



**ELMA CLEANING AGENTS  
A GOOD CARE FOR  
ULTRASONIC DEVICES**



# elma tec clean

Powerful cleaners for ultrasonic baths suitable for almost any industrial cleaning task

Comprehensive range of cleaners for almost any cleaning problem in the industrial fine cleaning

- prolongs the service life of the ultrasonic unit
- highly efficient concentrate
- long shelf life
- biodegradable



## elma tec clean prolongs the service life of ultrasonic cleaning units

elma tec clean chemicals have been developed especially for the use in high-performance ultrasonic cleaning units. They solve the special cleaning problems in industrial cleaning and at the same time avoid damages of the transducer tanks of the ultrasonic units.

The ultrasonic transducer tanks are exposed to frequencies between 25 and 130 kHz. In the ultrasonic cleaning process tiny cavitation bubbles are created which, combined with the right cleaning chemical, gently remove the dirt. The transducer tanks made of special stainless steel are exposed to strong bending stresses.

Cleaning media that are not adapted to this purpose may contain ions which increase corrosion and wear and tear on the material. Halogenide ions for example enhance strongly corrosion and shorten the service life considerably. Most aggressive are chlorides and fluorides in an acid cleaning medium.

**The Elma chemical engineers' challenge was to create**

- a small but comprehensive range of products,
- highly efficient concentrates with long shelf lives,
- gentle cleaning chemicals
- with good care for the ultrasonic cleaning berths



A1

**elma tec clean A1**  
Cleaner for electronics and fine optics

The mildly alkaline elma tec clean A1 has been developed specially for the fine cleaning of printed circuit boards and electro-mechanical components. It removes remnants of fluxing agents, finger prints or dust.



A2

**elma tec clean A2**  
Intensive cleaner with brightening effect

elma tec clean A2 contains ammonia. Due to this chemical items made of brass and copper are not only cleaned but also brightened up and shine as new. It is therefore used e.g. for the treatment of brass cartridge cases in the weapons and arms business.



A3

**elma tec clean A3**  
Iron and metal cleaner

A emulsifying alkaline cleaner. Ideal for the cleaning of metals after mechanical treatment and suitable for stainless steel, steel, iron metals, gray cast iron, titanium and precious metals after turning on a lathe, milling, lapping, polishing, grinding, drawing and punching. The cleaner easily removes polishing paste, oil, grease, chips etc. even from bores and other difficult spots.



A4

**elma tec clean A4**  
Universal alkaline cleaner

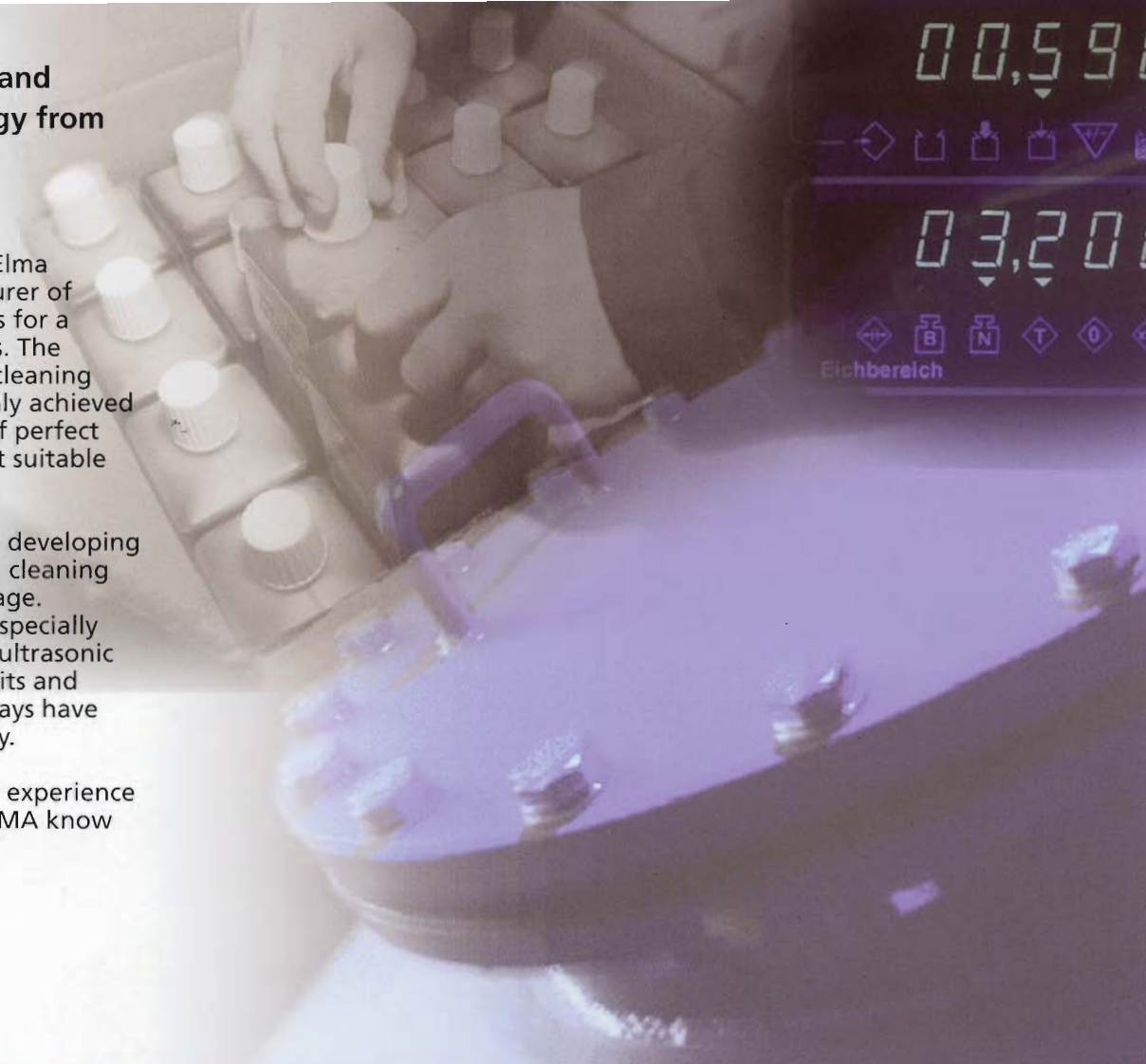
The universal alkaline cleaner is suitable for the treatment of metals, nonferrous heavy metals, light metals, glass, rubber, ceramics and alkaline-resistant plastics. It thoroughly removes normal contaminations such as oil, grease, remnants of polishing media etc. It causes the removed oil, grease and wax to separate and float on the surface so that these particles can be skimmed off in an ultrasonic unit with skimming edge. In cases where several different applications have to be carried out with only one cleaning chemical, elma tec clean A4 is probably the correct choice.

## Cleaning chemicals and ultrasonic technology from the same source

For over 50 years now, Elma has been the manufacturer of ultrasonic cleaning units for a variety of cleaning tasks. The complete solution to a cleaning problem, however, is only achieved with the combination of perfect technology and the best suitable cleaning medium.

This is why Elma started developing and producing chemical cleaning media at a very early stage. The Elma chemicals are specially designed for the use in ultrasonic cleaning baths. Both units and chemicals are – and always have been - made in Germany.

You can profit from our experience and from decades of ELMA know how!



A5

**elma tec clean A5**  
Powerful cleaner for iron and light metals

This highly alkaline cleaning powder is perfect for the removal of tenacious contaminations, such as resinification, coking, tar remnants or remnants of paint or lacquer. It is frequently used for the overhaul cleaning of parts of motor vehicles, of metal cutting tools and other machinery parts.



N1

**elma tec clean N1**  
Neutral cleaner

This efficient neutral cleaning concentrate is very gentle to the material. It is used for the treatment of highly sensitive pieces and removes oil, grease and other organic particles. We recommend to use elma tec clean N1 e.g. for the cleaning of only lightly dirty aluminium pieces.



S1

**elma tec clean S1**  
Mild acid cleaner

elma tec clean S1 is a mildly acid cleaning concentrate. It is suitable for the use in ultrasonic cleaning baths for the cleaning of nonferrous heavy metals, aluminium, stainless steel, plastics and glass. Brass and copper alloys are brightened up. S1 easily removes oxide films, rust, lime and verdigris. For the cleaning of steel we recommend to add our anticorrosive elma-KS\* in subsequent rinsing bath.



S2

**elma tec clean S2**  
Strong acid cleaner

elma tec clean S2 is a highly acid cleaning concentrate. It easily removes oxide films, rust, lime and verdigris. S2 is suitable for the cleaning of nonferrous heavy metals, brass, stainless steel and precious metals. For the cleaning of steel, gray cast iron and hard alloys we recommend to add our anticorrosive elma-KS\* in subsequent rinsing bath. elma tec clean S2 is the ideal product for the overhaul cleaning in the shop.

\*on request

Table of possible applications of elma tec clean products

Product	Main contamination	Main surfaces	Properties	Ph value	Dosage
<b>Alkaline cleaners</b>					
elma tec clean A1 electronics and fine optics cleaner	Light oil, grease, fluxing agents, dust, finger prints.	Substrates in the electronics (pcb) and optics industries (glasses, fine optics), electro-mechanical components. For the overhaul cleaning of plastics.	Liquid, emulsifying, silicate and phosphate-free, mildly alkaline.	10,8	3 - 10 %
elma tec clean A2 intensive cleaner with brightening effect for brass and copper	Grinding, polishing and lapping media, grease/oil.	Nonferrous metals, precious metals, brass, nickel, titanium; check zinc and aluminium for resistance before use!	Liquid, emulsifying, contains ammonia, silicate and phosphate-free, mildly alkaline.	11,0	5 - 10 %
elma tec clean A3 cleaner for iron and precious metals	Punching oil, drawing grease, soot, forge, grinding and polishing media, high-performance cooling lubricants.	Stainless steel, steel and other iron materials, titanium and precious metals, gray cast iron; check nonferrous heavy metals, brass, glass and quartz for resistance before use! Not suitable for aluminium and light metals.	Liquid, emulsifying, silicate and phosphate-free, mildly alkaline.	13,0	3 - 6 %
elma tec clean A4 universal cleaner	Oil, grease, soot, coking, forge, dust, finger prints.	Stainless steel, steel, iron, gray cast iron, aluminium and light metals, brass, nonferrous heavy metals, precious metals, nickel, zinc, plastics, ceramics, glass, quartz, rubber.	Liquid, mostly de emulsifying, contains silicate and phosphate, alkaline	13,4	with ultrasound: 1 - 5 % without ultrasound: 5 - 10 %
elma tec clean A5 powerful cleaner for iron and light metals	Forged and resinified oil and grease, grinding and polishing media, lacquer and paint remnants, wax.	Stainless steel, steel, iron, gray cast iron, aluminium and light metals, nickel, stainless metals, zinc.	Powder, emulsifying, contains silicate and phosphate, alkaline.	11,5 (1%)	1 - 4 %
<b>Neutral cleaners</b>					
elma tec clean N1 neutral cleaner	Oil, grease, grinding, lapping and polishing media, dust, sweat, finger prints.	All metals, plastics, ceramics, glass, rubber; check magnesium for resistance before use!	Liquid, emulsifying, silicate and phosphate-free, neutral.	9,3	with ultrasound: 2 - 5 % without ultrasound: 10 %
<b>Acid cleaners</b>					
elma tec clean S1 mild acid cleaner	Rust, lime, oxide films (e.g. verdigris), grease, oil.	Nonferrous heavy metals, stainless steel, aluminium and light metals, brass, steel, plastics, glass; take out steel immediately after derusting and rinse with anticorrosive	Liquid, emulsifying, acid.	1,6	1 - 5 %
elma tec clean S2 strong acid cleaner	Mineral contaminations such as lime, rust and other oxides; films that can be removed with corrosives.	Stainless steel, steel, iron, gray cast iron, hard alloys, brass, nickel, nonferrous heavy metals and precious metals; take out steel immediately after derusting and rinse with anticorrosive.	Liquid, emulsifying, acid.	< 1,0	with ultrasound: 1 - 10 %

**Dosage**

	Usable volume	1%	2%	5%	10%
T 310 (H)	0,7 l	7 ml	14 ml	35 ml	70 ml
T 420	1,2 l	12 ml	24 ml	60 ml	120 ml
T 460 (H)	1,9 l	19 ml	38 ml	95 ml	190 ml
T 470 H					
T 490 DH					
TS 540	4,8 l	48 ml	96 ml	240 ml	480 ml
T 570 (H)	2,2 l	22 ml	44 ml	110 ml	220 ml
T 660 H	4,3 l	43 ml	86 ml	215 ml	430 ml
TP 690	4,0 l	40 ml	80 ml	200 ml	400 ml
TP 680 DH					
T 700 (H)	7,5 l	75 ml	150 ml	375 ml	750 ml
T 710 DH					
T 780 (H)	9,0 l	90 ml	180 ml	450 ml	900 ml
T 760 DH					
T 820 H	12,9 l	129 ml	258 ml	645 ml	1,29 l
T 840 DH					
T 890 (H)	20,6 l	206 ml	412 ml	1,0 l	2,0 l
T910 DH					
Elmasonic X-tra 30 H	2,02 l	22 ml	42 ml	102 ml	202 ml
Elmasonic X-tra 50 H	3,43 l	34 ml	68 ml	171,5 ml	343 ml
Elmasonic X-tra 70 H	4,70 l	47 ml	94 ml	235 ml	470 ml
Elmasonic X-tra 150 H	10,5 l	105 ml	210 ml	525 ml	1,05 l
TI-H 5	3,5 l	35 ml	70 ml	175 ml	350 ml
TI-H 10	8,6 l	86 ml	172 ml	430 ml	860 ml
TI-H 15	12,2 l	122 ml	244 ml	610 ml	1,22 l
TI-H 20	16,8 l	168 ml	336 ml	840 ml	1,68 l
TI-H 25	19,8 l	198 ml	396 ml	990 ml	1,98 l
TI-H 55	45,0 l	450 ml	900 ml	2,25 l	4,5 l
TI-H 80	67,5 l	675 ml	1,35 l	3,38 l	6,75 l
TI-H 115	90 l	900 ml	1,8 l	4,5 l	9,0 l
TI-H 160	135 l	1,35 l	2,7 l	6,75 l	13,5 l

Fill the tank up to the marked level with water (city or distilled water). Then add the correct quantity of the cleaner. For bigger-sized cleaning items please take the displacement volume into consideration. Operate the ultrasonics for approx. 5 minutes before cleaning.



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