

**MASS FINISHING**

## TROWAL MASS FINISHING

### Chips and Compounds

#### **A multitude of applications**

Trowalizing is not just a single method of surface treatment but offers a wide spectrum of alternatives to modify and improve surfaces in a specific way. Satisfactory finishing results and a stable finishing process can only be achieved with the right combination of all mass finishing components, namely processing machine, finishing chips and compounds. For all imaginable applications, Trowal offers a close assortment of chips and compounds. For more than 75 years, a sophisticated assortment, composed of the most different materials, sizes, geometric shapes and qualities has been developed. For rough grinding or to obtain surfaces ready for galvanization, Trowal always offers the optimum consumables from in-house production.

# Ceramic Chips: Efficiency in many shapes

## A Multitude of Types

Trowal offers a comprehensive program of ceramic chips with different grinding performance, geometric shapes and sizes.

## Ceramic Media, frequently used

Trowal ceramic chips are preferred for many mass finishing tasks.

The reasons are:

- high durability
- high grinding pressure due to high density
- strong deburring
- bright, shiny surfaces
- a vast variety of available geometric shapes

Type	Abrasive efficiency	Surface finish	Triangle	Angle cut triangle	Cylinder	Angle cut cylinder	Star	Ellipse	Pyramid	Tristar	Arrow head	Rhombus	Ball
WXC			6 x 6 13 x 13 28 x 26	15 x 15 21 x 21	10 x 19	7 x 14 10 x 20							
MAC			26 x 26 13 x 20	6 x 12 10 x 15 15 x 15 15 x 30 21 x 21 33 x 23		7 x 15 15 x 25		14x14x5 20x20x8		10x10x10 S			
Z			6 x 6	4 x 10									
F			9 x 5 16 x 7	10 x 15 15 x 15	6 x 7 7 x 13 10 x 19	4 x 11 7 x 15 8,5 x 20 10 x 20	35x17x12 45x23x15	14x14x5	25 35	4x4x5G 10x10x10 S 20x20x20 S		50x30x30	
PI				4 x 10 15 x 15 25 x 25			22x10x8	14x14x5 20x20x8					
BA			4 x 4 6 x 6 8 x 8 10 x 10 16 x 16 20 x 20 26 x 26 30 x 30	10 x 15 15 x 15 21 x 21 25 x 25 33 x 23		10 x 20 15 x 25	22x10x8 40x20x15	14x14x5 20x20x8		10x10x10 S	14 x 14 19 x 19		
WV				10 x 15		3 x 10 6 x 14 7 x 10 7 x 13 10 x 20	35x17x12 45x23x15		15 25 35 45			50x30x30	
FSG			6 x 6 10 x 10 13 x 13 16 x 16 26 x 26	4 x 10 6 x 12 10 x 20 13 x 26	20 x 40	15 x 25				4x4x5G 6x6x6G			6
DK			13 x 13 16 x 16 26 x 26	6 x 12 10 x 20 13 x 26 15 x 15 21 x 21	6 x 14 10 x 19		22x10x8 40x20x15	15x15x6 20x20x8					
MHC					1,7 x 5 2,5 x 8 3 x 10 4 x 14								
GP			6 x 6 8 x 6		4 x 6	4 x 10 6 x 14				6x6x6G			6

Dimensions (in mm), S=Angel Cut, G=Straight Cut






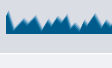
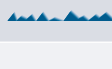

# Plastic chips: non-chipping and gentle

## Gentle grinding

Trowal plastic chips are the right choice for gentle surface finishing, especially for soft material like die-castings. They are selected according to required grinding performance and desired surface smoothness.

## The shape remains intact

By wearing down in the finishing process, plastic – as well as ceramic – chips over time are becoming smaller. However, plastic chips keep their original geometric shape. Therefore, even worn-down plastic chips can still be utilized to finish parts with complex geometric shapes.

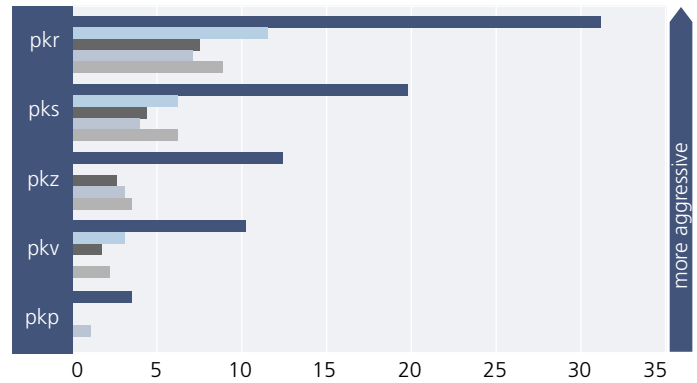
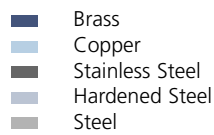
Type	Abrasive efficiency	Surface finish	Colour	 Pyramid	 Tristar	 Cone	 Paraboloid	 Kite	 Lense	 Nipple
HSC			carbon black	10 20 25 30		12 19				
ET			dark green	10 20 30			28			
SP			purple	15, 20, 25, 30, 40		12 19 24 29	41 51	75		
OV			brown	10 20 30 40		12, 19, 24, 29	28			
NG			blue	10 15 20		12, 16, 19, 24, 29, 39	28			
XS			light brown	10, 15, 20, 25, 30, 40, 60	22 42	12, 16, 19, 24, 29, 39, 59	28 41 51			
SF			yellow	10 15 20		12 16 19 24	28		14	
CR			grey	15, 20, 30, 40, 60			28			
CX			pink	20, 25, 30, 40, 50, 60	22 32 42	12, 19, 24, 29, 39, 59	28, 41, 51, 61	75	14	53
PP			white	10					14	

Dimensions (in mm)

## Polishing compounds

### Powder concentrates for the Trowapast process

From the diagram showing the metals to be processed, select the powder whose bar reaches just over the corresponding  $R_{max}$  line.



Surface improvement with dimensional stability  $R_{max}$  [ $\mu\text{m}$ ]

### Brightening with the Trowapast process

SG 36 is a light degreasing cleaning agent with good corrosion protection features. This product is perfectly suited for the processing of steel and low alloy special steels. Due to special substances, residues resulting from the Trowapast process are removed in an optimum way and hence bright and clean surfaces are being produced.

### Grinding support

To increase the grinding performance, the 9A powder compound can be added, too. Too smooth and blurred chips are roughened and cleaned.



9A powder compound

### Degreasing

For difficult degreasing tasks, it may be helpful to add additional degreasing powder right at the beginning of the process (shock degreasing):

#### K5

- strong degreasing
- much foam

#### K96

- good degreasing
- little foam



K5 degreasing powder

## High pressure deburring and ball burnishing

Steel medium is mainly used for ball burnishing resp. high pressure deburring. It is available in different materials, stainless steel and hardened steel.



Satellites in different sizes

## Shape and size

A multitude of different sizes and shapes are available:

- Steel balls
- Satellites
- Pins



Steel balls in different sizes

## Separation of work pieces

Flat, thin parts (e.g. washers) tend to stick to each other. This causes an uneven finishing result. ATK anti-adhesion balls prevent such sticking:



ATK anti-adhesion balls

## Drying

Finished parts can easily be dried in a heated vibrator which is filled with corncob or nutshell granules. The parts are not only dried but also cleaned from adhering wear.



Corncob granules

# Compounds: Indispensable for optimum finishing results

## Compounds for flocculation

Compound	Type	Effect
Liquid	LAC	removes the effect of the tensides and forms micro flakes
	F	enlarges the flakes and cleans the water
Powder	ESM	especially for effluents which contain oil
	ESB	less powder consumption for effluent containing no oil

## Compounds for recycling

Application for	steel	nonferrous metals	Compound	Flocculants
Lots of oil, little solids	yes	yes	DE 97 KFL	ESM ESM
Lots of oil, lots of solids or high cleanliness	yes	yes	DE 97 KFL	R ESM
No oil, lots of solids (plastic or metallic)	yes	yes	KS 66	V
No oil, lots of solids or ceramic solids	yes	yes	KR 50 KFL KS 66	no
Magnesium	no	only MG	MK 20	no

Type		pH-value	for steel	for nonferrous metals	Corrosion protection	Degreasing capabilities	cleaning capabilities	Foaming	Brightness	Acid resistance
ARF	cleaning and polishing for nonferrous metals	9	2	10	2	1	10	8	9	3
ARO 1	good corrosion protection, bright surface finish	8	10	8	8	0	6	4	8	0
AWS	lightly acidic pickling and polishing compound	3	0	2	0	6	9	2	10	7
GB 13	slightly acidic foaming pickling and polishing compound	3	0	2	0	7	9	10	10	7
KE 61	good corrosion protection compound with decreasing capability	8	10	8	10	5	5	5	8	0
KFL	excellent degreasing compound with corrosion protection	8	8	10	5	10	5	4	7	0
KH 65	excellent corrosion protection, bright surface finish	9	10	8	10	2	7	5	8	0
LZ 11	very acidic pickling compound	1	10	10	0	1	4	2	10	10
M 10	universal compound for nonferrous metals and diecastings	8	6	10	4	6	6	6	10	0
RD	stable compound for very bright finish and good passivation	9	1	10	2	3	9	6	10	10
S 70	universal compound for steel	9	10	8	10	2	8	7	5	0
T 77	excellent corrosion protection	9	10	9	10	2	10	7	6	0

0 = ability not present  
10 = optimum ability

## Standard Compounds

All Trowal standard compounds provide the most important features such as corrosion protection, cleaning performance and degreasing effects. The difference of these individual compounds is that these features are provided to a differing extent.

## Special Compounds

For special applications where acid resistance, a minimum of foam, or pickling capabilities are required, Trowal offers special compounds containing these additional characteristics.



## Selection of Chips

All chips are characterized by three differing main features:

### 1. Abrasiveness

The abrasiveness of the chips determines the grinding performance and hence the processing time.

### 2. Size

The chips size is also decisive:

The bigger and heavier the individual chip, the higher the grinding performance.

### 3. Shape

The shape of the chip must be selected in a way that all edges and contours of the work pieces can be reached without chips jamming therein.



Cones of different size and abrasiveness



Selection of ceramic media



Nipple: The new shape



Selection of plastic media

