PLASTIFORM TECHNICAL DATA SHEET

M60

Key information

- **Shape Memory** Impression.
- No **dimensional shrinkage**.
- **Potentially** usable for **contact measurement**
- **Compatible** with the **Double Blade Cutter.**

Description

Plastiform is a high-precision silicone-based impression material used primarily for quality control and non-destructive dimensional testing in industry.
It is a two-component, addition-curing, 1:1 (one to one) mixture, polymerizing without heating or odor.

Technical data

Initial Consistency	Final Consistency	Final Hardness	Max. Removal Constraint (definition page 6)	Elongation at break *	Impression resolution **
Manual Putty	Semi-Flexible	60 Shore A	5 %	100 %	10μm

Density at 20°C	Temperature of decomposition	Flash point	Boiling point	Ignition temperature
1,45 g/cm3	ND	>130 °C	>200 °C	460°C

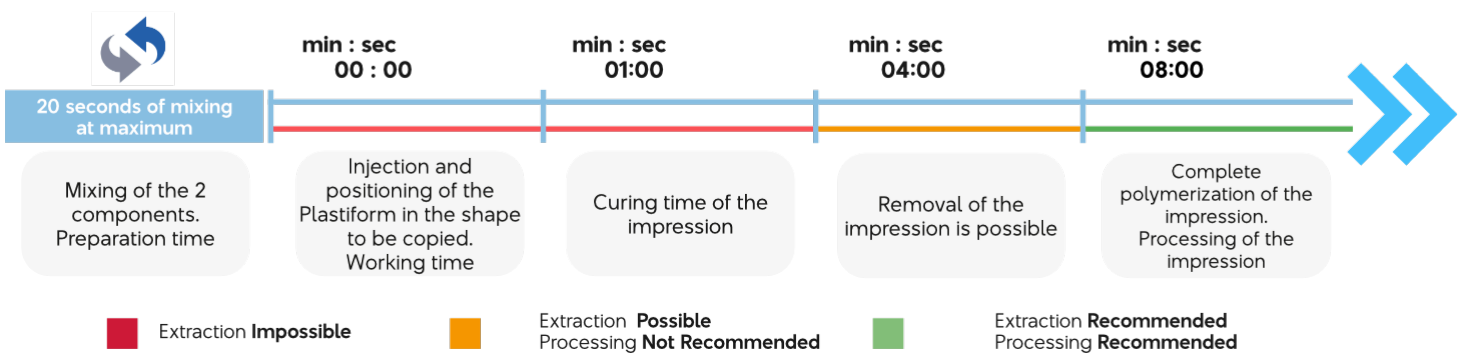
* Elongation at break defines the ability of a material to elongate before breaking when loaded in tension.

** The impression resolution is the smallest variation of the measured quantity that produces a perceptible variation of the indication delivered by the measuring instrument.

ND - Not Determined

Recommended application times (Data at 23°C / 50% HR)

It is recommended to wait for complete polymerization before extracting and processing the impressions.



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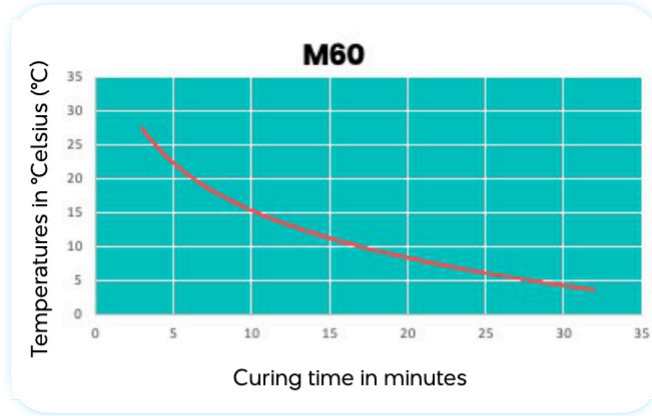
Evolution of curing time / product temperature

Temperature is a factor with a direct influence on the curing time of Plastiform products. It is recommended to use the products at room temperature (~23°C).



Applications

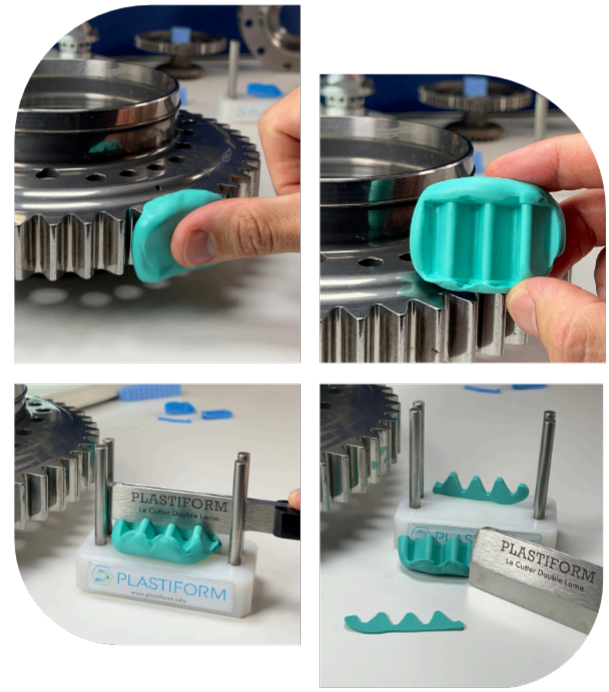
With its consistency, the M60 can be applied manually to vertical or overhanging surfaces. The final impression of this plastiform is Semi-Flexible (60 Shore A hardness), and has a low deformation capacity. It accepts a maximum Removal Constraint of 5%. The M60 is therefore used on less complex shapes.

M60 is recommended for creating simple external shapes (threads, grooves, etc.). It can be used on medium to large parts. Moreover, it is a very practical product to use to check large assemblies without having to disassemble them.

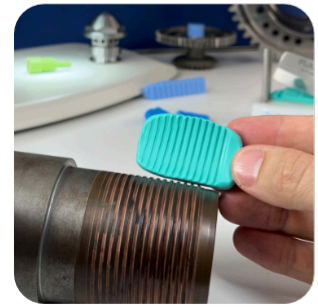
It is possible to cut the M60 impression with the **Double Blade Cutter** to obtain a profile of the replica.

Secondary applications

M60 can also be used to create custom protections



Example of use of the M60 for partial shape control



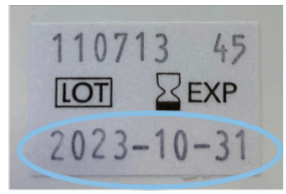
Material compatibility

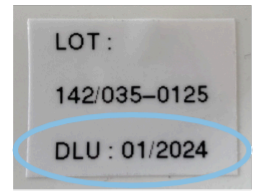
Plastiform can be used on all types of materials. However, an alteration of the chemical reaction of polymerization can occur in contact with latex, sulfur compounds, graphite, oils and greases, as well as certain titanium alloys (non-exhaustive list).
In general, the user is advised to conduct comprehensive tests to determine the suitability, effectiveness and safety of Plastiform for the intended application.

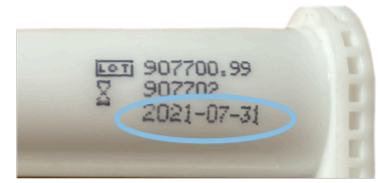
Shelf life / Storage / Conservation

The expiry date of Plastiforms is indicated on the products. It varies between 24 and 36 months (depending on the product) after the manufacturing of the product, if it is kept in its original packaging, well closed, and stored in a dry and temperate environment (between 15 and 25°C).

The expiry Date is indicated on the cartridge or under the jar as follows:







Once the product's validity date has been exceeded, Rivelec no longer guarantees the performance shown on this technical data sheet. It is then up to the user to proceed with tests, in order to determine the adequacy, the efficiency and the safety of Plastiform products with the application he is considering. Nevertheless, Rivelec has been able to confirm the conformity of Plastiform on products manufactured more than 5 years ago, untouched and stored in nominal conditions.

As long as that the materials have been stored at room temperature and that the original packaging has not been opened, Rivelec considers that it is safe to use the product up to one year after its expiration date. Rivelec recommends that tests be carried out by the customer before using expired products.
A change of aspect, of consistency or an abnormally long polymerization time allow to detect the alteration of the product.

Plastiform's performance can be potentially impaired if the products have been exposed to wide temperature variations or extreme temperatures (< 0 °C or > 55 °C).

In order not to pollute the components and thus alter the homogeneous mixture of Plastiform and the 1/1 ratio of the base and the catalyst, take care not to interchange the caps and to close the cartridges well after use.

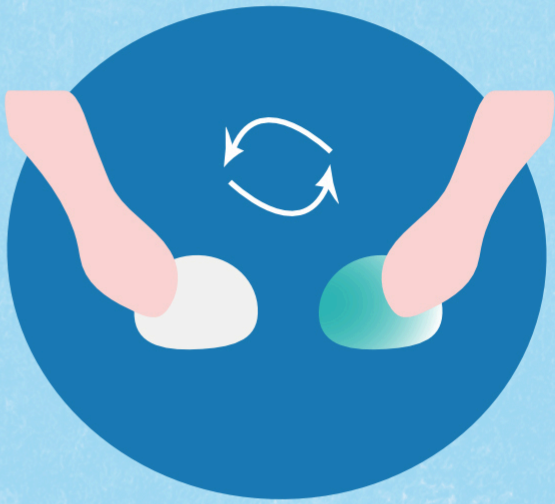
Health & Environment

- Plastiforms are **non-toxic** and can be handled without PPE.
- None of the raw materials used in the manufacture of Plastiform products are classified as **CMR** (carcinogenic, mutagenic or toxic for reproduction).
- No Volatile Organic Compounds **(VOCs)** are used as raw materials in the manufacture of Plastiform.
- No substances / raw materials containing substances mentioned in the **REACH SVHC** list in a concentration > 0.1 % are present in the composition of Plastiform products.
- The polydimethylsiloxanes used in the manufacture of Plastiform products contain a maximum of 0.1% of **volatile cyclic siloxanes** D4, D5 and D6.
- No **nanoparticles** are used in the manufacturing of Plastiform products.
- No substance / raw material containing **substances of animal origin** is present in the composition of Plastiform products.
- No **halogenated hydrocarbons** (chlorinated, fluorinated, brominated) are present in elemental form in Plastiform.
- No substance / raw material containing **latex** is present in the composition of Plastiform products.
- Plastiform containers and impressions are classified as **non-hazardous non-inert waste** and more precisely as waste from organic chemical processes under code 07 02 17 "waste containing silicones" (according to annex I of article R 541-8 of the Environmental Code).

Implementation

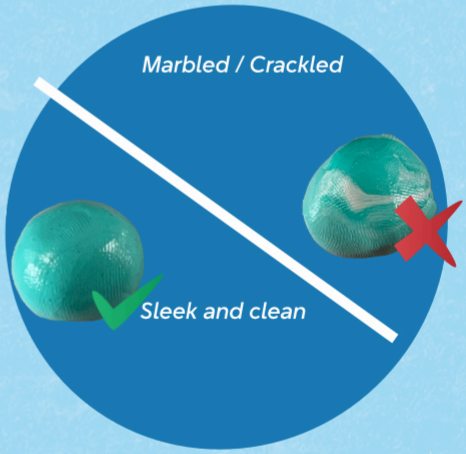
1. Degrease the part thoroughly.
Grease prevents polymerization and impairs accuracy.

2. Mix the 2 components in equal quantities.
The mixing must be done within the preparation time given on page 1 of the technical data sheet.

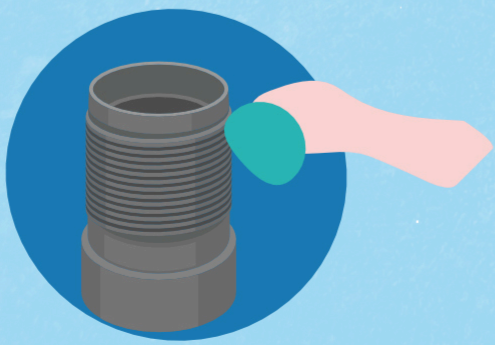


3. The mixture should have a homogeneous color.

4. The surface of the mixture must be smooth and clean.
The mixture must not be marbled or cracked.



5. Apply the mixture by pressing it firmly onto the surface of the part to be controlled.
Leave at least 5mm of material to ensure that the impression is rigid enough and will retain its shape when removed and cut with a Double Blade Cutter.



The application of the mixture must be done quickly because the polymerization starts as soon as both Plastiform components are in contact.

6. Wait until the curing time of the Plastiform is reached before removing the impression (refer to the recommended application times on page 1).

Factors that may influence the measurement results

There is always some unavoidable margin of error between the measured value and the "true value".
The causes of uncertainty can be due to several factors, either during the making of the impression or during its measurement, and can therefore have an impact on the measurement result. The following is a non-exhaustive list of causes of uncertainty:

Measuring device

The measuring device can have an impact on the measured value of the replica. The following should be taken into account:

- **Compatibility between Device/Plastiform:** Some instruments are perfectly compatible with Plastiform impressions, others will have more difficulties. This is why a preliminary test is always recommended, especially for machines with optical detection (laser, scan, light...)
- **Calibration of the device**
- **Uncertainty associated with the instrument**
- **Contact pressure of the instrument:** too much contact pressure can deform the impression and distort the measurement result.

Method

The impression must be taken according to the procedure in the instructions for use and the recommendations in the data sheet.

- **Surface pollution:** The original surface of the part must be perfectly clean. A poorly degreased surface can lead to poor curing of the impression, and a poorly cleaned surface will have dust and residues that will pollute the Plastiform impression.

- **Plastiform product selection:** The choice of the Plastiform is essential. It must be adapted to the application (shape of the part, orientation of the part, extraction constraints, measuring system used, etc.).
- **Implementation:** Incorrect application of the product could lead to bubbles or defects in the final impression.

- **Removing the impression:** The impression must be sufficiently hard before it is removed (curing time). Premature removal of the impression will have an impact on its accuracy.
- **Exploitation of the impression:** The replica must be measured or evaluated after it has fully cured, as indicated on the data sheet.

Operator

- **Handling the impression:** The impression must be handled with care. The control surface must be preserved throughout the production, extraction and handling process.
- **Cutting with Double Blade Cutter:** A bad cut with the Double Blade Cutter can induce a loss of measurement precision (parallelism, deformation...).
- **Positioning the impression on the measuring device:** Since Plastiform is a rather soft material (even the most rigid ones), the impressions must be positioned so that they are not deformed during the measurement.
- **Measurement size:** Beyond a certain measurement distance, the margin of error logically tends to increase. This factor must be taken into account in the measurement strategy.

Plastiform Impression

- **Impression Volume:** If the impression is too large, there is a risk that it will deform under its own weight.
- **Cleanliness:** Plastiform material is slightly electrostatic and therefore attracts dust. A cleaning of the impression (with the help of Plastin) may be necessary so that this does not disturb the measurement.
- **Impression Condition:** The impression may be altered during handling (scratches, tears, deformations), resulting in geometrical defects. Although Plastiforms are resistant, they must be handled with the utmost care in order to obtain optimal results.
- **Adhesion:** Soft impressions may adhere slightly to surfaces. Incorrect positioning on the measurement support can therefore deform them.

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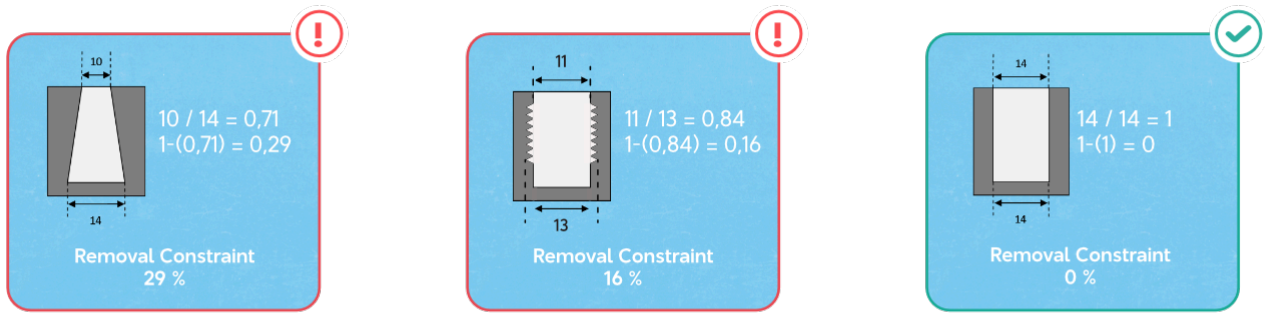
Removal Constraint

Determining the Removal Constraint of your part allows you to select the right Plastiform.
When taking an impression of a part, complex internal shapes can complicate the extraction: groove, internal angles, threading... We then say that there is a Removal Constraint (or undercut).
It is calculated using the following formula:

$$1 - \left[\frac{\text{Minimum size of the extraction hole}}{\text{Maximum internal dimension}} \right] = \text{Removal Constraint (\%)}$$



The **M60** has a **5%** Removal Constraint

The higher the percentage, the softer and more elastic the product will need to be to be removed.
For a Removal Constraint = 29%, it is necessary to choose a product which accepts a constraint **higher than 29%**: F30 Max, F20 or F20 XL for example.

Available Packages

MT-002

2 x 450ml : 2 pots (A+B) of M60

MT-002-B

2 x 45ml : 2 pots (A+B) of M60