

SILBIONE[®] RESINS 76405 and 76405 X

FOOD RELEASE

Description

The **SILBIONE RESINS 76405 and 76405 X** are polymethylphenyl-siloxane resins supplied as 50 % solutions in toluene (76405) or xylène (76405 X).

The **SILBIONE RESINS 76405 and 76405 X** are used as release coatings for materials that will be in contact with foodstuff.

These resins can also be used as binders in paints developed to protect and decorate these materials.

The products obtained after crosslinking of **SILBIONE RESINS 76405 or 76405 X** contain only substances permitted by the regulations currently in force in the following countries :

- **France** : Journal Officiel : brochure N°1227.
- **Germany**: Bundesgesundheitsamt recommendations. BGVV chapter XV A on silicones.
- **USA**: FDA regulations found in paragraphs 175.300 « Resinous and polymeric coatings » and 177.2600 « Rubber articles intended for repeated use ».

Important remarks :

All the constituents of the lining must be authorised, i.e. they must appear in the positive lists of materials for contact with foodstuff. In addition, the finished lining, after application and curing must pass migration tests in the conditions stipulated by the regulations.

Moreover, manufacturers of paints, varnishes or coatings must naturally make sure that the other constituents in their formulas (solvents, pigments, additives, etc.) also comply with the regulations. They must also check that the coatings obtained have been correctly applied, in particular to avoid any risk of migration of constituents.

Advantages

- Excellent heat stability.
- Good ageing resistance (by oxygen, ozone, water and light).
- Very good release properties.
- Chemically inert.

Applications

- Non-stick linings for baking tins and dishes for bread, rusks, cakes, pâté, ham, etc.
- Coatings for toasters, grills, waffle-irons, etc.

Characteristics

SILBIONE® RESINS 76405 and 76405 X

	SILBIONE RESIN	
	76405	
Appearance	Clear to almost clear liquid	Appearance
Colour	Colourless to slightly yellow	Colour
Solids content, %, approx.	50	Solids content, %, approx.
Specific gravity at 25°C, approx.	1.02	Specific gravity at 25°C, approx.
Viscosity at 25°C, mm ² /s, approx.	30 to 60	Viscosity at 25°C, mm ² /s, approx.
Solvent	toluene	Solvent
Flash point (closed cup), °C, approx.	6	

Processing

1 – Surface preparation

The materials treated are generally ordinary or stainless steel, aluminium or light alloys.

- For new materials, the most satisfactory method is to degrease the metal with trichloroethane, trichloroethylene or perchloroethylene (by dipping or in vapour phase), followed by careful sand-blasting.
- For reconditioning, the silicone coating will usually be removed by soaking in trichloroethylene for about 30 minutes and subsequent brushing.

For difficult cases :

Steel based materials may be immersed for some hours in a 20 to 30% NaOH solution in water at between 60 and 90°C. Rinse tho roughly with hot water. Short immersion in a bath of 3 to 5% hydrochloric acid will allow neutralization of the surface. Rinse and dry.

Aluminum based materials (or light alloys) are more sensitive to basic media. Therefore use a diluted (approx 5%) NaOH solution in water at 60°C. Immerse just the time needed to delaminate the coating and then proceed as mentioned above.

Steel based materials may also be treated by pyrolysis at 500 to 700°C. The heating elements of the stoves must be protected.

2 - Applying Silbione Resins

The **SILBIONE RESINS 76405 and 76405 X** may be used as supplied. We recommend to apply the resins by spray. The use of a pneumatic spray gun assures a smooth and regular film with optimum anti stick properties.

If, for optical reasons, an orange peel like surface is preferred, we recommend to dilute 80 parts of **SILBIONE RESIN 76405 or 76405 X** with 20 parts of cyclohexane.

To increase the service life of the coating and to increase the anti stick properties SILBIONE H 70047 V 350 may be added.

We recommend to formulate 100 parts of **SILBIONE RESIN 76405 or 76405 X** with 3 parts SILBIONE H 70047 V 350 and 5 parts of a solvent like Toluene, Xylene or Cyclohexane.

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These mixtures are not homogeneous as the whitish colour of the dispersion shows. So it is very important to homogenise just before use.

In any case, users must make sure that the thinners they are planning to use (recommended or not) are permitted by law in the country concerned.

In all cases, the application of the coating should be done by the use of a pneumatic spray gun, so as to obtain a homogeneous coating with maximum anti-stick properties.

3 – Drying and curing the resins

The spray treated articles are air-dried for thirty minutes.

Then the resin can be cured. The curing may be done in a continuous or discontinuous process. In any case the coating should be cured in **stoves with forced ventilation and protected resistors**.

For perfectly cured coatings the treated articles are air-dried for thirty minutes, loaded into the cold stove and then subjected to the following curing cycle :

- Heating up to 200°C in 30 minutes.
- 200°C held for 30 minutes.
- Heating up to 300°C.
- Final curing at 300°C for 2 hours.

The purpose of the gradual heating is to avoid the risk of bubbles in the coating.

The curing time at 300°C ensures maximum non-stick properties.

The coating is slightly thermoplastic after curing, so certain precautions are necessary when handling hot articles :

- Do not scratch the coating.
- Do not stack the articles until they have cooled.
- Exclude frictions between the coating and other materials.

Thermoplasticity may be reduced by the addition of a catalyst, such as iron octoate (Iron (+III) octoate containing 6% Iron: 5g/kg resin), before spray application.

In any case users must make sure that the catalyst they are planning to use (recommended or not) is permitted by law in the country concerned.

Packaging

SILBIONE RESINS 76405 and 76405 X are supplied in 25 and 200 kg drums.

Storage and shelf life

When stored in their original unopened packaging at a temperature of between +2°C and +30°C, the **SILBIONE RESINS 76405 and 76405 X** may be stored for up to 18 months from their date of manufacture (expiry date). Comply with the storage instructions and expiry date marked on the packaging.

Past this date, Bluestar Silicones no longer guarantees that the product meets the sales specifications.

This product is inflammable and must be stored away from the risk of fire.

Safety

Consult the Safety Data Sheet for **SILBIONE RESINS 76405 and 76405 X**.

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