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FAQ

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Emissions and Ventilation Related to Imaging of Thermal Media

Creo is committed to providing the safest devices and the best-in-industry solutions to ensure the safest possible operating conditions.

Laser imaging of thermal media may create airborne emissions. Creo designs its CTP systems accordingly, and keeps customers informed with the most up-to-date information available.

We hope that the questions and answers below will address concerns that you may have regarding airborne emissions from thermal printing media.

Why does Creo provide information on emissions and ventilation?

Creo wants to make certain you have the ability to ensure safe working conditions for your employees.

Do Creo output devices release harmful emissions? What about devices made by others?

Emissions come from the thermal media while being imaged rather than from the output device.

Thermal media, as shipped, are usually chemically stable and do not release any contaminants into the air. When a plate is hit by the laser beam in *any* output device, its coating is subjected to chemical and/or physical changes that may result in particulate or gaseous airborne emissions.

To protect operators from these emissions, Creo supplies its output devices with a Debris Removal System (DRS) when needed. We are committed to providing you information to the extent of our own current knowledge that will assist you to ensure safe operation of Creo output devices.

Why is ventilation needed?

Neither emissions collection nor filtration (particulate or chemical) can be made 100% efficient, so filtration must be complemented by outdoor air ventilation (fresh air coming from outside rather than air circulating inside the building). Creo recommends ventilation levels for the customer site in the output device's *Site Preparation Guide*.

Note: Ventilation recommendations are valid for *one* output device. If you have more than one output device in a room, or if there are processors, ovens or other equipment, adjust the ventilation accordingly.

Are Creo ventilation recommendations burdensome? How do I know if I have enough ventilation?

Ventilation recommendations are not burdensome at all. For most qualified offset plates, Creo recommends the same ventilation level for a single output device as the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) requires for an office space intended for two-person occupancy. If you have ventilation in your imaging room sufficient for two operators, you are probably meeting the recommendations.

When imaging certain media, such as chemistry-free or flexographic media, more ventilation may be needed. The values are specified in the *Site Preparation Guide* or the *CTP Media Imaging Performance Database*, available from a Creo representative.

In any case, there is a good chance that you have the recommended ventilation already in place. If in doubt, you may contact a local Heating, Ventilation and Air-Conditioning (HVAC) service to check the ventilation at your facility.

Do the ventilation recommendations apply to my older Creo output device, which was supplied without a filtration unit?

Yes. The default ventilation recommendation for an output device supplied either with or without a filtration unit is the same, and it does not exceed the ASHRAE standard requirement for office space ventilation for two people. If you have ventilation in your older device's imaging room sufficient for two operators, you are probably meeting the recommendations.

Regardless of airborne concentrations, the DRS may contribute significantly to the reliability of an output device. To find out if your older device would benefit from the DRS, and whether it is upgradeable, contact a Creo representative.

Is it hazardous to image thermal plates?

If you follow our recommendations for ventilation and maintenance (in particular, timely replacement of filters), imaging of thermal plates should not be hazardous, and airborne emissions levels should not exceed established regulatory limits for workplace air quality.

However, if you don't follow the recommendations the concentrations of emissions in the air may exceed the regulatory limits. Similarly, if you operate your equipment under circumstances that are beyond the knowledge or control of Creo, the concentrations of emissions in the air may exceed the limits.

Such circumstances may include, for example, inadequate ventilation, imaging of media not qualified by Creo, emissions from sources other than the output device, and so on.

What emissions come from thermal media?

You can find information on emissions from a particular plate or film in the media manufacturer's Material Safety Data Sheet (MSDS), in other safety documents, or by contacting the manufacturer directly.

The emissions most frequently associated with offset plates are particulates (dust). Some gases may be released as well, but in such small amounts that they usually don't require special filtration and are taken care of by ventilation alone. Some media, such as chemistry-free or flexographic media, may release more gases. Creo devices are supplied with the DRS that include appropriate filter(s) for your device/media combination.

What happens if I image a plate that is not qualified, or if I overexpose media?

During qualification of thermal media, Creo determines what DRS, if any, should be installed, and the ventilation recommendations for imaging those media in order to bring the airborne emissions levels below the established regulatory limits.

However, if you image an unqualified plate or film, or excessively overexpose a qualified plate, the media may release emissions into the air that have not been taken into account. Those emissions may not be handled appropriately by the device's DRS and/or by ventilation at your site and cause adverse health effects. Reliability of your device may also suffer due to excessive particulate emissions resulting in dust accumulation on the lens.

Are chemistry-free plates any worse than regular plates in terms of emissions?

Some qualified chemistry-free (also known as processless) plates may release more emissions, especially gaseous, than the regular offset plates (refer to the respective MSDS for information on particular plates). Creo takes measures to reduce the airborne concentrations of those emissions below the regulatory limits by installing a customized DRS and making you aware of the ventilation recommendations. If you follow all Creo recommendations, imaging of chemistry-free plates in terms of emissions should not be any worse than imaging of regular plates.

What is the Notice (in the *Site Preparation Guide*) about—in plain English?

Creo does its best to make its products as safe to operate as possible, but Creo does not have knowledge or control over all components of your operation. For example, either the properties of the media you are using or the regulations may have changed since the time of media qualification. Essentially, the Notice is a list of factors outside the control or knowledge of Creo for which Creo cannot be held responsible.

Whose responsibility is it to ensure safety when imaging thermal plates?

The user is ultimately responsible for ensuring safety in their workplace. Creo designs its products to be as safe to use as possible. If you follow our ventilation recommendations, the airborne emissions concentrations should be below the established regulatory limits and, consequently, should not result in adverse health effects

for operators of Creo output devices. You should also read labels and safety documents, including MSDS, provided by the media manufacturers.

If Creo can't guarantee that my operating environment is safe, how do I know that health of device operators will not be harmed?

Creo designs its products to be as safe to operate as possible. However, Creo does not have knowledge or control over other components of your operation. It is your responsibility to ensure a safe operating environment; neither Creo nor any other vendor/supplier can guarantee it. For example, the properties of media that you are using may have changed over time since being qualified. If you are in doubt about safety, contact an industrial hygienist to arrange for an indoor air quality assessment.

If I have a concern about airborne contaminants from imaging, where should I go?

Make sure you follow all Creo recommendations regarding imaging, ventilation, and replacement of filters. Since the emissions are coming from the media rather than the output device, your first contact should be the media manufacturer. Your Creo representative can also answer your questions and, if needed, will escalate them within Creo to your complete satisfaction.

The source of contamination may not actually be imaging—it may be processing or baking. To check the indoor air quality (IAQ) at your facility, you are encouraged to contact a local IAQ expert, such as a qualified industrial hygienist.

Why do I need a filtration unit? If I put an air purifier in the room or a local exhaust hood over an output device, would they do the job?

They might. However, it is better to remove contaminants from the source, where the imaging occurs, rather than from the surrounding environment, so using a Creo filtration unit such as the Universal Debris Removal Cabinet (UDRC) is beneficial. Removing dust also contributes to increasing the reliability of your output device.

Does a filtration unit make things worse?

Quite the opposite. A filtration unit such as the UDRC makes things better. It removes the emissions, which come from the thermal media during imaging, from the air.

We may put the UDRC outside the imaging room—is ventilation still required in the room?

You must ventilate the imaging room to at least provide fresh air for the operators that run the output device.

Emissions generated by media enter the room air from two separate sources: the output device (1% or less of contaminants will have not been collected by the DRS) and the UDRC (the contaminants that have not been filtered out). There should be ventilation for both sources.

Why are the filters so expensive?

When you pay around $500 for a filter, it may seem expensive. However, it's only a tiny fraction of your total consumables cost—usually less than 1%.

The following examples may help to put the filter price in perspective.

Note: Prices given in the examples are believed to be correct to the order of magnitude. Refer to price lists for the actual prices of various particulate and chemical filters, thermal media, processing chemistry, and so on.

Regular Offset Plate

The area of a regular offset plate that can be imaged before the particulate filter becomes full varies widely for different plates, but should not be much less than about 15,000 m^2 (of imaged area). If the price of the plate is \$10/m^2 and the price of the filter is $500, we can calculate the filter part of the consumables cost (without even including the processing chemistry and oven energy costs) as:

500/(15,000*10) = 0.003, or 0.3%

We conservatively ignored the difference between the plate area and imaged area in this example.

Chemistry-Free (Processless) Plate

The area of a chemistry-free plate that can be imaged before either the particulate or the chemical filter becomes full may be substantially smaller—approximately 2,000 m^2. In this case, again assuming the price of the plate to be \$10/m^2 and the price of the filter to be $500, the calculation of the filter part of the consumables cost is:

500/(2,000*10) = 0.025, or 2.5%

Chemical processing cost savings (room, processor, chemistry) were conservatively not considered in this example.

Flexographic Plate

The area of flexographic media that can be imaged before either the particulate or the chemical filter becomes full is the smallest —say, 150 m^2. Flexographic plates are usually negative (image prints), so the corresponding plate area would be roughly 300 m^2. If we assume the price of the media to be \$200/m^2, then the filter part of the consumables cost (without processing costs) is:

500/(300*200) = 0.008, or 0.8%

So, after all, the filters are not that expensive.

Why can't I buy the filters from a third party supplier?

Both particulate and chemical filters are made strictly to Creo specifications and exclusively for Creo. They are not an "off the shelf" product. To maintain quality, Creo is the only distributor of these filters. So, if you need a spare filter, contact Creo.

Is it dangerous to replace filters in the filtration unit?

Not at all. The DRS is designed in such a way that following common sense and normal hygienic practices will make exposure to airborne contaminants, if any, negligible. Detailed instructions on filter replacement can be found in the respective *Operator Guide*.

How should I dispose of full filters?

You should follow all federal, state/provincial, and local regulations on filter disposal. For example, particulate and chemical filters full of debris from some chemistry-free and flexographic media were tested on Creo request using the Toxicity Characteristic Leaching Procedure (TCLP) and found not to be a hazardous waste and suitable for regular landfill in accordance with regulations of British Columbia, Canada. Creo has no knowledge of the chemical composition of dust from media not manufactured by Creo. For recommendations on disposal of filters full of debris from specific media, please contact the media manufacturer.

What is environmental impact of imaging thermal plates?

Generally negligible, if any. Environmental issues are regulated on many levels, including the local/municipal level. Our records indicate that even in the worst case—imaging of flexographic plates with emissions vented directly into the atmosphere, without filtration—the environmental regulations will be complied with in the majority of jurisdictions worldwide, for example in Germany or State of Massachusetts.

About Creo

Creo is a world leader in solutions for the graphic arts industry. Core product lines include image capture systems; inkjet proofers; thermal imaging devices for films, plates, and proofs; professional color and copydot scanning systems; workflow management software; and proofing and printing consumables. Creo is also an original equipment manufacture supplier of on-press imaging technology, components for digital presses, and color servers for high-speed, print-on-demand digital printers. Creo trades under the symbols CREO on NASDAQ and CRE on the Toronto Stock Exchange. www.creo.com

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