



Bringing Innovation to Imaging

2023

CET Group Co.

Introduction to Water Foam Technology

Date : 2023.6

CET Group Co., Ltd

www.cetgroupco.com

Silicone Rubber Foam

High-temperature vulcanization foam

- First used in the United States and then developed worldwide.
- Made into a high-temperature-resistant product series.

Defects:

- Heat aging
- Deformation
- Cumbersome process
- Pollution

Two-component foam mixture

Water-foamed Silicone

Material+Salt

upgrade

Cumbersome process, prone to pollution.

Advantages:

- Solved silicone foam fusing defects.
- Improved fusing performance.

Three-component chemical foam

Only **3** OEMs in the world have this technology.

Water Foam Technology

Three-component chemical foam

After **2 years** of research and development, CET **mastered** the manufacturing technology of water foam!

Advantages:

- Solves the silicone foam **fusing defects**.
- Improves the **fusing performance**.
- Meets **the technology requirements** for new OEM machines.

CET Water Foam Test Results :

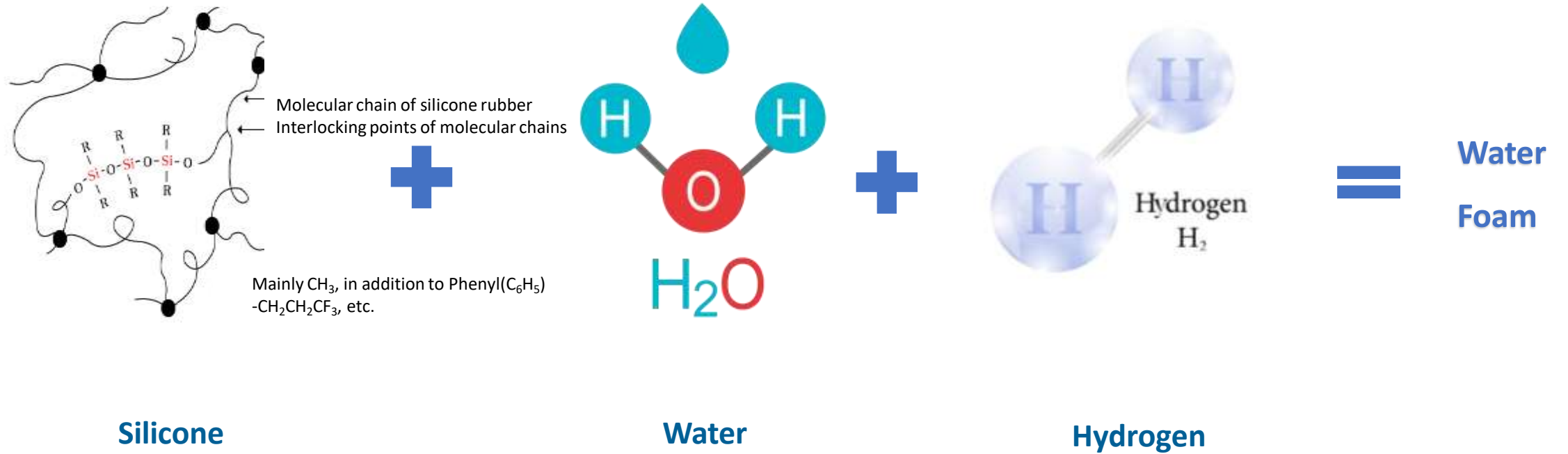
- Cold start printing within **5 seconds**.
- **Stable fixing** of high-speed color printing.
- **High-resolution** print quality with **perfect images**.



Production Process of Water Foam

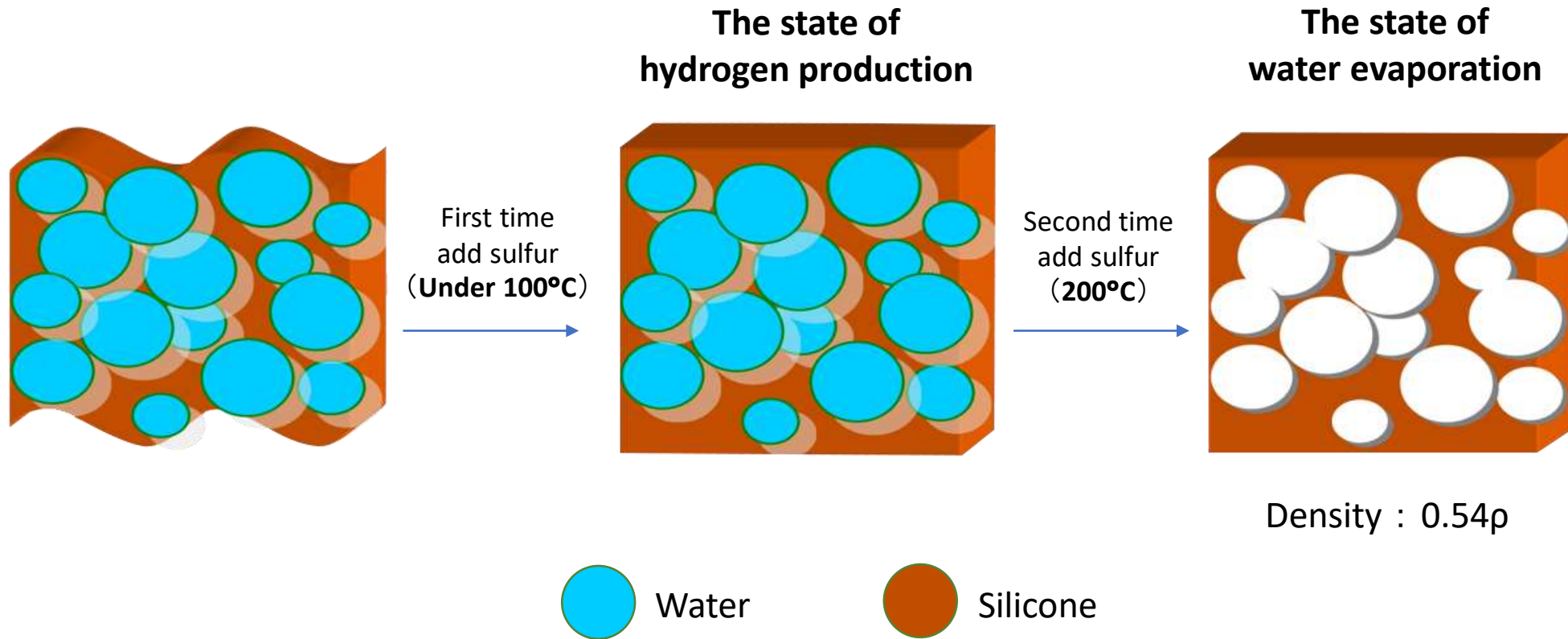


Three-component chemical foam



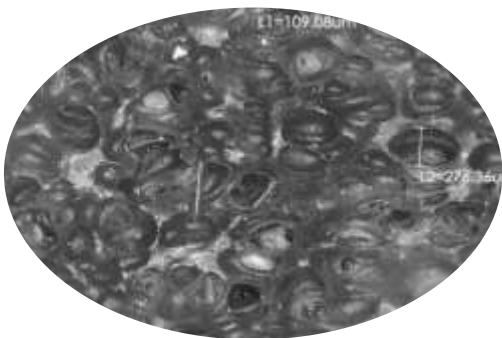


Production Process of Water Foam

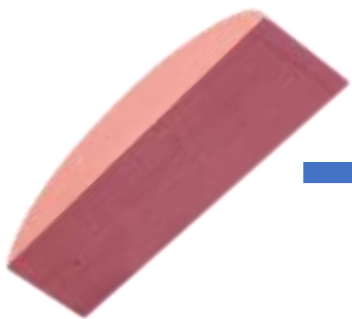




Structure comparison between water & conventional foam



Conventional Foam
Independent pore bubbles



Water Foam
Joint-pore bubbles

	Structure	Pore diameter	Changes after heating	Energy storage	NIP width	Fusing effect
Water Foam	Joint-pore bubbles	$\leq 0.001\text{cm}$	The pore size remains uniform	The water foam stores and releases heat effectively	15mm	Excellent
Conventional Foam	Independent pore bubbles	$0.01\sim 0.05\text{cm}$	The pore size changed, leading to deformation of the roller core	x No such function	8mm	Average

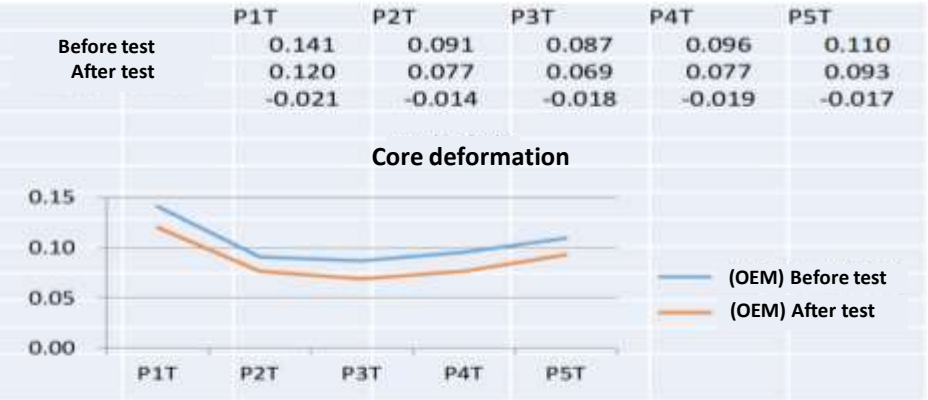


Difference In Cores Between Independent And Joint Pore Bubbles After Heating

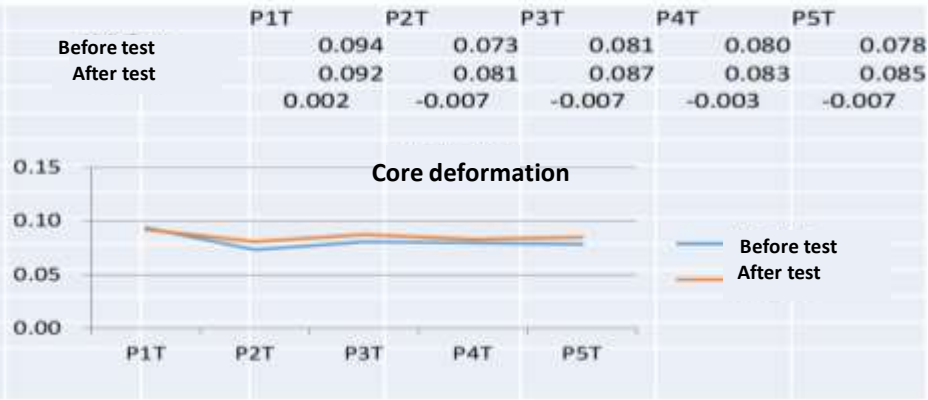


180°C After 22h

Independent hole
(Conventional Foam)



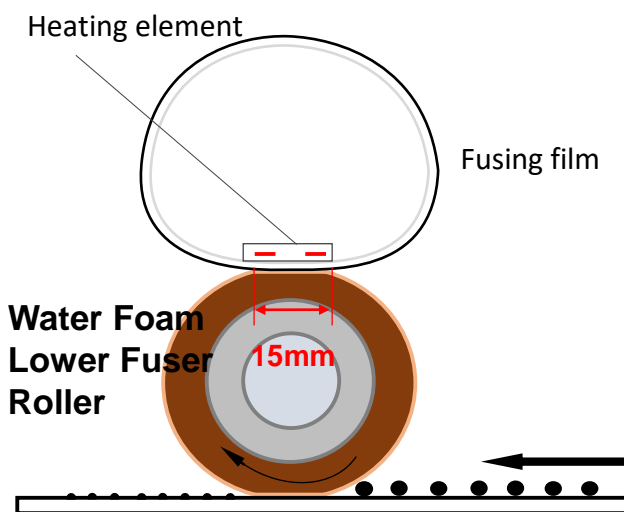
Joint hole
(Water Foam)



Test Results: Conventional foam core has obvious deformation with heat, while water foam avoids this problem.



Comparison of Water Foam and Ordinary Foam Fixing Shape Variables



Water Foam Lower Fuser Roller

Pressure pliability: **30%**

Pliability width: **15mm**

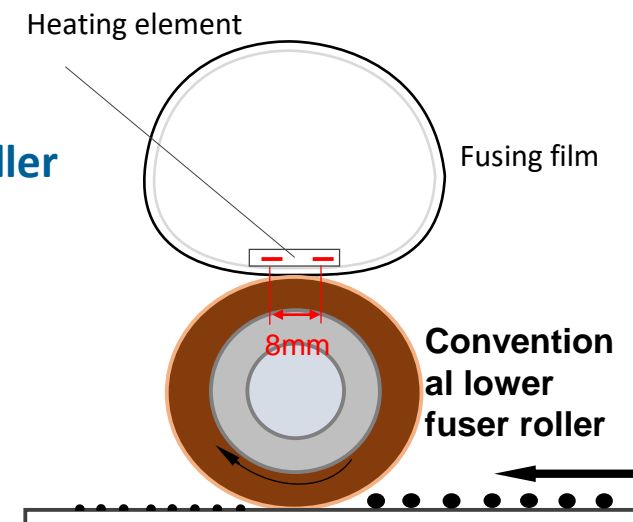
Advantages:

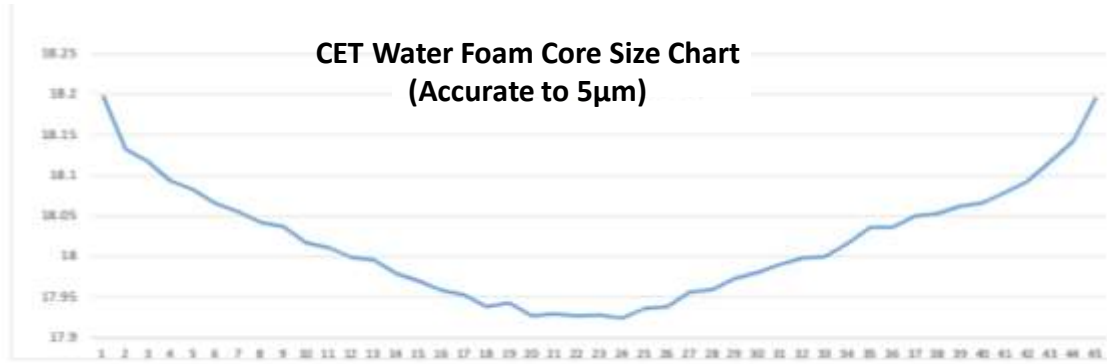
- when tested under the same pressure, the NIP width of the water foam roller is **7mm** wider than the conventional product.
- The water-foam material provides a compression set of over **30%**, which is double of conventional product.
- The product has excellent **resilience** and regains **its original shape** rapidly.
- Provides significant improvement in fusing performance!

Conventional Lower Fuser Roller

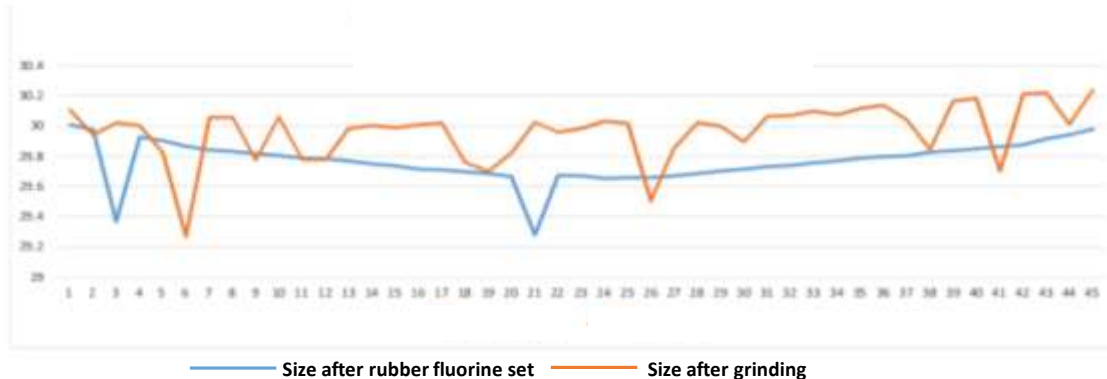
Pressure pliability: **16% - 20%**

Pliability width: **8mm**





Standard Conventional Foam Core Size Chart
(Tolerance is 0.03mm)



CET Water Foam Lower Fuser Roller:

- Tolerance of symmetry point of core is **within microns.**
- Tolerance of left-and-right outer diameter is **within 0.03mm.**

Standard Conventional Foam Lower Fuser Roller:

- Tolerance of symmetry point of core is **within 100 microns.**
- Tolerance of left-and-right outer diameter is **within 0.3mm.**



Conclusion: Advantages of CET Water Foam Technology



01 | Independently developed & manufacturing

CET is the only compatible manufacturer that is able to independently develop and manufacture the water foam product

02 | Stable performance of the roller core

The joint-pore bubbles of the water foam store and release heat effectively to prevent the roller core from deformation after heating

03 | Significant improvement in fusing performance

The NIP width of the water foam roller is 7mm wider than the conventional product, which provides significant improvement in fusing performance

04 | Market trend

OEMs are moving towards this technology for lower rollers in new models





CET Water Foam Products & Development Program



Water foam lower roller developed by CET

CET211001 for use in HP
HP Color LaserJet Pro M452dn/452dw/452nw
MFP M377dw/477fdn/M477fdw/477fnw/
M479dw/479fnw/479fdw



Products under development by CET

For use in **RICOH, KM, HP, LEXMARK, CANON**
multiple brands and models



CET Water Foam Lower Fuser Roller

Product's Highlights



Water Foam Lower Fuser Roller

For use in HP Color LaserJet Pro
M452dn/452dw/452nw
MFP M377dw/477fdn/M477fdw/477fnw/
M479dw/479fnw/479fdw

Product Highlights:

- **Stable and Consistent Shape**

CET's product is cured to achieve a hundred-nanometer joint-pore foaming structure ensuring the roller's **shape remains constant** and stable during use.

- **Excellent Fixing Effect**

The water foam pressure pliability is **double** that of conventional products with **more resilience** to regain its original shape and provide excellent fusing performance.

- **Extends Fuser Assembly Life**

CET's rollers use a unique water foam structure that better **stores and releases heat** to achieve faster and more consistent operating performance while significantly **increasing the product's lifespan**.



CET WATERFOAM

Lower Fuser Roller



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Thank You