

Samsung ML-2850 refill instructions

Also suitable for: ML-2850D, ML-2850DR, ML-2851

Before use, familiarise yourself with the safety information on pages 5 and 6.

Take maximum care when using a screwdriver as a lever. Consider the safety and protection of eyes and hands with regard to accidental slippage of the tool.

Consider doing the refill on top of sheets of old newspaper in case of accidental spills.

Take care refilling standard cartridge: only half will go in at a time

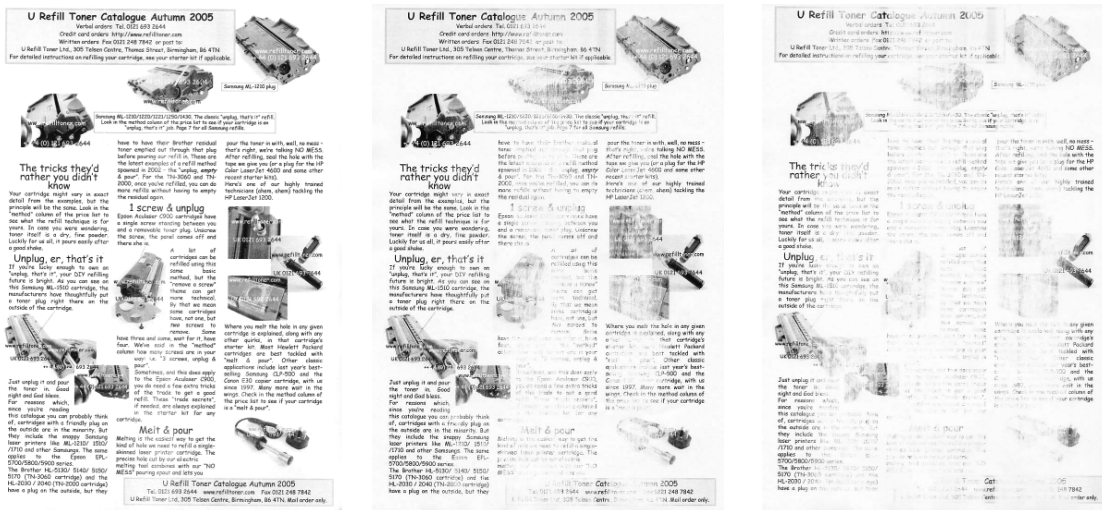
The new machine arrives with a standard cartridge (code ML-D2850A). Samsung also make a high yield cartridge (code ML-D2850B). Both flavours of cartridge can be bought on the open market.

Because our refill bottle is directed towards the high yield cartridge, only about half a bottle at a time will fit into the standard cartridge.

Ignore "toner low", refill at fade out

Ignore or override any messages that mention "toner low". Just keep printing until you get fade out from actual lack of toner powder in the cartridge; then refill it.

Typical fade-out due to lack of toner develops **progressively** as shown in these three prints.



As you can see, the faded area gets wider and more pronounced with each print, but even on the last very faded page, the print at the edges is still the same blackness as on the first print. If you take out the cartridge and give it a shake at this point, perfect print will return for a few more prints – but then the fade out will return again. This pattern of progressively widening fade out bands which can be temporarily cured by shaking is the hallmark of toner exhaustion.

"Toner exhausted" message stops printing? Change the chip

Our soak testing in the lab shows that you can expect a "toner exhausted" message like the one below after approximately the following number of refills for the respective cartridge:

Starter/standard cartridge: 2 refills

High yield cartridge: 3 refills (actually hadn't cut in when testing stopped half way through 4th refill)

You'll also find the machine won't let you print. At this point, change the chip as described on page 3, then carry on printing.



Although the message is saying "toner exhausted", it would be pure coincidence if the toner was actually exhausted at the same time the chip needed changing. So fight disinformation with shrewdness. Put more toner in when you get fade out and change the chip if you've got the "toner exhausted" message and can't print

anything.

See page 3 for how to change the chip. Note: to fit the new chip, you'll need some blu-tack, which isn't supplied with this kit.

How to refill it

Important: has the cartridge been run to fade out? Don't refill unless it has. See page 1 "Ignore 'toner low', refill at fade out". Change chip at "toner exhausted" message only.

- 1) Identify end of cartridge by layout of features and remove 3 screws.



- 2) Lever and slightly push end-plate away from cartridge body. Use screwdriver in a variety of different places to ease end plate off.



- 3) **Care:** do not force screwdriver down side of plug unless absolutely necessary.

Lever out on plug flange in different places until plug has visibly come out some way. Once plug has eased out a little way, pull it out with your fingers.

- 4) Shake toner bottle hard for a count of 5 before opening.

5) Open toner bottle and screw spout on. Wrap tape around neck to avoid all leakage of micro fine toner. "Duct tape", also known as "Gaffa tape" is best, but any wide tape will do.

- 6) Hold cartridge at 45 degrees with one hand. Use other hand for bottle.



- 7) **Care!** If refilling standard cartridge, only half the toner will go in, so get the feel of pouring toner slowly and avoid spills by keeping an eye on toner level rising. If refilling high yield cartridge, you can be more gung-ho.

Keeping bottle below horizontal, bring spout to hole and up-end bottle. Bring cartridge and bottle to 60 degree angle or more to encourage flow of toner.

- 8) Count to 10 while toner flows in.

- 9) Keeping spout near hole, rotate bottle down to below horizontal.



- 10) Cover end of spout firmly with finger and briefly shake bottle again. Repeat shake/pour until you can feel there's no toner in bottle when shaken.

11) If original plug seems to be in good condition, re-use to seal cartridge. If original plug seems damaged, seal hole with orange plug supplied. If in doubt, use the orange plug. Push it well in with the butt of the screwdriver (flanges of plug will bend a bit, this doesn't matter).

12) Wipe excess toner from around plug end of cartridge and shake over white paper to check for a leak. If you get a leak, even with the orange plug, seal with bathroom sealant or Copydex.

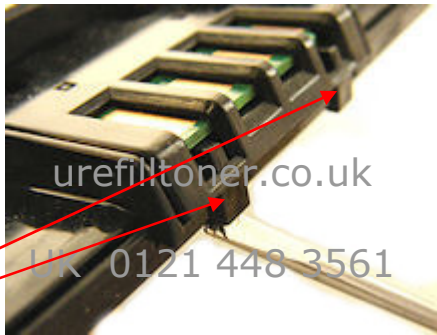
- 13) Reverse your steps to replace end plate. End

How to change the chip

Note: a chip is not supplied with the starter kit because it isn't needed for a successful first refill.

Note: in the case of the starter cartridge, which doesn't have a chip, just use blu-tack to stick new chip on as shown (end of step 3 onwards).

1) Use 3mm screwdriver to break off 2 plastic heat rivets.



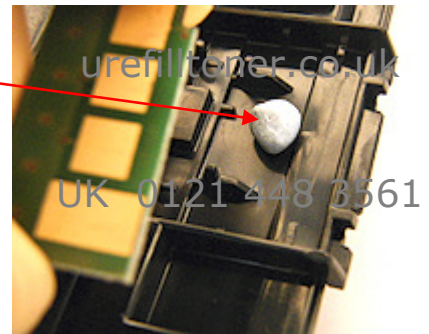
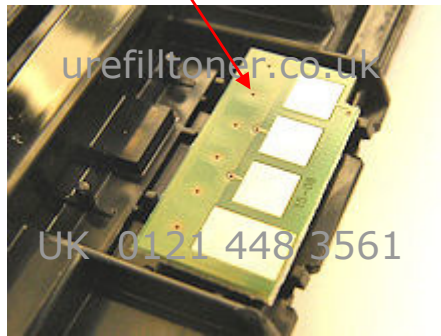
2) Prise free 2 lugs as shown. Grilled plate covering chip will now come free (with some fiddling).

3) Take out spent chip and place small piece of blu-tack about here.

4) Stick new chip on with line of holes innermost

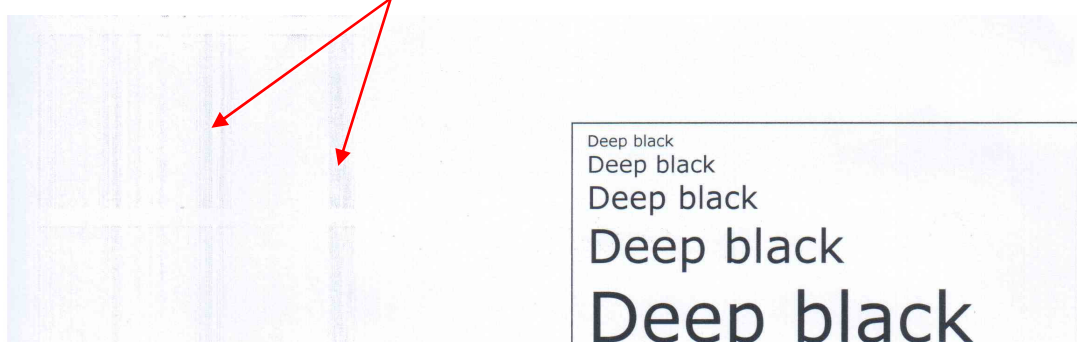
5) Don't replace chip cover.

6) Carefully insert cartridge into machine and check the red light goes away after a few seconds.



Empty waste after 3 refills

The cartridge collects waste toner in a compartment which, eventually, fills up and causes print problems. The symptom of waste overflow is black "skid marks" vertically down one section of the page.



If you seem to have that, you can empty the waste as shown in the next section (over the page)

For the ML-2850 waste overflow will happen during the fourth refill. If you want to be pre-emptive, empty the waste at the end of the third refill.

If you do get skid marks, you need to empty the waste straight away if you're going to because the compacted toner will soon permanently scratch the OPC drum.

We say "if you're going to" because emptying the waste is inevitably more messy than just refilling: so it's a personal choice if you want to do it or not.

How to empty the waste

You need a vacuum cleaner with the "hairy" attachment on. Only use the vacuum for cleaning stray toner powder from the surface of the cartridge. Only use the vacuum cleaner with the "hairy" attachment on to avoid damaging the cartridge's delicate seals.



1. Get a melting tool from urefilltoner.co.uk (in the manufacturer list, choose "Sundries", then click "Sundries" again).
2. Melt hole here.
3. Shake waste straight into an outside bin.
4. Using hairy vacuum attachment, carefully clean up outside of cartridge.
5. Clean flat surface around hole with absorbent paper.
6. Seal hole with any wide tape.



Three refills, and maybe then some

If you've delved into our website, you might know that we "put our corporate neck on the chopping block and say that the rule of thumb is **three refills, and maybe then some**".

As far as problems due to "wear and tear" go, the ML-2850 is an "and then some" cartridge. We were actually on refill number 4 of the high capacity cartridge when waste overflow came into play. We stopped there, having proved the product, but the cartridge would have been capable of going on if we'd emptied the waste.

Of course, some cartridges inexplicably give up the ghost early, probably due to small manufacturing imperfections. Others perform above and beyond the call of duty.

By aware though, that the more times a cartridge has been refilled, the more likely it is to fail for one kind of wear and tear related issue or another. We could write a moderately sized book about the different ways a toner cartridge can fail and what the associated symptoms are. Instead, here's another rule of thumb that'll save you most of the headaches we've had since 1992:

If you've got any kind of persistent print problem that boils down to toner being present on the page where you don't want it (i.e. not an *absence* like fadeout), if emptying the waste doesn't clear it, then it's about the end of the road for that cartridge.

The flip side to this is: don't refill a cartridge that has a "toner where it shouldn't be" print problem thinking more toner will fix the problem. On the contrary, at best, you'll just be able to print the undesired effect for much longer.

Safety Data Samsung ML-2850 type toner

Not to be used by children. Avoid inhalation of product. Avoid eye and skin contact. Do not ingest. Avoid sources of ignition while pouring and at all times.

Take maximum precaution when using a screwdriver as a lever: consider safety and protection of eyes and hands from sudden slippage or unexpected freeing of the tool.

1 Identification of the substance and the company

Product name	Samsung ML-2850 type refill toner
Part no.	SA2850BOT
Supplier	U Refill Toner Ltd. Contact details as per page header

2 Hazards identification

Classification	Not classified as hazardous according to OSHA CFR 1910.1200 or EU Directive 1999/45/EC, as amended.
Acute health effects	
Skin contact	Unlikely to cause skin irritation
Eye contact	May cause irritation
Inhalation	Irritation to respiratory tract if exposed to large amounts of toner dust
Ingestion	Unlikely when used as intended. Acute oral toxicity is believed to be low
Potential health effects	
Routes of exposure	Skin contact, eye contact and inhalation. Ingestion unlikely.
Chronic health effects	Prolonged inhalation of excessive amounts of any dust may cause lung damage
Carcinogenicity	Carbon black is classified by IARC as group 2B (possible human carcinogen). Carbon black in this preparation, due to its bound form, does not present this risk.

2 Composition

Ingredients	CAS No.	Weight(%)
Polyester copolymer	Proprietary	75-85
Carbon black	1333-86-4	1-10
Ethylene propylene wax	9010-79-1	1-5
Charge control agent	31714-55-3	1-5
Fumed silica	68909-20-6	1-5

4 First aid measures

Inhalation	Move person to fresh air. If breathing is difficult, obtain medical assistance
Eye contact	Flush with plenty of low pressure water for at least 15 minutes. Do not rub eyes. Remove contact lenses to ensure thorough flushing.
Skin	Wash with water, obtain medical attention if ill effects occur
Ingestion	Rinse out mouth with water. Drink one or two glasses of water. If large quantity swallowed seek medical advice

5 Fire fighting measures

Hazardous combustion products	Carbon monoxide and carbon dioxide
Extinguishing media	Water, dry chemical, carbon dioxide or foam
Special fire fighting procedures	Avoid inhalation of smoke. A self contained breathing apparatus and suitable protective clothing should be worn.
Unusual fire & explosion hazards	Toner is a combustible powder; formation of an explosive dust-air mixture is possible. Avoid all ignition sources if toner has been dispersed in air.

6 Accidental release measures

Spill/leak procedure	Sweep up or vacuum spilled toner and transfer into sealable waste container. Sweep slowly to minimize generation of dust. If vacuum is used, the motor must be rated as dust tight and safely applicable to the vacuuming of toner dust. Residue can be removed with soap and cold water. Garments may be washed or dry-cleaned after removal of loose toner.
Environmental precautions	Do not flush into surface water or sanitary sewer systems. Dispose of waste material in accordance with all applicable laws.

7 Handling and storage

Handling	Keep containers closed when not in use. Handle and open containers with care. Use with adequate ventilation. Avoid inhalation of dust and contact with skin and eyes. Keep away from sources of heat, sparks and open flames.
Storage	Store at room temperature in the original container. Keep container tightly closed and dry. Do not store with strong oxidizers.

8 Exposure controls and personal protection

UK exposure guidelines	WEL: 10mg/m ³ (inhalable dust), 3mg/m ³ (respirable dust)
Personal protective equipment	
Eye / face	Wear dust resistant safety goggles if there is danger of eye contact
Hands / skin	Wear protective gloves
Respiratory protection	Wear approved respirator for dust when exposure exceeds permissible limits
Additional measures	Use in a well ventilated area. Use engineering controls to reduce air contaminants to permissible limits. Wash hands after use.

9 Physical and chemical properties

Appearance and odour	Fine powder. Slight odour
Solubility in water	Negligible
Solubility in organic solvents	Partially soluble in toluene and xylene
Specific gravity (H ₂ O = 1)	1.2

10 Stability and reactivity

Stability	Stable under normal storage conditions
Conditions to avoid	Heat, flames, sources of ignition. Keep dust away from ignition sources.
Hazardous decomposition products	Carbon dioxide, carbon monoxide
Hazardous polymerization	Will not polymerize
Incompatible materials	Strong oxidizers

11 Toxicological information

Oral toxicity	Tests on toners have indicated there is no evidence of acute oral toxicity. Not classified for acute oral toxicity according to EU Directive 67/458/EEC and 1999/45/EC
Inhalation toxicity	No data
Eye irritation	Not classified as irritant according to OSHA HCS and EU 67/548/EEC as amended
Sensitization	Not classified as sensitizer according to OSHA HCS and EU 67/548/EEC as amended
Chronic toxicity	No data

Carcinogenicity	Carbon black is classified as a group 2B by IARC, but carbon black is present only in bound form in this preparation.
Mutagenicity	Negative (AMES test)
Reproductive toxicity	Not classified as toxic according to EU 67/548/EEC as amended

12 Ecological information

Not tested for ecological effects

13 Disposal considerations

Collect into tightly sealed containers. Dispose of waste in accordance with all local laws. Do not throw in open fires in order to prevent risk of dust explosion.
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14 Transport information

General	Not regulated
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15 Other information

Labelling EU 67/458/EEC	
R & S phrases	Not required
Hazard symbol	Not required

Notice. All safety information is given to help facilitate the safe use of this product and is based on information obtained from the manufacturer. This information is believed to be correct, but does not purport to be all-inclusive and shall only be used as a guide. U Refill Toner Ltd makes no warranty, express or implied, as to the accuracy or completeness of this information. It is the user's responsibility to determine the suitability of this information for the adoption of necessary safety precautions and / or compliance with local laws and regulations.

All information offered is believed to be true and is offered for consideration in good faith. However, U Refill Toner Ltd gives no warranties, neither explicit nor implicit as to the completeness or accuracy of any information offered nor the ultimate safety of refilling toner cartridges in any manner described or suggested nor the ultimate safety or hazardousness of products supplied by U Refill Toner Ltd. The onus is on the purchaser to evaluate all possible risk, including the possible incompleteness or inaccuracy of currently available information, and by proceeding to use the refill product or products, the purchaser thereby assumes all risk of peril or injury howsoever arising.

If you the purchaser decide not to go ahead with refilling for whatever reason, simply return the product or products to U Refill Toner Ltd and we will cheerfully refund your money. Your statutory rights are unaffected.

Please, tell three people what you've done



OK, we admit it. This is our begging act. Have you saved money by using our DIY kit? Did you feel a touch of pride as your cartridge *did* print again? Maybe you found some environmental satisfaction? Or perhaps you feel it should be refilled "because it's there".

We sincerely hope we've helped float your boat in some way. And if so, then please help our voice in the wilderness and tell at least three people about what you did with your empty cartridge. Why not send a link to urefilltoner.co.uk to some friends you know have printers?

The phrase "carbon footprint" hadn't been coined in 1992 when we started selling our trend-bucking "guerrilla re-cycling" products. Refilling with just toner **more or less halves CO₂** compared with making the toner plus the whole structure of a cartridge to put it in*.



We're asking for your support to create a kind of benign chain-reaction effect. Yes, we stand to make money from that, but we believe that the battle to reduce CO₂ output does have to be commercialised. That's to say, when the capacity of individuals to make voluntary self-sacrifice reaches a limit, what will take up the slack? In the same way that carbon big-foot companies need money to keep doing what they do, so does a carbon twinkle-toes.

Environmental organisations make us aware of a pyramid of priorities. **Re-use**, in the sense of directly using a resource again, is more beneficial than re-cycling (normally taken to

imply an industrial process such as re-pulping paper fibre).

So, one last time for the planet, please advocate urefilltoner.co.uk if you feel our existence is preferable to our non-existence. Keep refilling in the free world.

*Sources:

Dr. M. Gell, "Carbon Footprints and Ecodesign of Toner Printer Cartridges", Xanfeon Energy & Environmental Services, UK, 2008. Dr. Gell calculates a 52% reduction in carbon footprint by refilling a cartridge 3 times and replacing the OPC drum once. We think the DIY refill case is even more favourable because the following carbon loads included in Dr. Gell's assumptions don't apply: manufacture/transport of replacement OPC drum, triple transport of empty cartridge to remanufacturing facility and energy consumed during remanufacturing at facility. In addition, the footprint of the delivery transport is smaller because toner weighs only a fraction of a whole cartridge.

Centre For Remanufacturing & Reuse (commissioning body), "The Carbon Footprint of Remanufactured Versus New Mono-toner Printer Cartridges". The authors conclude that, based on their data, a remanufactured mono (i.e. black & white laser printer) cartridge has a "46% lower carbon footprint than a corresponding new cartridge".

Berglind & Eriksson, "Life Cycle Assessment of Toner Cartridge HP C4127X", University of Kalmar, Sweden, 2002. The authors state (Abstract page I) that from the point of view of environmental load, "the re-use alternative is full measured two times better ...". Although they point out that the main environmental load is, in fact, associated with paper.

Refills by you ... thanks to you

Thanks for refilling the toner cartridges in your printer. We invented "do-it-yourself" toner refills in 1992, "melt & pour" in 1996 and put "unplug & pour" into internet-speak in 2002. We've never tried to patent or otherwise restrict the use of these ideas.

Now needed more than ever. Now refined more than ever.

- ✓ cut CO₂
- ✓ sabotage "designer waste"
- ✓ save money

<http://www.urefilltoner.co.uk>

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