

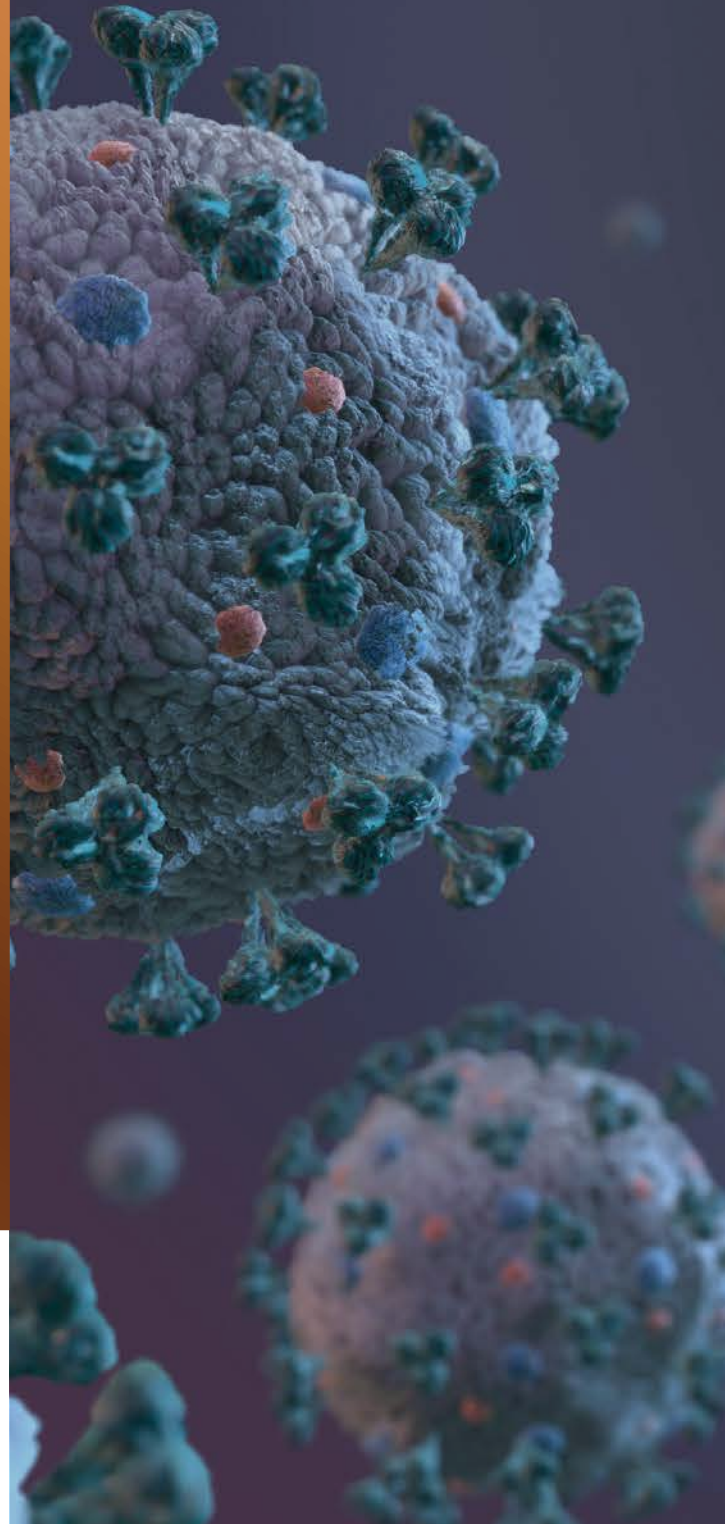
RuKaInnovation B.V.

**RuKa  
Innovation**

INNOVATE TO WIN

ANTIVIRAL AND ANTIMICROBIAL SPECIALITY FILMS





## CORONAVIRUS AND PANDEMIC:

Coronavirus - the word unheard few months ago, but today it's hard to ignore any news around it.

The sustenance of human life and its ascendance on Earth has been in action for many centuries. For decades, we have been terrified by dreadful visions of civilizations ending, overpopulation, resource shortages, pollution and nuclear wars. But recently the list of essential menaces has added a vicious virus.

Nature has decided to requite, and there's no turning back easily. The Coronavirus pandemic of 2019-20 has been a retaliation of nature that has encapsulated the entire human civilization to the core. Never before in the modern history of human existence had we presaged an event so massive, spread in such a short time and on immense scale which has caused destabilization of the governments across the world. The world is grappling, trying to understand how to balance saving lives and saving economies.

## ABOUT THE CORONAVIRUS:

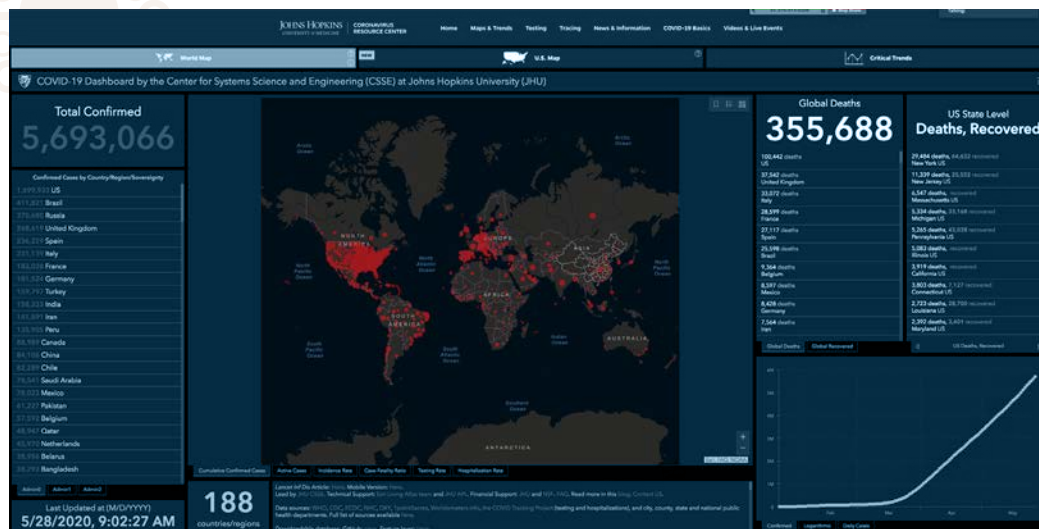
- Family of Virus - Coronavirus.
- Name of the Virus - SARS-CoV-2
- Disease caused by the Virus - Covid-19
- On 31<sup>st</sup> December 2019, China reported to World Health Organization about spread of Coronavirus in - Wuhan city, China.
- Total Covid-19 cases - 5,000,000 and counting.
- Total Covid-19 deaths - 300.000 and counting.

## IMPACT ON GLOBAL ECONOMIES:

The implications of the pandemic are alarming as unemployment is soaring globally, airlines are parked, SMEs are filing for bankruptcy, humans have been quarantined in their houses for months, world economies are crashing to an incipient low, the supply chain is disrupted, major world powers are surrendering helplessly due to their incompetence to get a breakthrough in the race to find a vaccine. However, as World Health Organization's special envoy for Covid-19 David Nabarro said: **"We have all got to learn to live with this virus, to do our business with this virus in our presence, to have social relations with this virus in our presence and not to be in lockdown continuously because of the widespread infections that can occur."** This would imply that economies have to open, border restrictions have to go, lives have to get back to normal and we have to come up with coordinated measures to sustain this pandemic.

## OUR START!

Amidst the race for the vaccine and coordinated fight against the virus, we came up with the idea of RuKaInnovation. RuKaInnovation envisions the concept of **"Imagine the future and fill in the gaps"**. Our efforts are focused to help the society get products in this fight against the virus. Our vision outreaches the materialistic monetary gains & looks forward to bring a pragmatic change in society.



<sup>1</sup>Source: JOHNS HOPKINS Coronavirus resource center: <https://coronavirus.jhu.edu/map.html>



## ANTI-VIRAL & ANTI-MICROBIAL SPECIALTY FILMS



**“Innovation is seeing what everybody has seen & thinking what nobody has thought.”**

- Dr. Albert Szent-Gyorgyi, discovered Vitamin C

RuKaInnovation introduces antiviral & antimicrobial Poly Ethylene (PE) and Poly Ethylene Terephthalate (PET) Films.

The products are available in two variants, namely, PROMAXCOPPER & COPPERCOVID. These sheets are the yield of scientific prowess of RuKaInnovation & our constant unending nerve to keep innovating. The sheets have dispersed copper metal on top of the films.

PROMAXCOPPER & COPPERCOVID were developed with the aim to optimize the microbe killing along with inactivating virus. The brains in RuKaInnovation persistently work for the betterment of the society and stay a step ahead with innovative ideas. We believe that our current offering is a perfect balance & can be supplied with different polymers such as PE, PET, PP, PC & other polymers in future.



# EFFECT OF COPPER ON VIRUS AND BACTERIA:

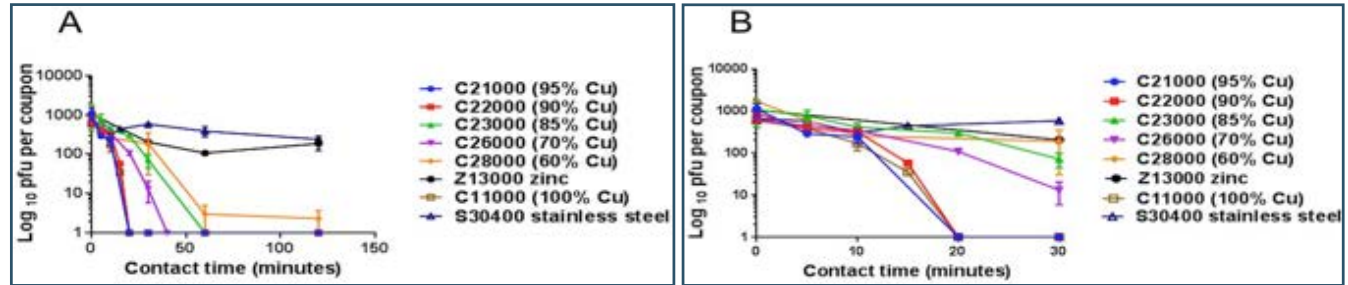
## ON VIRUSES:

Over the last years, well-known universities & institutes investigated the effects of copper on microorganisms and viruses. Extinction of microorganisms on copper is proven. The research of virus on copper spiked and had a gradual increase when COVID-19 pandemic began to spread around the globe.

## Antiviral Activity:

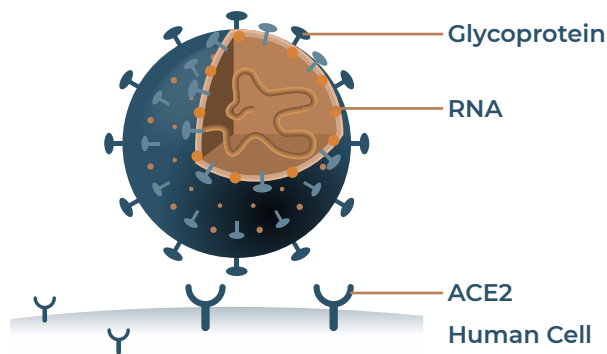
- Human Corona 229E & SARS-CoV-2 virus can survive on surfaces made of materials such as plastic, ceramic tile, glass, and stainless steel for 3-5 days.
- However, inactivation time of virus on a Copper surface is one hour. This has been tested by the American Society of Microbiology in 2015 <sup>1</sup>.

Chart indicates the destruction of overall structure & genome of virus on Copper surface.

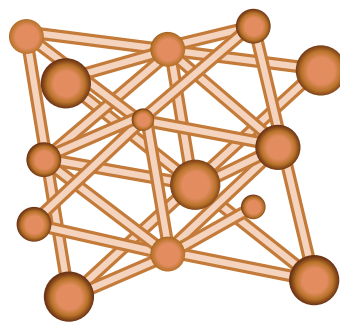


<sup>1</sup> Source: Human Coronavirus 229E Remains Infectious on Common Touch Surface Materials, (Sarah L. Warnes, Zoë R. Little, C. William Keevil), American Society for Microbiology 2015

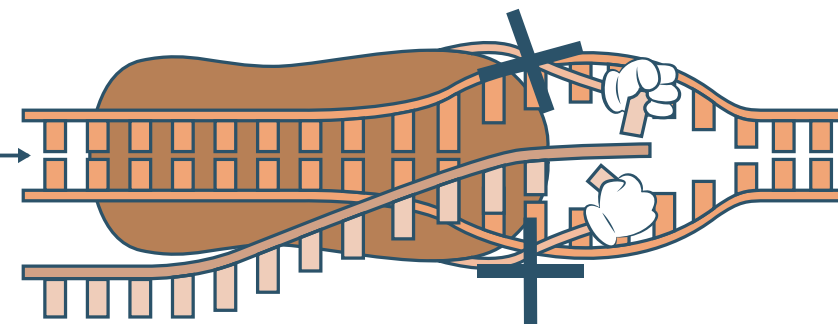
## Pictorial Representation of deactivation of virus on Copper Surface:



- “Glycoprotein Spike” has a key role to penetrate & invade the human cell.
- RNA is critical for replication of the virus.
- RNA polymerase facilitates the RNA replication as a catalyst.



- Principle of Antiviral effect of Copper.
- Antiviral Cu acts as an inhibitor of virus RNA replication.

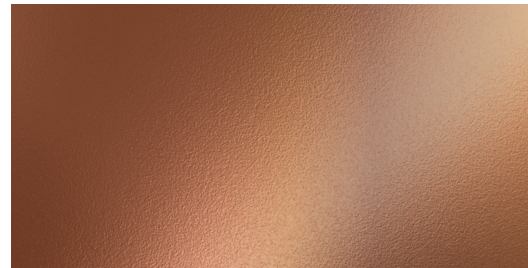


- Antiviral copper inhibits RNA replication.
- Transcription: Role of the RNA Polymerase.

## ON BACTERIA:

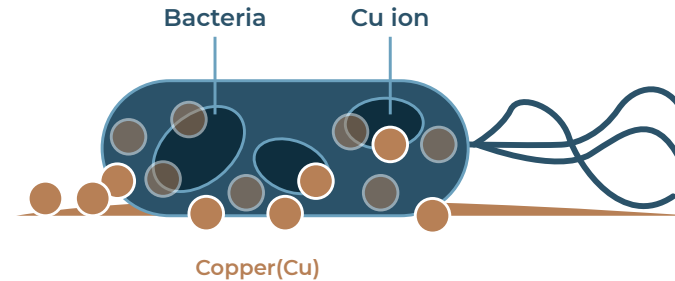
In April 2020, researchers from the National Institute of Allergy and Infectious Diseases, Hamilton, US and Princeton University reported in The New England Journal of Medicine that they tested both the new coronavirus (SARS-CoV-2) and the old SARS virus (SARS-CoV-1) on different surfaces including copper. They found that the new virus was remarkably stable at different surfaces such as stainless steel and plastic and could even be viable up to 4 days.

In strong contrast to stainless steel or plastic, they found that on copper surfaces the virus was inactivated for 99,9% within an hour.



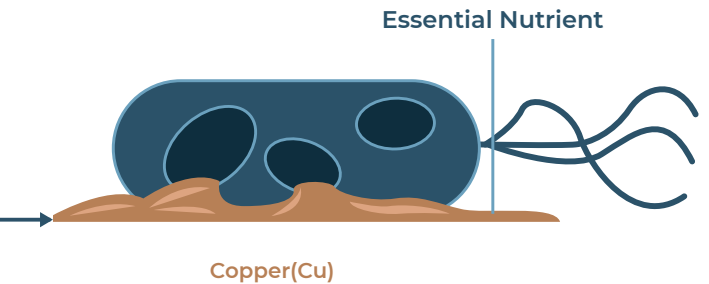
## Antimicrobial Activity:

Copper ion infiltrates through the bacterial cell-wall



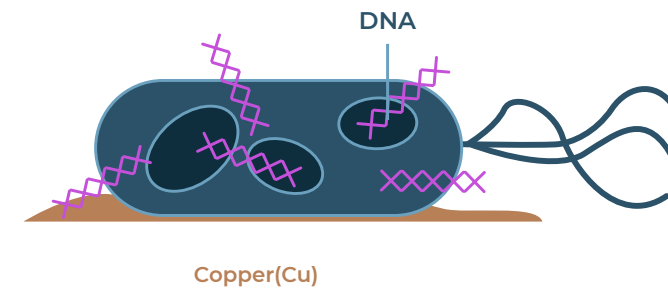
Bacteria recognize the copper ion on the copper surface as essential nutrients, so bacteria absorb it into the cell.

Destruction of cell membrane initiated



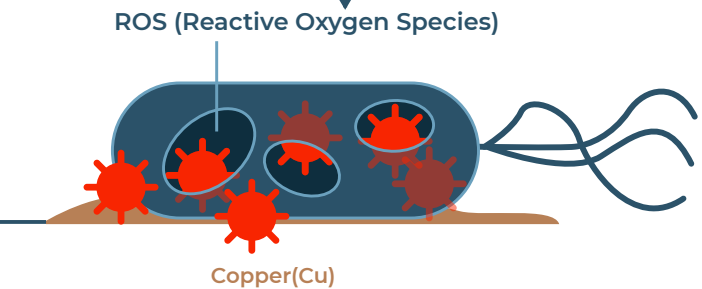
The absorbed copper ion penetrates the cell membrane, so the cell loses essential nutrients and water.

Genome and plasmid DNA decomposition



Bacteria get serious prevention for metabolic activity, which cause the damage to DNA that lead to complete extinction. Suspension of Cell replication & self-replication

Acceleration of cell destruction



Copper ion pull the active oxygen through the penetrated hole of the cell membrane.

# OUR PRODUCTS:

## Product Data Sheet



**COPPERCOVID**  
ANTI VIRUS-TRANSMISSION

## COPPERCOVID PE-A Films

### Product Description:

COPPERCOVID films are anti-viral & anti-microbial films ready with adhesive to be stuck on any surface to stop the spread of virus & bacteria. These films have a top layer with dispersed copper metal, a core layer of Poly Ethylene & bottom layer of paper adhesive. The films are easy to use like labels/stickers and needs no curing time.

COPPERCOVID variant are adhesive antiviral & antimicrobial films.  
Base Material: PE/PET/PP/PC with paper adhesive.



	PO Type	PET Type
Adhesion	<ul style="list-style-type: none"> <li>Anti-viral Layer</li> <li>PO Layer</li> <li>Release agent adhesion Coating</li> </ul>	<ul style="list-style-type: none"> <li>Anti-viral Layer</li> <li>PET Layer</li> <li>Release agent adhesion Coating</li> </ul>
	<ul style="list-style-type: none"> <li>Softness, Low Transparency</li> <li>Adhesion to desired area</li> </ul>	<ul style="list-style-type: none"> <li>Provide optimal anti-viral characteristics</li> <li>Base Material</li> <li>Adhesive Coating for diverse usage</li> <li>High strength, High Transparency</li> <li>Adhesion to desired area</li> </ul>

### Segment Application:

Offices, Hospitals, Restaurants, Banks, Arena, Supermarkets, Elevators, Public Transport etc.

### Delivery Forms:

Standard shapes and sizes with round or sharp edges. Customized shapes & sizes are available on order.

**Standard Shapes:** Rectangular, Circular, Triangular.

### Standard Sizes:

40 cm * 1000 cm (1 Roll)	30 cm * 50 cm	20 cm * 30 cm
40 cm * 100 cm	20 cm * 50 cm	20 cm * 20 cm
30 cm * 100 cm	40 cm * 40 cm	20 cm * 10 cm
20 cm * 100 cm	30 cm * 40 cm	15 cm * 10 cm
40 cm * 50 cm	20 cm * 40 cm	10 cm * 10 cm

### General Properties:

Characteristics	Unit	Typical Value	Method	Remarks
Thickness	µm	100-150	ASTM D6988	-
Colour	-	Light brown	-	Semi - transparent
Tensile Strength	kgf/cm <sup>2</sup>	320	ASTM D882	Machine Direction
		270		Transverse Direction
Elongation	%	600		Machine Direction
		680		Transverse Direction
Adhesiveness	g	300-500	Glass (90°C)	-

CAS No.: Copper 7440-50-8

Poly Ethylene 9000-88-4

HS No.: 3919.90.0000

TARIC Code: 3919908065

COPPERCOVID films as the name suggests are films to fight COVID-19 using Copper.

## Product Data Sheet



**PROMAXCOPPER**  
— ANTI VIRUS-TRANSMISSION —

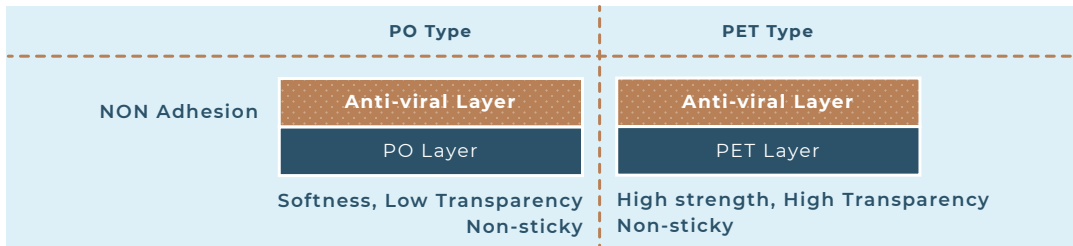


## PROMAXCOPPER PE-N Films

### Product Description:

PROMAXCOPPER films are anti-viral and anti-microbial non-adhesive layer films to be placed on any surface by user-preferred adhesive layer or tapes to stop the spread of virus and bacteria. These films have a top layer with dispersed copper metal, a core layer of Poly Ethylene & bottom layer of dispersed copper metal. The films are easy to use as any other plastic films and need no curing time.

PROMAXCOPPER variant are non-adhesive antiviral & antimicrobial films.  
Base Material: PE/PET/PP/PC



### Segment Application:

Offices, Hospitals, Restaurants, Banks, Arena, Supermarkets, Elevators, Public Transport etc.

### Delivery Forms:

Standard shapes and sizes with round or sharp edges. Customized shapes & sizes are available on order.

**Standard Shapes:** Rectangular, Circular, Triangular.

### Standard Sizes:

40 cm * 1000 cm (1 Roll)	40 cm * 100 cm
30 cm * 100 cm	40 cm * 50 cm
20 cm * 100 cm	30 cm * 50 cm

### General Properties:

Characteristics	Unit	Typical Value	Method	Remarks
Thickness	µm	100-150	ASTM D6988	-
Colour	-	Light brown	-	Semi - transparent
Tensile Strength	kgf/cm <sup>2</sup>	320	ASTM D882	Machine Direction
		270		Transverse Direction
Elongation	%	600		Machine Direction
		680		Transverse Direction

CAS No.: Copper 7440-50-8

Poly Ethylene 9000-88-4

HS No.: 3920.10.0000

TARIC Code: 3919908065

PROMAXCOPPER films as the name suggests are films to fight COVID-19 using Copper.

## CHARACTERISTICS OF THE PRODUCT:

- SEMI-PERMANENT PERIOD OF USE – To be replaced when scratched, torn.
- SUPERIOR BACTERIA/ VIRUS DESTRUCTION
- HARMLESS TO HUMAN – As no Copper metal is discharged out of the films because of unique polymer manufacturing technology.
- COPPER – Specific grade of Copper is used to have the desired effects.





## APPLICATIONS:

- Handles in public transportations.
- Market-cart handles.
- Elevator operating panels.
- Operating panels besides of front doors for apartments and offices.
- Card Readers.
- Protective film for mobile phones.
- Door handles.
- Petrol station counters & food tables.
- Hospital reception desks.



## ABOUT US:

RuKaInnovation is a product based company which aims to help humans in the **“fight against the virus”**. Our main objective is to supply people & businesses with innovative products.

The word “RuKa” has several meanings. It is the name of a tranquil and serene area in Lapland, Finland. In Japanese, it means ‘Bright Blue Flower’ or ‘Gem Flower’ and it is also the first two initials our two ingenious founders’ names. ‘Ru’ stands for “Rudolf Wessels” and ‘Ka’ stands for “Kamal Khandelwal”. Since Executive MBA days, bubbling with entrepreneurial ambitions, both aspired to start and be a partner to Company selling innovative products for the betterment of humanity.

## OUR HISTORY:




Founded in 2020, when half of the world was under lockdown. We aspired to stay relevant by helping in the fight against Covid-19. During our hunt to find ways to contribute to the society, we came across a simple & innovative product to help communities in the fight against the invisible enemy, We started to set up supply chains in EU & India to supply the product. This is how our journey began.

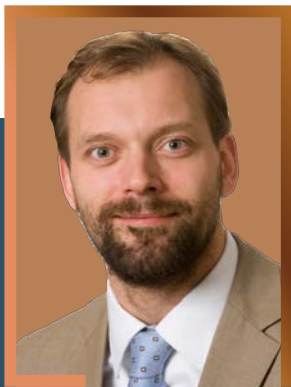
## OUR VISION:

We believe that innovation benefits society & has a transformative impact.

We aim to bridge the gap between production and consumption.

## OUR VALUES:

-  • We practice win-win partnerships
-  • We add value to our customers
-  • We deliver what we promise



**Rudolf Wessels**  
Director & Co-founder

Rudolf graduated in microbiology/ molecular genetics at the University of Groningen & finished his Executive MBA at Rotterdam School of Management. He has over 10 years’ experience with materials related innovation & worked for the majority of his career within the Dutch multinational DSM & Aspen pharma.



**Kamal Khandelwal**  
Co-founder

Kamal graduated in Mechanical Engineering with a Masters in Industrial Production. In 2014 he completed his Executive MBA from Rotterdam School of Management. He has around 30 years of experience in Operations/Operational excellence in chemical Manufacturing industries in the Global context. He is co-investor in the company.

## SUPPORT & SERVICES:

RuKaInnovation is a global company with a local footprint. We are committed to serving our consumers with innovative & advanced products, application support and turnkey services.

**RuKaInnovation B.V.**

**KvK Number - 77906403**

**BTW Number - NL861192928B01**

## OUR PRESENCE:

- **Dordrecht, Netherlands**
- **Estepa (Sevilla), Spain**
- **Milano, Italy**

## CONTACT US:

For any queries or assistance contact us at -

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**Website: [www.rukainnovation.com](http://www.rukainnovation.com)**

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**Address: Zuidendijk 393, Dordrecht 3317 NS,  
Netherlands**

## DIGITAL PRESENCE:



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