

## Product information Alfinal 276

### Alfinal 276

is a liquid alkaline pickling component for use with aluminium and its alloys. A combination of Alfinal 276 and Alfisid products achieves a highly efficient alkaline pickling and degreasing system.

**Alfinal 276** can be used either as an alkaline pickling process (Alfinal 276 on its own) or as an alkaline pickling and degreasing agent (combined with Alfisid). The aluminium surface is pickled with various intensities that depend on the bath conditions. The attack on the aluminium can be selectively controlled by altering the concentration, temperature and time.

**Alfinal 276** is preferably applied by spraying, although it is also suitable for dipping processes.

<b>Characteristic data</b>	<b>Initial preparation</b>	2 - 15 g/l Alfinal 276 (alkaline pickling process) <b>or:</b> if used as a combination solution (alkaline pickling and degreasing agent), together with 2 - 5 g/l Alfisid 12 (for less intensive cleaning processes) <b>alternatively:</b> in combination with additionally 2 - 5 g/l Alfisid 11 (for more demanding cleaning processes)  Due to the fact that concentrations are highly dependent on the conditions in the facility, the required concentrations should be defined by our technical service personnel at plant start-up.
	<b>Density</b>	Alfinal 276: approx. 1.3 g/ml Alfisid 11: approx. 1.0 g/ml Alfisid 12: approx. 1.0 g/ml
	<b>Duration of treatment</b>	1 - 10 minutes
	<b>Temperature</b>	50 - 70°C
	<b>Spraying pressure</b>	0.8 - 2 bar
	<b>Max. Al-content</b>	10 g/l
	<b>Bath agitation (in dipping plants)</b>	recommended, e.g. by air agitation
	<b>Quality control</b>	see paragraph on Maintaining concentration

The cleaning effect of the product is strongly influenced by the degree of greasing and contamination of the parts. Therefore, the optimal operational parameters may lie outside the indicated standard areas in individual cases.

**Safety precautions**

Please observe the usual precautions when handling chemical substances. The classifications according to the statutory regulations for transport, storage and handling of the product as well as further product specific information are included in the safety data sheet. Bath solutions, rinsing water and concentrates must be treated according to the relevant regulations before entering the sewage system.

**Procedure**

The parts to be treated are introduced directly into Alfinal 276. The addition of Alfsid 11 or 12 achieves a simultaneous degreasing and pickling effect. To eliminate the possibility of too extensive treatment times, it may be necessary to conduct a preliminary cleaning process when dealing with very greasy parts. This is followed by rinsing steps before continuing the treatment.

Alkaline pickling residues should be removed in a downstream acid treatment zone. The treatment data and suitability for each new application must be determined by preliminary tests.

**Tank material**

Steel is a suitable tank material. It is important that the tanks are heatable. If very oily parts are cleaned a device for the surface cleaning of the bath is recommended.

**Maintaining concentration**

Values which have been proven to function well should be maintained at a constant level through monitoring. Alfinal 276 is the etching component. The concentration and additions should be such that a pH value between 11.0 and 12.5 (at ambient temperature) is achieved. Concentration is best controlled by determining the etching rate (weight loss). The weight loss should amount to at least 0.8 g/m<sup>2</sup> (after the individual treatment time). In this case, Alfinal 276 is added until the desired removal has been achieved.

Alfsid 11 or Alfsid 12 are the cleaning components. The quantity of Alfsid to be added is 1/3 - 1/10 of the added quantity of Alfinal 276. The suitable ratio of Alfinal 276 and Alfsid depends on the degree of contamination of the parts to be treated. The degreasing effect can be checked by rinsing the parts after approx. 75 % of the scheduled treatment time. Should the surfaces not be completely degreased after rinsing, the concentration of Alfsid must be increased or a new preparation must be made.

**Determination of concentration:** The determination of concentration only serves to adjust the new bath preparation. When the aluminium concentration increases and there are reactions of the bath with carbon dioxide from the air, the analysis values are increasingly distorted. The corrections of the bath can then be carried out only on the basis of the measured pH values and weight loss. 50 ml bath sample are pipetted with a volumetric pipette into a 300 ml Erlenmeyer flask and diluted with approx. 50 ml of dist. water. Then approx. 5 drops of phenolphthalein solution are added from a dropping bottle. Titration is performed using 1N sulphuric acid from a 50 ml Schellbach burette until the color changes from red to colorless.

Used ml = A

Calculation:  $(A - B/3) \times 3.85 = \text{g/l Alfinal 276}$

**Maintaining concentration**  
(continuation)**In presence of aluminium:**

**Determination of aluminium:** 50 ml bath sample are pipetted with a volumetric pipette into a 300 ml Erlenmeyer flask, diluted with approx. 50 ml demineralized water and then several drops of phenolphthalein solution are added. Titration is performed using 1N sulphuric acid until the color changes from red to colorless. (consumed ml = A; this value is not needed for the calculation.) 25 ml potassium fluoride solution (33%) are added from a measuring cylinder to the titrated solution. If aluminium is present, the color of the solution becomes red. This red solution is again titrated after filling the burette until the solution becomes colorless. Now the colorless solution is briefly brought to boiling and the hot sample, which is again red, is titrated until the solution becomes colorless without prior filling of the burette.

(consumed ml = B)

Calculation:  $B/5 = \text{g/l aluminium}$ 

**Determination of weight loss:** An AlMg1 (5005) panel is degreased with acetone, dried and then weighed on an analytical balance (= mass1).

After weighing, the panel is etched in the original etching bath solution with the given pretreatment time. Then it is rinsed, desmutted in 10 – 15 % nitric acid and rinsed in demineralized water. Then the panel is dried and weighed again after cooling down. (= mass 2).

Calculation:  $\text{mass 1} - \text{mass 2} = \text{weight difference (DG)}$  $\text{DG} \times (10000 / \text{surface of the panel in cm}^2) = \text{weight loss in g/m}^2$ 

The calculated weight loss belongs to the given pretreatment time used in the original etching bath solution.

**Alufinish**  
**laboratory chemicals**

Sulphuric acid 1 N (item no. 5002)

Potassium fluoride solution, 33% (item no. 5000)

Phenolphthalein solution (item no. 5013)

We will be glad to give you advice in the area and to send you relevant information.