MUTOH

Ready for the next milestone in sign & display printing ?

UMS21 – Ink Specifications

Environment	
Hazardous Mark	Not required according to current CLP regulations
Operating Environment	20 to 32°C (86 to 89.6°F) / 40 to 60% RH / non-condensing
Shelf Life	18 months from the manufacturing date
Storage Conditions	5 to 35°C (41 to 104°F) / 5 to 85% RH / non-condensing *Store the product unopened. *Do not store directly on the floor. *Avoid direct sunlight.
Shipment Conditions	5 to 60°C (41°F to 140°F) / 5 to 85% RH / non-condensing *When shipping in a container via sea it is recommended to include desiccant bags.

Easy-to-use large capacity 1 liter ink packs improve work efficiency and reduce waste

UMS21-BK	1000 ml	bag	Black
UMS21-CY	1000 ml	bag	Cyan
UMS21-MA	1000 ml	bag	Magenta
UMS21-YE	1000 ml	bag	Yellow
MS41-CL (*)	300 ml	bag	Cleaner

*MS41 cleaner can be used.

One ink case is required per ink pack.

MUTOH

What do these pictograms mean?

This includes carcinogenic, mutagenic and reprotoxic (CMR) substances which may cause cancer, give rise to hereditary genetic disorders or have an effect on the fertility of men and/or women or which may harm the unborn child (signal word Danger) or which are suspected of having such effects (signal word Warning).

This group includes all substances that are corrosive to metals and the skin, as well as substances that can cause serious eye damage.

Hazardous to the aquatic environment (GHS09)
Substances that present or may present immediate or delayed danger to animals and/or nature.

Substances and mixtures which, in direct prolonged or repeated contact with the skin or mucous membranes, can cause inflammation. This group also comprises narcotic and skin-sensitising substances.

UMS21 **NO** H&S Pictograms Required!

Health / Hazard Categories Explained

- Flammability
  Category 4: liquids having flashpoints above 60°C and at or below 93°C.
- Acute Toxicity
  Category 5: for chemicals which are of relatively low acute toxicity but which, under certain circumstances, may pose a hazard, especially to vulnerable populations.
- Skin Corrosion/Irritation
  Category 2: chemicals which produce reversible damage to the skin following application for up to 4 hours.
- Serious eye damage
  - Category 1: Produces irreversible effects on the eye.
  - Category 2A: Irritating to the eyes.
- Reproductive toxicity:
  - Category 1B: Presumed to produce an adverse effect on reproductive ability or capacity or on development in humans.
  - Category 2: some evidence from humans or experimental animals, possibly supplemented with other information, of an adverse effect on sexual function and fertility, or on development, and where the evidence is not sufficiently convincing to place the substance in Category 1.

H-codes & Related Phrases

H227 : Combustible liquid
H303 : May be harmful if swallowed
H315 : Causes skin irritation
H318 : Causes serious eye damage
H319 : Causes serious eye irritation
H360 : May damage fertility or may harm the unborn child
H361 : Suspected of damaging fertility or harmful for the unborn child
H371 : May cause damage to organs

UMS21 **NO** H&S Pictograms !

UMS21 – GREENGUARD Gold Certification

GREENGUARD

PRODUCT CERTIFIED FOR
LOW CHEMICAL EMISSIONS
UL.COM/GG
UL 2818

GOLD

Indoor / Outdoor

Unrestricted Level of Use UMS21 Inks

GREENGUARD Gold Certification[H]

- UMS21 inks meet the UL 2818-2013 Gold Standard for chemical emissions for building materials, finishes and furnishings (= category Wallpaper).
- UL GREENGUARD Gold indicates that products – including inks, printed substrates and the combination of both for indoor applications – contribute to healthier indoor environments by minimizing potential exposure to airborne chemicals.

[H] = same level as latex inks

Unrestricted Level of Use UMS21 Inks

GREENGUARD Gold Certification

- UMS21 inks are certified at the highest level – category Wallpaper[1] (lowest emissions) and qualified as “unrestricted” to decorate a complete room.
- Category Wallpaper means :
  - Unrestricted for a fully decorated room - 33,4 m² in an office environment and 94,6 m² in a classroom environment.

BENEFITS

- Prints can be used at full room coverage, even in sensitive environments such as schools, offices and hospitals !
- Using GREENGUARD Gold inks widens the scope of applications !

1 The other categories of GREENGUARD Gold certification are :
- Category Decorative Wall = one wall of less than 10,4 m² in office environment and less than 31,6 m² in a classroom environment
- Category Signage = sign of less than 3 m² in office environment and less than 11,9 m² in a classroom environment

MUTOH

UMS21 vs Latex : Ink Fixation & Drying Temperatures

UMS21 : Fixed and dried at regular heating temperatures

Mutoh XpertJet 1641SR-P

UMS21 ink fixation at temperatures of 35°C

→ No cockling, outputs on heat sensitive media, …

HP Latex 800

Evaporating water is energy intensive!
High temperatures required above 80°C !!

→ Risk of cockling, adapted media required, no use of heat sensitive media, …

Mutoh – No Excessive Energy Usage

Mutoh XpertJet 1641SR-P

UMS21 ink fixation at temperatures of 35°C

Standby	45 W
Printing	Max. 1.1 kW
Heater	Max. 1.2 kW
Average	0.243 kW

x 6,1

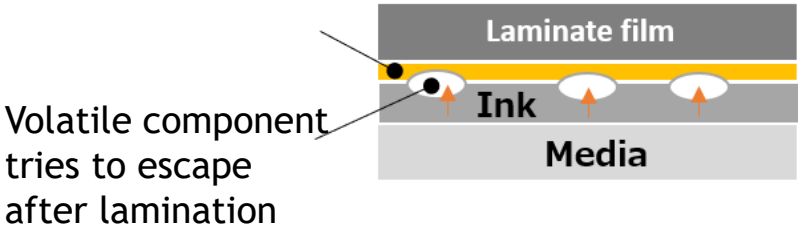
HP Latex 800

Evaporating water is energy intensive!
High temperatures required !!

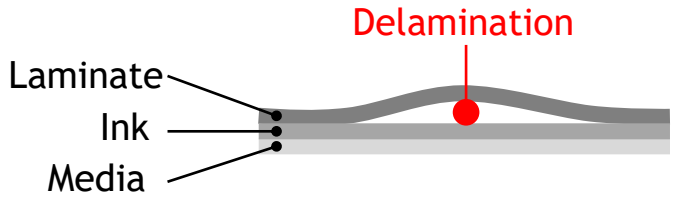
Standby	105 W
Printing	Max. 2.5 kW
Heater	Max. 2.5 kW
Average	1.49 kW

Optimized Drying
Reduced waiting time before Lamination

When are lamination issues likely to occur?



- Volatile and/or wet components in the ink are trying to escape after lamination
- For example:
  - When the output is not cured
  - When the output is exposed to increased temperatures (sunlight)



- The adhesion of the laminate to the ink layer is below expectations causing it to release under stress or at the time temporary over-posting graphics are removed

Ref. slide 'Extracts from the links of Avery®/3M® for Latex inks'

UMS21 – Lamination

How to know if a print is ready for issue-free lamination?

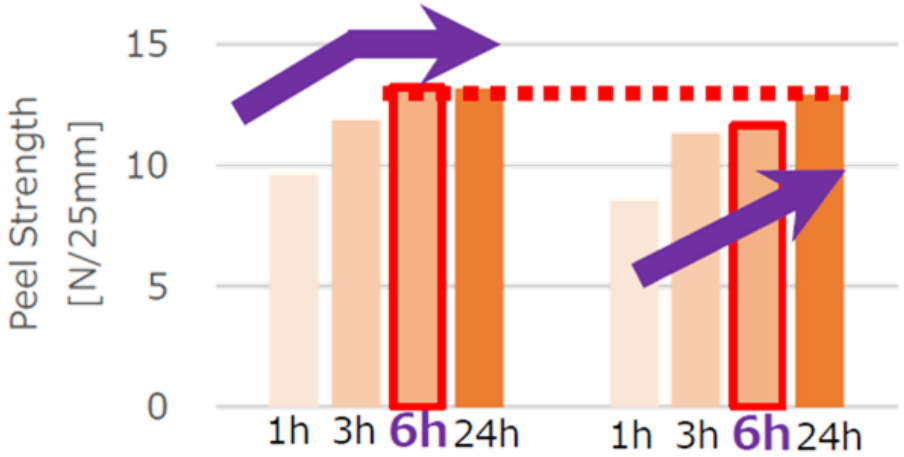
Important Notes:

1. The results presented hereafter were performed in combination with an industry leading polymeric cast self-adhesive PVC and a matching laminate intended for 3D wrapping applications.
2. Obviously these results may differ in function of the media selection made by the printer operator.
3. To ensure maximum peace of mind, Mutoh will pursue to obtain results with different manufacturers and follow-up mutual communication about the do's and don'ts together with the different industry partners.

UMS21 – Ready for issue-free lamination

How to know if a print is ready for issue-free lamination?

1. Verify how long it takes to reach the maximum adhesive strength of the laminate to the printed film.



UMS21 **Conventional sign & display Ink**

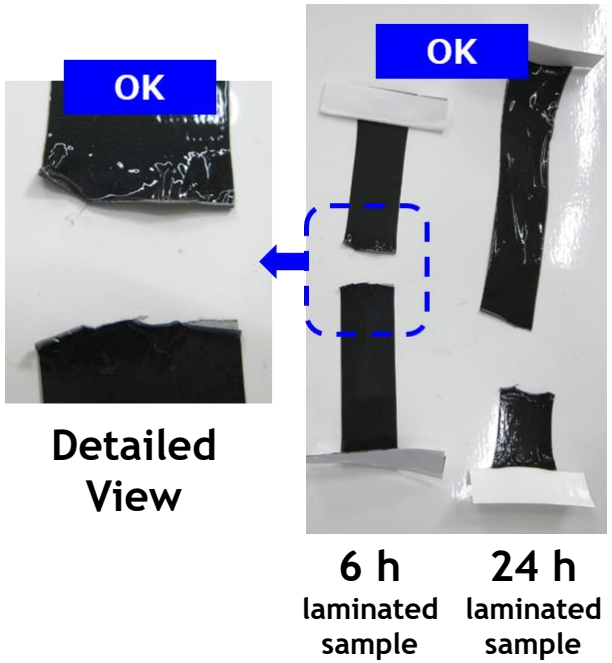
Testing peel strength using a tensile tester at Mutoh Suwa labs

- Using conventional sign & display inks, it takes typically 24 h but also sometimes 48 or even 72 hours before the full adhesive strength is reached
- Using UMS21 the maximum adhesive strength is reached already after as little as **6 hours**

UMS21 – Ready for issue-free lamination

How to know if a print is ready for issue-free lamination?

2. Ensure that the printed film, ink layer and laminate are not separated when the output is put under stress.
   Even when conducting a tensile strength test (pull until break occurs),
   UMS21 ink does not separate from the film/laminate. They break together.



Example of a failing combination

- The Ink film releases from the media before the breaking point
- The breaking time of the media and the laminate are different.

UMS21 – Ready for issue-free lamination

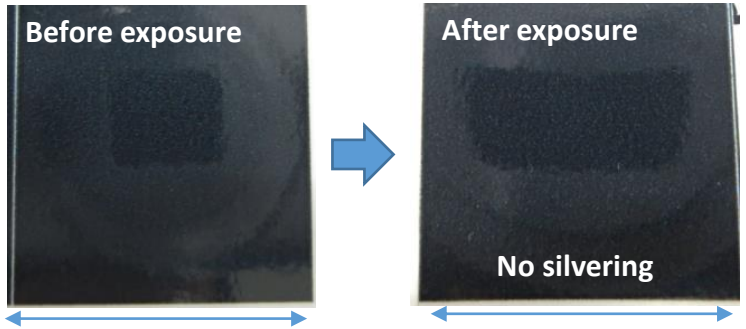
How to know if a print is ready for issue-free lamination?

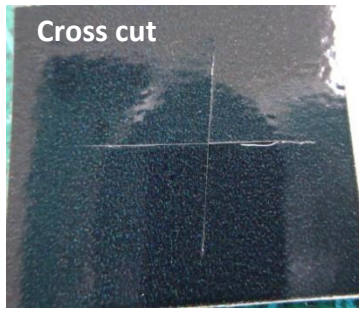
3. Inspect if there are signs of silvering, shrinkage, peeling when exposed to increased temperature & cross cutting.

Observation when laminated UMS21 prints are exposed to increased temperature for a long period of time:

- No release of micro gas bubbles (No silvering)
- No shrink behaviour when cross-cutting
- No peeling of the laminate when cross-cutting

6 hours delay between printing & lamination





No film shrinkage or peeling from cut