



Filament Selection Guide for Agilent GC/MSDs

The filament in the Agilent MSD generates electrons that are used to ionize the sample. Much like the filament in a light bulb, the filament in the MSD will eventually burn out, break, and need to be replaced.

Please [click here](#) or see **Table 1** for the filament details.

There are several important factors that must be considered when choosing the proper [replacement filament](#). First, you must be sure that the filament is compatible with the model of MSD being used. Specifically, the 5971 and 5972 MSD require different filaments, but the filament for the 5972 and the EI source for the standard 5973 MSD are the same. Also, different filaments are needed for the CI and EI sources for the 5973. The EI filaments can be identified by the wound or braided wires leading into the filament posts. The CI filaments have straight wires leading to the filament posts.

The source temperature limit has increased from the 250°C limit of the 5973 MSD to 300°C with the release of the new 5973 Inert MSD. For this reason, replacement filaments for the 5973 Inert MSD require the higher temperature filament. The standard filament should not be used in a 5973 Inert MSD because use at the higher temperature will cause deformation and failure. The high temperature filament is compatible with both the 5973 MSD and the new 5973 Inert MSD. It is very important NOT to mix and match parts between different sources or problems with unpredictable results can occur.

How can you tell if you have the new 5973 Inert MSDs or the 5973 MSD?

First, the screws that secure the 5973 Inert MSD (repeller, filaments and lens set screw) are gold-plated. Secondly, the filaments for the 5973 Inert MSD are different

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and small dimples on their surface mark the source body, repeller assembly and draw out plate.

Troubleshooting a broken filament

There is a dramatic change in the signal when a filament breaks. A typical result is a precipitous drop in the baseline during data acquisition. Also, the Chemstation will exhibit the **[NO EMISSION CURRENT]** error during tuning.

All 5973A/N MSDs equipped with the EI source have 2 filaments. If one of the filaments breaks, you can use the Chemstation software to change to the alternate filament. After selecting the alternate filament, go to the Edit MS Parameters screen and proceed to the FILAMENT SELECT BOX, (which could have either FILAMENT 1 or 2 selected) and select the alternate filament. After selecting the alternate filament, try to execute a scan using the Scan button at bottom of screen. If the Scan is successful (meaning no errors occur), then exit the screen. This will put you back at the top level of MANUAL TUNE. At this point select [FILE], then save the tune values to the tune file you are using.

Maintaining the Filaments

Follow these general practices to reduce the chance of premature filament failure.

- When setting up data acquisition parameters, set the solvent delay so that the MSD will not turn on while the solvent peak is eluting from the column into the source. Use the ion-gauge to indicate passage of the solvent front and add a few seconds after the pressure returns before turning on the filament. If you do not have the gauge, use the Agilent flow calculator software utility to estimate solvent holdup time. Err on the conservative side when making an estimate.
- When the software prompts you to override the solvent delay at the beginning of a run, always select "No."
- Higher emission current will reduce filament life.
- If you are controlling your MSD from the Edit Parameters screen, always select MS Off before changing any of the filament parameters or exiting the panel.

It can be useful to switch from one filament to the other periodically (every three months) so that both filaments will have about the same number of hours of use. When one of the filaments fails, the second filament will fail soon after. The MSD can then be shut down once to replace both filaments. Similarly, during source cleaning, inspect the filaments for sagging or thinning and replace any filament that shows wear.

Table 1:

Description	Unit	Part No.
Filament, 5973 (EI)		G2590-60053
Filament, 5973 (CI)	2/pk	G1099-80053
Filament, EI High Temperature for the 5973 inert		G2590-60053
Filament, 5972 (EI/CI)		G2590-60053
Filament, 5971 (EI/CI) / GCD (EI)		05971-60140