:mod:`lzma` --- Compression using the LZMA algorithm

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 1); *backlink*

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 4)

Unknown directive type "module".

```
.. module:: lzma
   :synopsis: A Python wrapper for the liblzma compression library.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 7)

Unknown directive type "moduleauthor".

```
.. moduleauthor:: Nadeem Vawda <nadeem.vawda@gmail.com>
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 8)

Unknown directive type "sectionauthor".

```
.. sectionauthor:: Nadeem Vawda <nadeem.vawda@gmail.com>
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 10)

Unknown directive type "versionadded".

```
.. versionadded:: 3.3
```

Source code: :source:`Lib/lzma.py`

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 12); *backlink*

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This module provides classes and convenience functions for compressing and decompressing data using the LZMA compression algorithm. Also included is a file interface supporting the `.xz` and legacy `.lzma` file formats used by the :program:`xz` utility, as well as raw compressed streams.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 16); *backlink*

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The interface provided by this module is very similar to that of the :mod:`bz2` module. Note that :class:`LZMAFile` and :class:`bz2.BZ2File` are *not* thread-safe, so if you need to use a single :class:`LZMAFile` instance from multiple threads, it is necessary to protect it with a lock.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 21); *backlink*

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 21); *backlink*

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 21); *backlink*

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 21); *backlink*

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 27)

Unknown directive type "exception".

```
.. exception:: LZMAError

   This exception is raised when an error occurs during compression or
   decompression, or while initializing the compressor/decompressor state.
```

Reading and writing compressed files

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 36)

Unknown directive type "function".

```
.. function:: open(filename, mode="rb", *, format=None, check=-1, preset=None, filters=None, encoding=None, errors=

   Open an LZMA-compressed file in binary or text mode, returning a :term:`file
   object`.

   The *filename* argument can be either an actual file name (given as a
   :class:`str`, :class:`bytes` or :term:`path-like <path-like object>` object), in
   which case the named file is opened, or it can be an existing file object
   to read from or write to.

   The *mode* argument can be any of ``"r"``, ``"rb"``, ``"w"``, ``"wb"``,
   ``"x"``, ``"xb"``, ``"a"`` or ``"ab"`` for binary mode, or ``"rt"``,
   ``"wt"``, ``"xt"``, or ``"at"`` for text mode. The default is ``"rb"``.

   When opening a file for reading, the *format* and *filters* arguments have
   the same meanings as for :class:`LZMADecompressor`. In this case, the *check*
   and *preset* arguments should not be used.

   When opening a file for writing, the *format*, *check*, *preset* and
   *filters* arguments have the same meanings as for :class:`LZMACompressor`.

   For binary mode, this function is equivalent to the :class:`LZMAFile`
   constructor: ``LZMAFile(filename, mode, ...)``. In this case, the *encoding*,
   *errors* and *newline* arguments must not be provided.

   For text mode, a :class:`LZMAFile` object is created, and wrapped in an
   :class:`io.TextIOWrapper` instance with the specified encoding, error
   handling behavior, and line ending(s).

   .. versionchanged:: 3.4
      Added support for the ``"x"``, ``"xb"`` and ``"xt"`` modes.

   .. versionchanged:: 3.6
      Accepts a :term:`path-like object`.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 72)

Invalid class attribute value for "class" directive: "LZMAFile(filename=None, mode="r", *, format=None, check=-1, preset=None, filters=None)".

```
.. class:: LZMAFile(filename=None, mode="r", *, format=None, check=-1, preset=None, filters=None)

   Open an LZMA-compressed file in binary mode.

   An :class:`LZMAFile` can wrap an already-open :term:`file object`, or operate
   directly on a named file. The *filename* argument specifies either the file
   object to wrap, or the name of the file to open (as a :class:`str`,
   :class:`bytes` or :term:`path-like <path-like object>` object). When wrapping an
   existing file object, the wrapped file will not be closed when the
   :class:`LZMAFile` is closed.

   The *mode* argument can be either ``"r"`` for reading (default), ``"w"`` for
   overwriting, ``"x"`` for exclusive creation, or ``"a"`` for appending. These
   can equivalently be given as ``"rb"``, ``"wb"``, ``"xb"`` and ``"ab"``
   respectively.

   If *filename* is a file object (rather than an actual file name), a mode of
   ``"w"`` does not truncate the file, and is instead equivalent to ``"a"``.

   When opening a file for reading, the input file may be the concatenation of
   multiple separate compressed streams. These are transparently decoded as a
   single logical stream.

   When opening a file for reading, the *format* and *filters* arguments have
   the same meanings as for :class:`LZMADecompressor`. In this case, the *check*
   and *preset* arguments should not be used.

   When opening a file for writing, the *format*, *check*, *preset* and
   *filters* arguments have the same meanings as for :class:`LZMACompressor`.

   :class:`LZMAFile` supports all the members specified by
   :class:`io.BufferedIOBase`, except for :meth:`detach` and :meth:`truncate`.
   Iteration and the :keyword:`with` statement are supported.

   The following method is also provided:

   .. method:: peek(size=-1)

      Return buffered data without advancing the file position. At least one
      byte of data will be returned, unless EOF has been reached. The exact
      number of bytes returned is unspecified (the *size* argument is ignored).

      .. note:: While calling :meth:`peek` does not change the file position of
         the :class:`LZMAFile`, it may change the position of the underlying
         file object (e.g. if the :class:`LZMAFile` was constructed by passing a
         file object for *filename*).

   .. versionchanged:: 3.4
      Added support for the ``"x"`` and ``"xb"`` modes.

   .. versionchanged:: 3.5
      The :meth:`~io.BufferedIOBase.read` method now accepts an argument of
```

```
   ``None``.

.. versionchanged:: 3.6
   Accepts a :term:`path-like object`.
```

Compressing and decompressing data in memory

Create a compressor object, which can be used to compress data incrementally.

For a more convenient way of compressing a single chunk of data, see :func:`compress`.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 137); *backlink*

Unknown interpreted text role "func".

The *format* argument specifies what container format should be used. Possible values are:

- :const:`FORMAT_XZ`: The `.xz` container format.

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 144); *backlink*

  Unknown interpreted text role "const".

  This is the default format.

- :const:`FORMAT_ALONE`: The legacy `.lzma` container format.

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  Unknown interpreted text role "const".

  This format is more limited than `.xz` -- it does not support integrity checks or multiple filters.

- :const:`FORMAT_RAW`: A raw data stream, not using any container format.

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 154); *backlink*

  Unknown interpreted text role "const".

  This format specifier does not support integrity checks, and requires that you always specify a custom filter chain (for both compression and decompression). Additionally, data compressed in this manner cannot be decompressed using :const:`FORMAT_AUTO` (see :class:`LZMADecompressor`).

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 151); *backlink*

  Unknown interpreted text role "const".

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 151); *backlink*

  Unknown interpreted text role "class".

The *check* argument specifies the type of integrity check to include in the compressed data. This check is used when decompressing, to ensure that the data has not been corrupted. Possible values are:

- :const:`CHECK_NONE`: No integrity check. This is the default (and the only acceptable value) for :const:`FORMAT_ALONE` and :const:`FORMAT_RAW`.

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 160); *backlink*

  Unknown interpreted text role "const".

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 160); *backlink*

  Unknown interpreted text role "const".

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 160); *backlink*

  Unknown interpreted text role "const".

- :const:`CHECK_CRC32`: 32-bit Cyclic Redundancy Check.

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System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 164); backlink

Unknown interpreted text role "const".

- :const:`CHECK_CRC64`: 64-bit Cyclic Redundancy Check. This is the default for :const:`FORMAT_XZ`.

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System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 166); backlink

Unknown interpreted text role "const".

- :const:`CHECK_SHA256`: 256-bit Secure Hash Algorithm.

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Unknown interpreted text role "const".

If the specified check is not supported, an :class:`LZMAError` is raised.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 171); backlink

Unknown interpreted text role "class".

The compression settings can be specified either as a preset compression level (with the *preset* argument), or in detail as a custom filter chain (with the *filters* argument).

The *preset* argument (if provided) should be an integer between `0` and `9` (inclusive), optionally OR-ed with the constant :const:`PRESET_EXTREME`. If neither *preset* nor *filters* are given, the default behavior is to use :const:`PRESET_DEFAULT` (preset level `6`). Higher presets produce smaller output, but make the compression process slower.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 177); backlink

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System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 177); backlink

Unknown interpreted text role "const".

Note

In addition to being more CPU-intensive, compression with higher presets also requires much more memory (and produces output that needs more memory to decompress). With preset `9` for example, the overhead for an :class:`LZMACompressor` object can be as high as 800 MiB. For this reason, it is generally best to stick with the default preset.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 186); backlink

Unknown interpreted text role "class".

The *filters* argument (if provided) should be a filter chain specifier. See :ref:`filter-chain-specs` for details.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 192); backlink

Unknown interpreted text role "ref".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 195)

Unknown directive type "method".

```
.. method:: compress(data)

   Compress *data* (a :class:`bytes` object), returning a :class:`bytes`
   object containing compressed data for at least part of the input. Some of
   *data* may be buffered internally, for use in later calls to
   :meth:`compress` and :meth:`flush`. The returned data should be
   concatenated with the output of any previous calls to :meth:`compress`.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 203)

Unknown directive type "method".

```
.. method:: flush()

   Finish the compression process, returning a :class:`bytes` object
   containing any data stored in the compressor's internal buffers.

   The compressor cannot be used after this method has been called.
```

Create a decompressor object, which can be used to decompress data incrementally.

For a more convenient way of decompressing an entire compressed stream at once, see :func:`decompress`.

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst`, line 216); *backlink*

Unknown interpreted text role "func".

The *format* argument specifies the container format that should be used. The default is :const:`FORMAT_AUTO`, which can decompress both `.xz` and `.lzma` files. Other possible values are :const:`FORMAT_XZ`, :const:`FORMAT_ALONE`, and :const:`FORMAT_RAW`.

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst`, line 219); *backlink*

Unknown interpreted text role "const".

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst`, line 219); *backlink*

Unknown interpreted text role "const".

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst`, line 219); *backlink*

Unknown interpreted text role "const".

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst`, line 219); *backlink*

Unknown interpreted text role "const".

The *memlimit* argument specifies a limit (in bytes) on the amount of memory that the decompressor can use. When this argument is used, decompression will fail with an :class:`LZMAError` if it is not possible to decompress the input within the given memory limit.

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst`, line 224); *backlink*

Unknown interpreted text role "class".

The *filters* argument specifies the filter chain that was used to create the stream being decompressed. This argument is required if *format* is :const:`FORMAT_RAW`, but should not be used for other formats. See :ref:`filter-chain-specs` for more information about filter chains.

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst`, line 229); *backlink*

Unknown interpreted text role "const".

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst`, line 229); *backlink*

Unknown interpreted text role "ref".

Note

This class does not transparently handle inputs containing multiple compressed streams, unlike :func:`decompress` and :class:`LZMAFile`. To decompress a multi-stream input with :class:`LZMADecompressor`, you must create a new decompressor for each stream.

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst`, line 235); *backlink*

Unknown interpreted text role "func".

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst`, line 235); *backlink*

Unknown interpreted text role "class".

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst`, line 235); *backlink*

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 240)

Unknown directive type "method".

```
.. method:: decompress(data, max_length=-1)

   Decompress *data* (a :term:`bytes-like object`), returning
   uncompressed data as bytes. Some of *data* may be buffered
   internally, for use in later calls to :meth:`decompress`. The
   returned data should be concatenated with the output of any
   previous calls to :meth:`decompress`.

   If *max_length* is nonnegative, returns at most *max_length*
   bytes of decompressed data. If this limit is reached and further
   output can be produced, the :attr:`~.needs_input` attribute will
   be set to ``False``. In this case, the next call to
   :meth:`~.decompress` may provide *data* as ``b''`` to obtain
   more of the output.

   If all of the input data was decompressed and returned (either
   because this was less than *max_length* bytes, or because
   *max_length* was negative), the :attr:`~.needs_input` attribute
   will be set to ``True``.

   Attempting to decompress data after the end of stream is reached
   raises an `EOFError`.  Any data found after the end of the
   stream is ignored and saved in the :attr:`~.unused_data` attribute.

   .. versionchanged:: 3.5
      Added the *max_length* parameter.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 267)

Unknown directive type "attribute".

```
.. attribute:: check

   The ID of the integrity check used by the input stream. This may be
   :const:`CHECK_UNKNOWN` until enough of the input has been decoded to
   determine what integrity check it uses.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 273)

Unknown directive type "attribute".

```
.. attribute:: eof

   ``True`` if the end-of-stream marker has been reached.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 277)

Unknown directive type "attribute".

```
.. attribute:: unused_data

   Data found after the end of the compressed stream.

   Before the end of the stream is reached, this will be ``b""``.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 283)

Unknown directive type "attribute".

```
.. attribute:: needs_input

   ``False`` if the :meth:`.decompress` method can provide more
   decompressed data before requiring new uncompressed input.

   .. versionadded:: 3.5
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 290)

Unknown directive type "function".

```
.. function:: compress(data, format=FORMAT_XZ, check=-1, preset=None, filters=None)

   Compress *data* (a :class:`bytes` object), returning the compressed data as a
   :class:`bytes` object.

   See :class:`LZMACompressor` above for a description of the *format*, *check*,
   *preset* and *filters* arguments.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 299)

Unknown directive type "function".

```
.. function:: decompress(data, format=FORMAT_AUTO, memlimit=None, filters=None)
```

```
Decompress *data* (a :class:`bytes` object), returning the uncompressed data
as a :class:`bytes` object.

If *data* is the concatenation of multiple distinct compressed streams,
decompress all of these streams, and return the concatenation of the results.

See :class:`LZMADecompressor` above for a description of the *format*,
*memlimit* and *filters* arguments.
```

Miscellaneous

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 314)

Unknown directive type "function".

```
.. function:: is_check_supported(check)

   Return ``True`` if the given integrity check is supported on this system.

   :const:`CHECK_NONE` and :const:`CHECK_CRC32` are always supported.
   :const:`CHECK_CRC64` and :const:`CHECK_SHA256` may be unavailable if you are
   using a version of :program:`liblzma` that was compiled with a limited
   feature set.
```

Specifying custom filter chains

A filter chain specifier is a sequence of dictionaries, where each dictionary contains the ID and options for a single filter. Each dictionary must contain the key `"id"`, and may contain additional keys to specify filter-dependent options. Valid filter IDs are as follows:

- Compression filters:
  - :const:`FILTER_LZMA1` (for use with :const:`FORMAT_ALONE`)

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    Unknown interpreted text role "const".

    System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 335); *backlink*

    Unknown interpreted text role "const".

  - :const:`FILTER_LZMA2` (for use with :const:`FORMAT_XZ` and :const:`FORMAT_RAW`)

    System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 336); *backlink*

    Unknown interpreted text role "const".

    System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 336); *backlink*

    Unknown interpreted text role "const".

    System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 336); *backlink*

    Unknown interpreted text role "const".

- Delta filter:
  - :const:`FILTER_DELTA`

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    Unknown interpreted text role "const".

- Branch-Call-Jump (BCJ) filters:
  - :const:`FILTER_X86`

    System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 342); *backlink*

    Unknown interpreted text role "const".

  - :const:`FILTER_IA64`

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 343); *backlink*

Unknown interpreted text role "const".

- :const:`FILTER_ARM`

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 344); *backlink*

  Unknown interpreted text role "const".

- :const:`FILTER_ARMTHUMB`

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 345); *backlink*

  Unknown interpreted text role "const".

- :const:`FILTER_POWERPC`

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 346); *backlink*

  Unknown interpreted text role "const".

- :const:`FILTER_SPARC`

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 347); *backlink*

  Unknown interpreted text role "const".

A filter chain can consist of up to 4 filters, and cannot be empty. The last filter in the chain must be a compression filter, and any other filters must be delta or BCJ filters.

Compression filters support the following options (specified as additional entries in the dictionary representing the filter):

- `preset`: A compression preset to use as a source of default values for options that are not specified explicitly.
- `dict_size`: Dictionary size in bytes. This should be between 4 KiB and 1.5 GiB (inclusive).
- `lc`: Number of literal context bits.
- `lp`: Number of literal position bits. The sum `lc + lp` must be at most 4.
- `pb`: Number of position bits; must be at most 4.
- `mode`: :const:`MODE_FAST` or :const:`MODE_NORMAL`.

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 364); *backlink*

  Unknown interpreted text role "const".

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 364); *backlink*

  Unknown interpreted text role "const".

- `nice_len`: What should be considered a "nice length" for a match. This should be 273 or less.
- `mf`: What match finder to use -- :const:`MF_HC3`, :const:`MF_HC4`, :const:`MF_BT2`, :const:`MF_BT3`, or :const:`MF_BT4`.

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 367); *backlink*

  Unknown interpreted text role "const".

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 367); *backlink*

  Unknown interpreted text role "const".

  System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]lzma.rst, line 367); *backlink*

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Unknown interpreted text role "const".

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Unknown interpreted text role "const".

- `depth`: Maximum search depth used by match finder. 0 (default) means to select automatically based on other filter options.

The delta filter stores the differences between bytes, producing more repetitive input for the compressor in certain circumstances. It supports one option, `dist`. This indicates the distance between bytes to be subtracted. The default is 1, i.e. take the differences between adjacent bytes.

The BCJ filters are intended to be applied to machine code. They convert relative branches, calls and jumps in the code to use absolute addressing, with the aim of increasing the redundancy that can be exploited by the compressor. These filters support one option, `start_offset`. This specifies the address that should be mapped to the beginning of the input data. The default is 0.

Examples

Reading in a compressed file:

```
import lzma
with lzma.open("file.xz") as f:
    file_content = f.read()
```

Creating a compressed file:

```
import lzma
data = b"Insert Data Here"
with lzma.open("file.xz", "w") as f:
    f.write(data)
```

Compressing data in memory:

```
import lzma
data_in = b"Insert Data Here"
data_out = lzma.compress(data_in)
```

Incremental compression:

```
import lzma
lzc = lzma.LZMACompressor()
out1 = lzc.compress(b"Some data\n")
out2 = lzc.compress(b"Another piece of data\n")
out3 = lzc.compress(b"Even more data\n")
out4 = lzc.flush()
# Concatenate all the partial results:
result = b"".join([out1, out2, out3, out4])
```

Writing compressed data to an already-open file:

```
import lzma
with open("file.xz", "wb") as f:
    f.write(b"This data will not be compressed\n")
    with lzma.open(f, "w") as lzf:
        lzf.write(b"This *will* be compressed\n")
    f.write(b"Not compressed\n")
```

Creating a compressed file using a custom filter chain:

```
import lzma
my_filters = [
    {"id": lzma.FILTER_DELTA, "dist": 5},
    {"id": lzma.FILTER_LZMA2, "preset": 7 | lzma.PRESET_EXTREME},
]
with lzma.open("file.xz", "w", filters=my_filters) as f:
    f.write(b"blah blah blah")
```