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Subject: ACQUARELLA® Water – Wudu Compatibility APRIL 2012 RELEASE

Acquarella, after considerable study, has concluded that the nature and structure of our water based nail polish will allow permeability of water, therefore allowing it to come in contact with the nail plate in which it is adhered. The desired property from Acquarella Nail Polish for an ablution (full or partial) to be considered proper/complete is to allow water come in contact (or touch) the nail surface. Our determination is made on a multitude of factors, specifically the swelling and capillary action of water within the nail polish film. This capillary action is also the cornerstone our how our Acquarella Remover works to remove the polish from the nail and is prevalent in other qualitative ways described below.

Background on the structure of Acquarella nail polish:

Most water based coatings irrespective of industry are usually comprised of a solvent (water) and some combination of plastics to form a polymer structure. There are families of acrylic based systems known for ambient temperature cross-linking like Acquarella's. In the case of Acquarella, our cross-linked polymer structure is not susceptible to rewetting (redissolving) back into the original solvent (water). This is unlike conventional nail polishes as they are removed from the nail with either a compatible solvent or the same wetting agent that was used to originally solubilize them, such as Acetone or Ethyl / Butyl Acetate. Those solvents disintegrate deposited nitrocellulose of conventional nail polish where water does not dissolve the acrylic structure of the Acquarella nail polish film. Instead, water can "wick" into this polymer structure using the property of capillary action. The measure of the infiltration by this capillary action is called sorptivity and is highly dependent on time.

From our standpoint, the two points needed to be addressed in demonstration of this property are how the event occurs (water migrating through the film on the nail) and understanding an indicator of such an event occurring. We will address points these individually.

Water Permeability and Absorption

Permeability of Acquarella nail polish has been observed to occur under a wide range of conditions, mostly dependent on time and temperature. The best analogy is that of a simple sponge. When water is placed on top, capillary action moves the water into the inner part of the sponge and it is dispersed *evenly*. It also is a function of volume of both the water applied and the volume (thickness and area) and density/porosity of the sponge. To achieve complete saturation, an amount of water greater than the capacity of the sponge is usually used. This saturation is witnessed on substrates after removal of the sponge or it bleeding out onto adjacent areas from the side of the sponge.

Unfortunately in the case of nail polish, removal of the polish to reveal a liquid on the substrate nail plate is undesirable since it would usually be done by the same capillary means effectively negating the ability to discern the outcome. The realization of the absorbency needs to be realized by either testing with a substrate (not a human nail) where the water would be detectible and have a marker while using it with a human nail to imply absorbency.

In our testing, the polish will absorb water given a sufficient quantity of water is present on the surface to effect this capillary action and with a duration of time exposed to the water. The capillary action is most pronounced with our polish more recent to application (first week) and decreases when worn longer due to the increased cross-linking or being more “cured”. The most pronounced effect of this absorption property of Acquarella is sometimes associated with raw issues of “failure” with a few clients. Specifically, some people will take demonstrably long bath or shower (implying oversaturation of the film with water) whereby the chemicals used in their bathing process migrate between the film and the nail plate, causing an adhesion failure in the form of the polish “sheeting” or “peeling” off. The dynamic of this absorption is governed by capillary/hydrostatic pressures, of which wet areas within the film will yield water to dryer areas achieving equilibrium of wetness throughout the film surface and ultimately even contact with the nail plate.

Detection of Absorption

It is important in any system or event to have a qualitative marker whereby an observer can demonstrate an event's completion. We have concluded that surface shine changing from highly reflective (“shiny”) to “matte” is most easily recognizable to the average observer. The polish in a dry film state will be shiny by design. Conversely, as the Acquarella nail polish absorbs water, the shine will abate and a matte appearance will result. This is a gradual change and may not be apparent until an oversaturated state may have occurred. This means, it is entirely possible that the film of polish on the nail may have sufficiently balanced the water absorbed to meet requirements of ablution without

complete loss of shine on the surface (partial matte appearance). That said, Acquarella advocates that for those that wish to be without doubt as to the state of the absorption, we recommend that sufficient exposure to water for a duration of time to occur to discern a considerable loss of shine (making sure not to agitate the surface as it will have a propensity to fail as described above as sheeting or peeling). Be advised, Acquarella is unique in the water based nail polish industry in that shine of our polish is intrinsic and present upon proper application, available for many days thereafter. Acquarella makes no claim to the applicability of using "shine" as a qualitative marker with any competitive products as their shine levels are inconsistent, poor or non-existent.

Conclusion

Based on our best knowledge on this subject and properties of our product, it is our assertion that given the proper criteria of having quantity of water available on the surface combined with duration of time sufficient to allow the capillary action to occur, the polish film will absorb water to have contact with the nail plate.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark E. Deason", with a long horizontal flourish extending to the right.

Mark Deason
Managing Member
Acquarella LLC

ABOUT ACQUARELLA

Acquarella is the world's first commercially successful prestige water-based nail polish. Based in Tucson, Arizona USA, Acquarella is made up of industry leaders in the fields of chemistry, health, and cosmetology.