

Inks and supplies

Using Videojet inks when complying with outgassing standards



Outgassing criteria is important in many industries, but the most common industries we see that have this requirement are space-based equipment (e.g. satellites) and medical equipment.

Application – What is outgassing?

When exposed to a vacuum, materials can release trapped gasses. This is referred to as outgassing. The escaped gasses can cause damage to other equipment in the area such as condensate formation on lenses, corrosion, or compromise to a sterile environment.

Outgassing criteria

The most common test used to evaluate outgassing in inks is ASTM E-595. The test method is to apply a layer of the ink and allow it to dry or cure per the manufacturer recommendation. The dried/cured ink is then set in a chamber and exposed to vacuum conditions. The test chamber can accurately determine the amount that is outgassed as well as determine if the outgassed material can be re-condensed and/or if the outgassed material can be characterized as water vapor. The results are reported as Total Mass Loss (TML), Collected Volatile Condensable Material (CVCM), and Water Vapor Recovered (WVR). The values are reported as a percentage of the original sample weight. The sample is considered to have passed the outgassing test if the TML is less than 1.0% and the CVCM is less than 0.1%. There is no requirement for WVR.

While ASTM E-595 is the commonly accepted test method to quantify outgassing, the test method is not a good simulation of inkjet printing. The test method requires a film of 100 mg of dried ink be deposited. A typical inkjet code deposits about 100 micrograms of dried ink. However, passing this test generally provides a blanket acceptance of an ink and avoids the need for further modeling or calculations to determine if the ink is suitable.

Ink selection

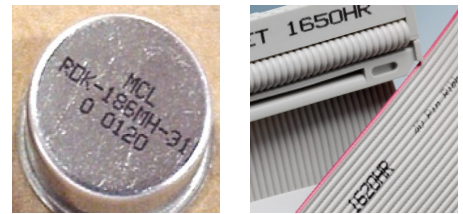
Videojet does offer an ink that can pass ASTM E-595 outgassing criteria after a heat curing step. The part number for the ink is dependent on the printer model:

- 1580 and 1860 printers – **V4248-D** (750 ml cartridge) or **V4248-L** (1 liter cartridge – 1860 only)
- 1620HR and 1650HR printers – **V548-D**
- Most other 1000 Series printers – **V448-D**

The ink must be cured at 175° C for 2 hours or 150° C for 8 hours to pass the test.

Upgrading from legacy products

The inks listed above can be used to replace Videojet ink 16-5900Q which is only qualified for Videojet Excel printers. Videojet stopped marketing the Excel series in 2013. It should be noted that 16-5900Q is listed as an approved ink for outgassing by NASA. To date, the new inks have not been added to NASA's approval list. Customers who must meet NASA requirements may need to provide additional information. Videojet can provide copies of the outgassing test reports upon request.



The bottom line

When outgassing is a concern, Videojet inks – after heat curing – help manufacturers meet ASTM E-595 criteria. Our ink specialists are constantly researching new formulations to meet new coding application challenges, resulting in a portfolio of over 340 different inks. This makes Videojet the right partner to support you in finding the ideal ink.

For further assistance with ink selection, please contact our fluids support team via email at fluidsupport@videojet.com.

Call **+91 75063 45599**
Email **marketing.india@videojet.com**
or visit **www.videojet.in**

Videojet Technologies (India) Pvt. Ltd.
Unit No. S-220 A, 2nd Floor,
Eastern Business District,
L B S Marg, Bhandup West,
Mumbai - 400078,
Maharashtra, India

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