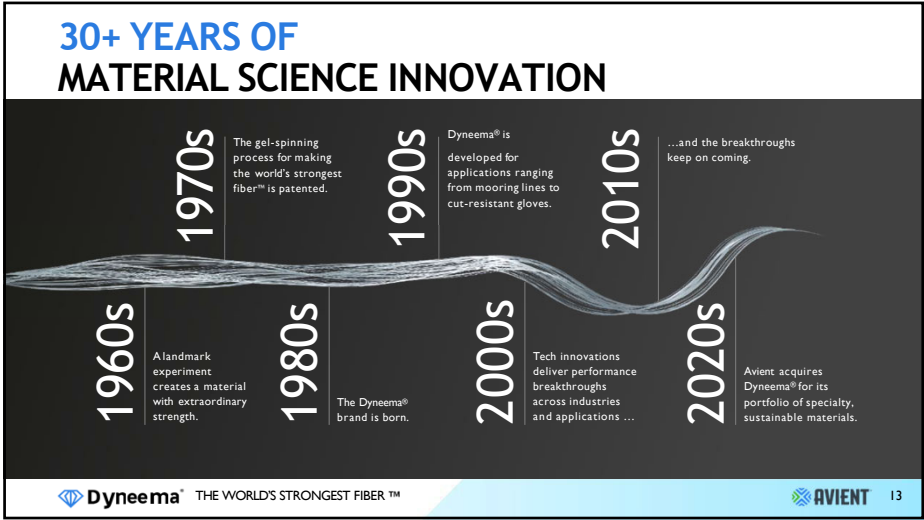
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Technical centers around the world

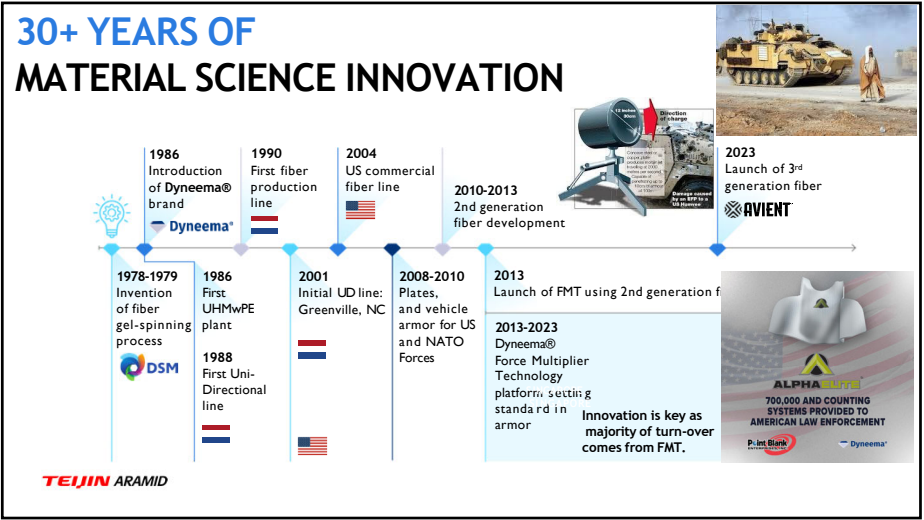
 **Dyneema**™ THE WORLD'S STRONGEST FIBER™

 **AVIENT** 10

 AVIENT II



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SECTORS WE SERVE

Aquaculture

Dyneema® has been helping the fish industry reel in success for decades, enabling stronger, lighter, more reliable, and more sustainable aquaculture equipment.

Law enforcement and military

Dyneema® is trusted by elite forces to deliver superior ballistic stopping power at a mission-enhancing low weight – helping protect those who protect us.

Manufacturing and construction

Dyneema® is helping to build safer, more efficient, more sustainable industries in a sector that relies on balancing scale with quality.

Maritime

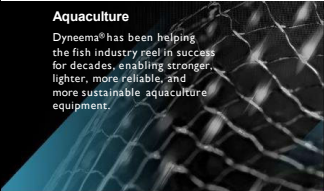
Dyneema® is renowned – and depended on – for its specially engineered reliability, durability, and safety, even in the world's most challenging mooring conditions.

Offshore energy

Dyneema®'s lightweight superstrength is indispensable in the race to lower the levelized cost of energy and power up the renewables industry we and our planet need.

Sports and consumer products

Dyneema® is ideal for creating ultra-light outdoor gear and gold-standard sports apparel, helping thrill-seekers and enthusiasts push to new peaks of performance.



 **Dyneema**™ THE WORLD'S STRONGEST FIBER™

 **AVIENT** 14

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SECTORS WE SERVE

LAW ENFORCEMENT AND MILITARY

Dyneema® is trusted by elite forces to deliver superior ballistic stopping power at a mission-enhancing low weight – helping protect those who protect us.

Armored vehicles



Ballistic helmets



Ballistic vest inserts and shields



Soft armor vests



 **Dyneema**™ THE WORLD'S STRONGEST FIBER™

 **AVIENT** 15

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IT MATTERS WHERE IT'S MADE

KNOW WHAT YOU BUY

WHAT IS DYNEEMA®?

Dyneema® is the world's strongest fiber™. It's used to create the highest-protection ballistic material on the planet. And it's trusted by most end-users whether Law Enforcement or Military.

WHAT IS THE THREAT?

Global conflicts are driving up demand for protective equipment. In turn, this leads to a lack of transparency around key aspects of sourcing. Just because a ballistic material manufacturer sources its UD sheets from the USA or Europe, it doesn't mean the ingredient fiber and polymer were also made there – or even in a NATO(Friendly) country. The result? The quality, consistency, and supply security of critical protection equipment is being compromised.

WHAT IS THE SOLUTION?

Full transparency is needed throughout the ENTIRE value chain.

The polymer, fiber, AND UD must be made within NATO, to guarantee quality, consistency, and security of supply.

POLYMER PRODUCTION



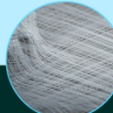
Dyneema® polymer is 100% made by APH

FIBER MANUFACTURE



Dyneema® fiber is 100% made in the USA and Netherlands

UD MANUFACTURE



Dyneema® UD is 100% made in the USA and Netherlands

EQUIPMENT MANUFACTURE



Dyneema® partners armor manufacturers around the globe

DYNEEMA® 100% MADE WITHIN NATO

- Dyneema® is the only UHMWPE fiber manufacturer that controls every part of the production process
- Dyneema® is manufactured in Greenville, North Carolina – employing over 400 US workers, including 10% military veterans – and Heerlen, The Netherlands





IT MATTERS WHERE IT'S MADE

KNOW WHAT YOU BUY

Galvion, a world leader in integrated head systems and intelligent power and data management solutions, has received major orders for its Batskin Caiman® head system from Norway, Finland and Sweden through the NATO Support and Procurement Agency (NSPA) contract, and is pleased to announce the first delivery has recently shipped to Norway. In December 2022, Galvion was awarded a framework contract that facilitates the procurement of their high performance Batskin Caiman® head system and accessories, typically used by Special Operations Forces (SOF) and dismounted light forces, for NATO countries and partners. This announcement marks the placement of multiple orders off the framework contract and the commencement of deliveries that are expected to total over 80,000 helmet systems.



THIRTY-DEED GALVION MARKS FIRST SHIPMENT OF CAIMAN BALLISTIC HELMETS TO NATO THROUGH NSPA

4.5.2.2 in those cases where the only known available source of a materiel or service is located in a non NATO Nation. However, contracting or use of subcontractors for materiel or services from sources in countries under Communist Control require prior ASB approval. Such cases shall be reported by NSPA to the ASB annually by 31 January concerning contracts awarded during the preceding year;



Galvion sees NSPA framework deal take Caimen helmet orders from NATO past 125,000

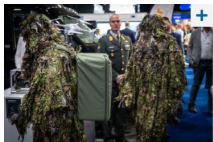
Peter / Helstead

19 April 2024





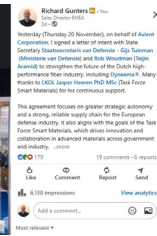
IT MATTERS WHERE IT'S MADE KNOW WHAT YOU BUY



Europese productie van supervezels

Met Teijin en Avient werd een intentieverklaring ondertekend om supervezels in Nederland te beschermen en te behouden. Supervezels zijn essentieel voor onder meer helmen, schervesten en voertuigen. Door oneerlijke concurrentie uit China staat de Europese markt onder druk.

De 3 partijen maken een plan om oneerlijke concurrentie buiten de deur te houden. Het is de bedoeling supervezels uit Nederland als standaard te laten opnemen bij aankopen door Defensie en bondgenoten.



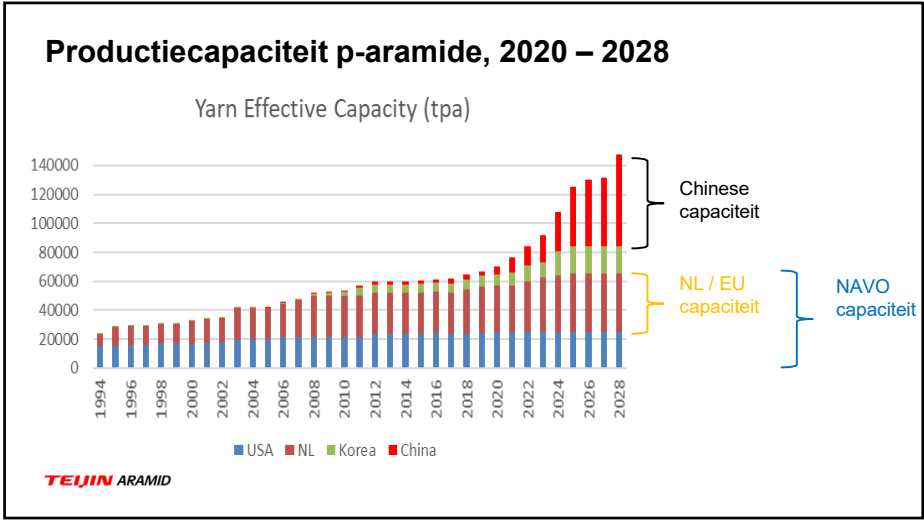
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Productiezekerheid & Strategische Europese Autonomie

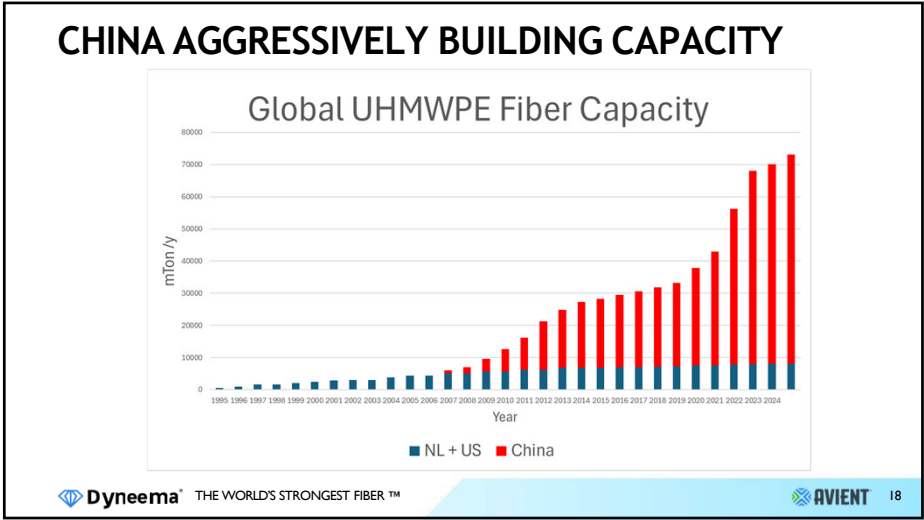
- Enige 2 High performance fibers producenten in Europese Unie:
 - Teijin Aramid (Twaron) en Avient (Dyneema)
- P-Aramide garens (Twaron):
 - Alleen Teijin Aramid produceert alle essentiële grondstoffen op Europese grond (NL)
 - Alle andere producenten van grondstoffen in China
 - Sterke groei Chinese productie van p-aramide
- EU: Noodzaak bescherming strategische productie, kennis & ontwikkeling van supervezels
- Behoeft supervazel industrie:
 - Zekerheid in bedrijfsklimaat
 - 'Level Playing Field'

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Kwetsbaarheid in Europa en NAVO

- De wereld van vandaag:
 - Ukraine
 - Gaza
 - Suez kanaal blokkade
 - Complexe logistiek (beschikbaarheid containers & schepen)
 - Spanningen in zuid-Chinese zee (China / Taiwan)
 - Trump effect: Onzekerheid, Spanningen, Noodzaak EU onafhankelijkheid
- Groeiende afhankelijkheid van goederen uit China / Azie
 - Kwetsbare afhankelijkheid
 - Kwetsbare logistiek
- Noodzaak tot veiligstellen productie, kennis, ontwikkeling & Innovatie op Europese grond

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Veiligstellen Europese belangen Defensie industrie

- USA: Buy American Act & Berry Amendment
 - Wetgeving omtrent aankopen door Amerikaanse overheid van materialen, niet van binnenlandse origine
 - Uitzonderingen zijn b.v. algemeen belang, niet-beschikbaarheid, onredelijke kosten, ...
 - Teijin Aramid: 'waiver' voor Berry amendment: Teijin Aramid beleverd Amerikaanse leger / overheid
- EU: NAVO Support and Procurement Agency (NSPA)
 - NSPA: Intensievere samenwerking binnen de EU
 - Echter, open markt en behoefte aan bescherming van Europese supervezel industrie
- Kwetsbaar voor (overheid gesteunde) goederen van buiten de Europa (China)

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Unieke industrie, groot strategisch belang

- **Twaron** p-Aramide garen & **Dyneema** UHMWPE garens:
 - Essentiële grondstoffen voor Ballistische Bescherming
 - **Enige** producenten binnen EU
- Sterke groei van de Chinese productie van p-aramide & UHMWPE garens.
 - Kwetsbaar voor (Chinese staatsgesteunde gesteunde) goederen van buiten de EU
- Noodzaak bescherming productie, ontwikkeling & innovatie binnen de EU

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