

Trends and Changes with Colour Toners!

OEM Driven Changes.

HUBEI DINGLONG CHEMICAL CO.,LTD Ian Copsey – GM Europe







OEM's Marketing Message – Latest Colour devices

- •Eco Friendly
- •Environmental impact / Sustainability
- •More efficient Toner
- •Broader Colour Gamut
- •Less Energy
- •Faster 1st Page out time

Much of this achieved due to Resin changes -







New A4 'Smart' Printers from Dell Rated at up to 63 PPM with FPOTs as Fast as 4.3 Seconds BY <u>KATHLEEN WIRTH</u> · MAY 24, 2016 – **DELL 5840 COLOUR PRINTER**



First Page out time – 4.3 seconds

Toner Technology - Polyester

<u>HP M 277, M252, M553, M452 & M477</u>



Leaner, Faster, smaller & Smarter!! - HP Press release March 2015 – Pradeep Jotwani

•Jet Intelligence Toner - Colour Sphere 3 – Softer Core, harder shell.

- •33% More prints per Cartridge
- •53% Less energy needed by Printer
- •Printer Foot Print is 40% smaller





Data sheet

HP Color LaserJet Pro MFP M477 Series



A fast-performing, unmatched colour MFP with robust security and innovative toner for more pages.²

Unmatched print, scan, copy, and fax performance plus robust, comprehensive security for how you work. This colour MFP finishes key tasks faster and guards against threats.¹ Original HP Toner cartridges with Jetithelligence produce more pages.²



HP Color LaserJet Pro MFP M477fm

HP Color | aser lat Pro MEP Md77fda

Speed through more tasks. Keep data protected • Scan digital files directly to email, USB, network folders, and the cloud with preloaded

- business apps.³ • Grab pages and go—without waiting around. This MFP wakes up and prints faster than the competition.¹
- Breeze through multipage documents with two-sided printing that's faster than the competition.¹
- Control access to print jobs and help keep printing safe with security features like LDAP authentication.

Easy management. Efficient printing

- Easily manage print jobs directly at the MFP—just tap and swipe the 10.9 cm (4.3-inch) touchscreen.¹
- Easily print Microsoft® Word and PowerPoint® documents—now directly from your USB drive.⁴
- Easily manage devices and settings using HP Web Jetadmin with a suite of essential management features.⁶
- Print using less energy than competitors—enhanced by Original HP Toner cartridges with JetIntelligence.²

More pages, performance, and protection

- Get the most prints for your money—with Original HP High Yield Colour Toner cartridges with JetIntelligence.²
- Count on professional quality at high speeds with HP ColorSphere 3 toner.
- Help ensure you're getting the authentic HP quality you paid for with innovative anti-fraud technology.
- Print right away with preinstalled toner cartridges. Replace them with optional high-yield cartridges.

Stay connected with secure mobile printing options

- Easily print from a variety of smartphones and tablets—generally no setup or apps required.[®]
 Count on wireless direct printing in the office—from mobile devices—without accessing the company network.[®]
- Help workers print with just a touch of their NFC-enabled mobile device to the printer—no network needed.¹⁰
- · Easily access, print, and share resources with Ethernet and wireless networking.9



Is HP's Toner different from their previous material?

Your opinion?



GPC test on HP1215 OEM & M252 OEM (Cyan only)

Chromatogram View





HP M252—— OEM Comparison Caking & Glass Transition



DSC test on HP1215 OEM & M252 OEM



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Hard Shell – Soft Core



HP's Colour route is different!

- Other OEM's using Polyester Resin
- •HP is adapting Styrene Resin

•Hard Shell – Wear & Transport benefits

•Soft Core – Lower Temp fusing- Eco



9.1.DL- H75 Toner VS OEM Toner--Physical Characteristics

	Color	T1/2	Particle Size	Circularity	Caking Temperature°C
H75	К	115.2	6.210	0.945	55
H75	Y	116.7	6.458	0.982	55
H75	М	113.8	6.322	0.971	55
H75	С	112.6	6.687	0.968	55
OEM	К	114.8	6.995	0.978	55
OEM	Y	117.7	6.481	0.986	55
OEM	М	115.9	6.161	0.982	55
OEM	С	111.7	6.790	0.983	55

9.2.H75 Toner VS OEM Toner--Shape



HP M252 HUBEI DINGLONG CHEMICAL CO.,LTD DL-H59 Toner For Hp252

8.1.DL-H59 Toner VS OEM Toner--Physical Characteristics

	Color	T1/2	Particle Size	Circularity	Caking Temperature°C
H59	К	116.1	6.268	0.980	60
H59	Y	114.3	6.310	0.978	60
H59	М	112.5	6.227	0.952	60
H59	С	115.8	6.125	0.981	60
OEM	К	110.5	6.106	0.983	55
OEM	Y	113.5	5.933	0.983	55
OEM	М	114.7	5.888	0.981	55
OEM	С	113.1	6.336	0.982	55

8.2.H59 Toner VS OEM Toner—Shape



Industry Trend for Chemical Toner





The 4th Generations CPT characteristic

- PE process method is significantly different compare with normal Chemical prepared toner
- Core-shell design change the toner structure
- •Soft core-hard shell adjustable for energy-saving and environment-friendly
- •Styrene acrylic resin not so easy to satisfies environmental requirements , Polyester resin starts to become popular





Why are some OEMs developing **PE toner**?

- Environment friendly , ECO emission- TVOC
- Low fusing temperature Less energy, faster speed
- Premium print image Better pigment dispersion
- Barrier to Aftermarket Fewer Polyester resin producers









>>> Polyester vs Styrene key reasons----lower melt point /less energy









Three fundamentals of fusing.

- Time
- •Pressure
- •Heat

Pre ordained by machine design & resin choice

OEM's desire to create another AM barrier! Restrictive access to Polyester Resins – Suitable for CPT Colour

Polyester Colour Benefits



- Translucent Resin

-Pigment Dispersion





Xerox - Chemical Ricoh – Chemical Canon – Chemical Dell – Chemical Konica – Chemical

Kyocera – Conventional (тк 590 Blend) Toshiba - Conventional Sharp – Conventional

HP, OKI, Samsung, Brother mostly Styrene resin

Another trend – Dual component development

DINGLONG

Carrier is the vehicle for Toner transportation & Charging



Solution Carrier microscope scanning— SEM







Core Material – Ferrite, Mn, Mg, Sr Created at +1000°C





Resin coated core -

Carrier development history





Market demand : saving energy , high resolution and faster speed !





Benefits of Dual Component Colour system

- Faster Print speeds More demanding on Toner & charging process
- More efficient use of Toner dedicated elements to process
- Faster rotational speed for components requires more control of Toner
- Toner optimised for broader Colour gamut and print quality
- OEM Protection Barrier for Aftermarket.











OEM toner & carrier matching situation

OEM	Carrier	Toner
SHARP	Silicone coated carrier	Polyester Pulverized
Toshiba	Silicone coated carrier	Polyester Pulverized
Konica Minolta	acrylic resin+ content PMMA particle	Styrene acrylic EA
Fuji-Xerox	acrylic resin + conductive carbon/PMMA particle	Styrene acrylic EA PolyesterEA
Canon	phenolic resin polymer carrier	Polyester Pulverized ,SP chemical
Ricoh	Silicone coated carrier	Polyester PxP chemical

Samsung CLX 9201, 9301 & 9350, 9352 > Carrier Technology



Summary



•OEM Driven Change – Pursuit of Eco, Environmental & ppm speed benefits

•Colour upside looks healthy, Aftermarket has to follow an "Equal to OEM" approach

•Aftermarket follows – Directly (HD's preferred route)

• OEM creates more technology barriers for aftermarket

•HD invested in Carrier, we have a strategy with Polyester.. It is the future





THANK YOU ! Questions?

