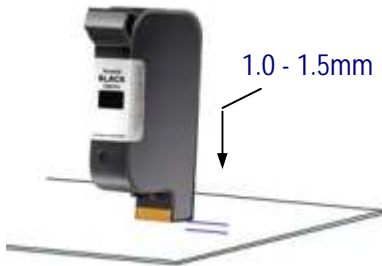


Print Cartridge Maintenance and Handling

Nozzle-to-Paper Distance

One of the most important keys to having crisp, sharp text (and graphics) is setting the proper nozzle-to-paper distance. HP recommends a nozzle-to-paper spacing of **1.0mm to 1.5 mm**. Higher nozzle-to-paper spacing degrades print quality (fuzzy text), because the ink droplet is less likely to hit the targeted area of the paper.

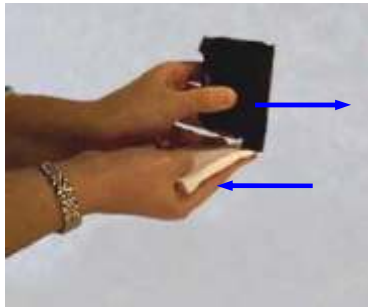


Print Cartridge Cleaning

Wiping:

Another key to maintaining good print quality is proper cleaning of the print cartridge. During printing ink-spray, paper fibers and dust can build up on the print cartridge. These can eventually degrade the print quality. When this occurs, the print cartridge should be wiped with a wet fiberless cloth.

Wipe slowly across the long-axis with the print cartridge facing down (as shown). Do not apply excessive force, as this could scratch the nozzle area.



A Cloth Should Be:

- v Soft
- v Fiberless
- v Moist with water (de-ionized is best, but tap works)

Should NOT Be:

- x Abrasive
- x Made of small fibers
- x Dry or containing chemical additives

The cloth must be soft so that it does not scratch the print cartridge. It should be fiberless because small fibers from the cloth can be left behind and block the nozzles of the print cartridge. The cloth must be moistened with liquid or it may scratch the print cartridge. Scratches on the print cartridge prevent the ink from coming out of the nozzle straight. If the ink drops do not come out of the nozzles straight they will not land on the paper in the proper place causing fuzzy text. De-ionized water is better than tap water because tap water contains minerals that can leave behind deposits in the chambers. During wiping the water

cleans out the nozzles and the firing chambers. A small amount of water mixes with the ink in the chambers.

Purging the Nozzles:

If the print cartridge sits inactive for a period of time, ink may dry in the nozzles. Dried ink clogging a nozzle is called an ink plug. As a result of the ink plug, white streaks will be visible in the printed text or graphic. Printing alone may not remove ink plugs from the nozzles. To obtain better print quality, purge the ink plug. This is accomplished by wiping the nozzle plate until ink is drawn out and absorbed into the cloth. Then print a few lines of text or graphics at high resolution.

Procedure:

This purging operation as well as wiping the print cartridge with a wet cloth should be done after every extended period of down time in order to prevent unacceptable levels of print quality.

- Wipe the print cartridge with a moist cloth (see wiping procedure).
- Print a few lines of text in a higher resolution (for example 600x600 dpi). The higher resolutions (for example 600 dpi) exercise more nozzles and push more ink out.

Storage

Short-term Storage (Less than 2 days)

- Simply leave the print cartridge in the machine, capped or uncapped.
- The next time that the printer is used, the print cartridge may have to be wiped and purged.

Long-term Storage (Greater than 3 days)

- If the printing system has a capping station, just leave the print cartridge capped.
- If the printing system does not have a capping station do the following:
 - Keep the print cartridge in an area that is relatively dust-free and that is not too dry, **or**
 - Place the print cartridge in a Tupperware container with a damp sponge to prevent drying out.
- When the print cartridge is ready to be used again the print cartridge may need to be cleaned as instructed earlier.

Supplied by

AMS Ltd - Mailing Equipment and Machines
No 1 Optima Business Park
Pindar Road
Hoddesdon
Hertfordshire EN11 0DQ, UK

TEL: +44 (0)1992 - 460111
FAX: +44 (0)1992 - 449111

<http://www.ams-gb.com/index.html>



Material Safety Data Sheet

1.0 Product and Company Identification

Identification of the preparation: 51645 Series – No 45 Black

Use of the preparation: Inkjet printing

Company Identification: Hewlett-Packard Company
1000 NE Circle Boulevard
Corvallis, Oregon 97330-4239
United States

Emergency telephone number: 1-800-457-4209 (USA and Canada)
Hewlett-Packard Health Effects Line: 503-494-7199 (USA direct)
Singapore: +001-800-332-13321

General information telephone number: 208-323-2551 (USA direct)

Local Contact Information

Ireland
Liffey Park Technology Campus
Barnhall Road,
Leixlip, Co. Kildare
Phone: 01 6150000

United Kingdom
Hewlett-Packard, Ltd.
Cain Road, Amen Corner
Bracknell, Berkshire, RG12 1HN
Phone: 1344 36-0000

Hazard Rating	NFPA/HMIS
Health	1
Flammability	2
Instability/Reactivity	0
Special	none

2.0 Composition/Information on Hazardous Ingredients

This ink supply contains an aqueous ink formulation

Component/Substance	CAS Number	EU Number	% by Weight	EU classification
2-Pyrrolidone	616-45-5	210-843-1	<10	Xi; R36/37/38
Isopropyl alcohol	67-63-0	200-661-7	<5	F; Xi; R11-36-67
Carbon black	1333-86-4	215-609-9	<5	not classified
Water	7732-18-5	231-791-2	> 50	not classified

3.0 Hazard Identification

The black ink is not classified according to EU Directive 1999/45/EC



Material Safety Data Sheet

3.1 Routes of Exposure

Potential routes of overexposure to this product are skin and eye contact.

Inhalation of vapor and ingestion are not expected to be significant routes of exposure for this product under normal use conditions.

Complete toxicity data are not available for this specific formulation.

3.2 Acute Health Hazards

Any potential hazards are presumed to be due to exposure to the components.

2-Pyrrolidone: Contact with eyes and skin may result in irritation. Inhalation may result in respiratory irritation. May cause nausea, vomiting, and diarrhea.

Isopropyl alcohol: Contact with skin may result in irritation. Inhalation may cause drowsiness or dizziness.

Carbon Black: Chronic inhalation studies performed with fine dust particles resulted in lung tumors in animals. The IARC classification (see sec 3.4) was based upon these results. IARC also concluded "there is inadequate evidence in humans for the carcinogenicity of carbon black." Inhalation of fine dust particles is not expected to occur during normal conditions of use of this ink.

3.3 Chronic Health Hazards

None noted

3.4 Carcinogenicity

Carbon black has been classified by the International Agency for Research on Cancer (IARC) as Group 2B (possibly human carcinogen). None of the other ingredients have been classified as carcinogens according to EU, IARC, MAK, NTP or OSHA.

4.0 First Aid Measures

Emergency telephone number
Hewlett-Packard Health Effects
Line:

1-800-457-4209 (USA and Canada)
503-494-7199 (USA direct)
Singapore: +001-800-332-13321

Inhalation:

Remove to fresh air. If symptoms persist, consult a physician.

Ingestion:

If stomach upset persists, consult a physician.

Skin:

Wash affected areas thoroughly with soap and water. If irritation persists, consult a physician.

Eyes:

Do not rub eyes. Immediately flush with large amounts of clean, lukewarm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists, consult a physician.



Material Safety Data Sheet

5.0 Fire Fighting Measures

Extinguishing media:	Water, dry chemical, carbon dioxide, foam
Unsuitable Extinguishing Media:	None known
Special Firefighting Procedures:	None known
Unusual fire and explosion hazards:	No special hazards known
Auto-ignition temperature:	Not determined
Flashpoint (method):	Approximately 129° F - 135°F, No ignition, sustained combustion or flashing in the Sustained Combustibility Test (method in US 49CFR173, Appendix H)
Hazardous Combustion Products	Refer to section 10.

6.0 Accidental release measures

Spill or Leak Procedures:	Standard eye and skin protection recommended.
Environmental precautions:	Do not discharge into drains (See also Section 13, Disposal considerations)

7.0 Handling and Storage

Storage Temperature:	59°F to 95°F; 15°C to 35°C
Handling and Storage precautions:	Keep out of the reach of children Keep away from extreme heat and cold.
Shelf Life:	1 year
Special Sensitivity:	None

8.0 Exposure control/ personal protection

8.1 Exposure Limit Values	<u>Isopropyl alcohol:</u> OSHA, ACGIH, Canada, Austria, Belgium, France, Ireland, Italy, Spain, UK TWA=400ppm; Denmark, Germany, Switzerland TWA=200ppm; Netherlands TWA=250ppm; Sweden TWA=150ppm; Norway TWA=100ppm <u>Carbon black:</u> OSHA, ACGIH, Canada, Denmark, Finland, France, Ireland, Italy, Netherlands, Norway, UK TWA = 3.5mg/m ³ ; Sweden NGV=3 mg/m ³ ; Belgium TWA=3.6mg/m ³ ; Germany TWA=6mg/m ³
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Material Safety Data Sheet

8.2 Exposure Controls

Standard eye and skin protection for laboratory chemical safety recommended. Use in well ventilated area.

9.0 Physical and chemical properties

pH:	7.8 – 8.4
Boiling point:	Not Determined
Flash point:	Approximately 129° F - 135°F; 54°C – 57°C
Flammability:	US NFPA/HMIS Flammability rating = 2
Explosive properties:	Not applicable
Oxidizing properties:	Not applicable
Vapor Pressure:	Not applicable
Relative density:	Specific Gravity 1.0 to 1.2
Solubility:	Soluble in water
Partition coefficient:	Not determined
Viscosity:	Not determined
Vapor density:	>1 (air = 1.0)
Evaporation rate:	Not applicable
Other:	Not applicable

10.0 Stability and reactivity

Stability:	Stable under normal storage conditions
Incompatibilities:	Strong oxidizers
Thermal decomposition products:	Oxides of carbon/nitrogen/sulfur, water
Hazardous polymerization:	None

11.0 Toxicological information

Refer to Section 3 for potential health effects and Section 4 for first aid measures
Ink formulation has not been tested.

12.0 Ecological information

96 Hour LC50	LC50 >750mg/L	Fathead minnow
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13.0 Disposal considerations

Dispose in accordance with all applicable US Federal, state, local, and country laws.



Material Safety Data Sheet

14.0 Transportation information

Not a regulated article under United States DOT, IATA, ADR, or RID.

UN Number:	Not applicable
Class:	Not applicable
Proper Shipping Name:	Not applicable
Packing Group:	Not applicable
Marine Pollutant:	Not listed
Special Precautions:	None noted

15.0 Regulatory information

US EPA TSCA Inventory:	All ingredients are listed or exempt.
US EPA TSCA 12(b):	Does not contain listed chemicals.
EU Notification:	All ingredients are listed on EINECS and/or ELINCS or exempt.
EU Hazard Label (1999/45/EC):	This product does not require a label according to EU Directive 1999/45/EC.

16.0 Other information

Date Prepared:	June 29, 2002
HP-DMS Document Control Number:	09000de7802284fb-eng
Revision Information:	This document replaces all prior versions of the MSDS
EU Risk (R) Phrase definitions:	R11: Highly flammable R36: Irritating to eyes R67: Vapors may cause drowsiness and dizziness R36/37/38: Irritating to eyes, respiratory system and skin.
Other Information	This MSDS was prepared in compliance with EU Directive 91/155/EEC as amended by 2001/58/EC and USA OSHA Hazard Communications regulations (29CFR1910:1200).

DISCLAIMER: This Material Safety Data Sheet (MSDS) is provided without charge to customers of Hewlett-Packard. Data is the most current known to Hewlett-Packard at the time of preparation of this MSDS and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application.