



## TROWAL MASS FINISHING TECHNOLOGY

### Chips and Compounds

#### Application

Trowalizing is not only a 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 mass finishing machine on the one hand and chips and compounds on the other. For all imaginable applications, Trowal offers a close assortment of chips and compounds for all possible applications. 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 chips, 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
- vast variety of available geometric shapes

Type	Abrasive Capacity	Surface finish	Triangle	Triangle angle cut	Cylinder	Angle cut cylinder	Star	Ellipse	Pyramid	Tristar	Arrow head	Rhombus	Ball
WXC			6 x 6 10 x 10 13 x 13 28 x 26	15 x 15 21 x 21	10 x 19	7 x 14 10 x 20							
MAC			10 x 10 26 x 26	6 x 12 10 x 15 15 x 15 21 x 21 33 x 23		7 x 15 15 x 25		14x14x5 20x20x8		10x10x10 S		50x30x30	
Z			6 x 6	4 x 10									
F			9 x 5		6 x 7 7 x 13 10 x 19	4 x 11 7 x 15 8,5 x 20 10 x 20	45x23x15		25 35	4x4x5 G 10x10x10 S 20x20x20 S			
PI				4 x 10 6 x 12 15 x 15 25 x 25			22x10x8	14x14x5 20x20x8					
BA			4 x 4 6 x 6 8 x 8 10 x 10 13 x 13 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						3 x 10 6 x 14 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					6x6x6 G		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		40x20x15	15x15x6 20x20x8					
MHC					1,7 x 5 2,5 x 8 3 x 10 4 x 14								
GP			6 x 6		4 x 6	3 x 10 4 x 10 6 x 14				6x6x6 G			6

S = Angle cut, G = Straight cut, further dimensions and qualities upon request

## 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	 Nipple	 Lense
HSC			dark grey	10 20 25		19				
ET			dark green	10 20 30			28 (28x16x28)			
SP			dark red	15, 20, 25, 30, 40		12 19 24 29	41 (41x23x41) 51 (51x27x51)	75 (75x61x37)		
NG			blue	10 15 20		12, 16, 19, 24 29, 39	28 (28x16x28)			
XS			light brown	10, 15, 20, 25, 30, 40, 60	22 42	12, 16, 19, 24, 29, 39, 59	28 (28x16x28) 41 (41x23x41) 51 (51x27x51)			
V 2030			light red	10, 15, 20, 30, 40, 60		12, 16, 19	28 (28x16x28)			14
CX			pink	10, 15, 20, 25, 30, 40, 50, 60	22 42	12, 16, 19, 24, 29, 39, 59	28 (28x16x28) 41 (41x23x41) 51 (51x27x51) 61 (61x33x61)	75 (75x61x37)	53 (40x51)	14
PP			light grey	10						14

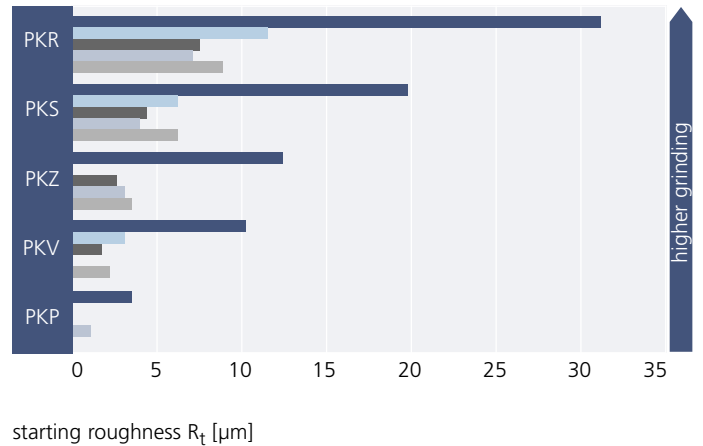
Further dimensions and qualities upon request

## Polishing and other auxiliary media

### Powder concentrates for the Trowalpast-process

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

- Brass
- Copper
- Stainless steel
- Hardened steel
- Steel



### Brighthening 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

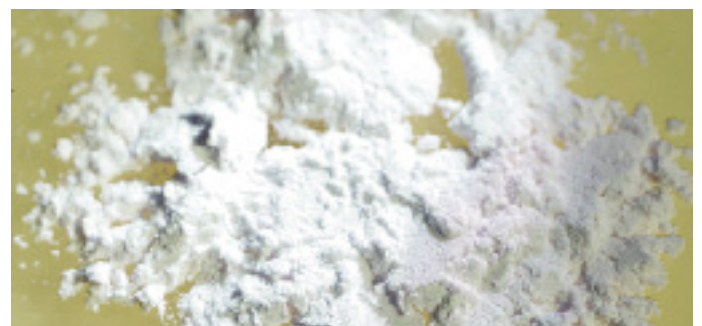
For difficult degreasing tasks, it may be helpful to add additional cleaning and degreasing powder right at the beginning of the process (shock degreasing).

K 5

- good degreasing
- much foam
- not suited for recycling

K 10

- strong degreasing
- little foam
- suited for recycling



K5 degreasing powder

## High pressure deburring and ball burnishing

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

## Shape and size

A multitude of different shapes and sizes is available:

- Steel balls
- Satellites
- Pins
- Abcuts



ATK anti-adhesion balls

## Separation of work pieces

Flat, thin parts (e.g. washers) tend to stick one to another. This causes an uneven finishing result. ATK anti-adhesion balls prevent such sticking and make sure, that there is a uniform material abrasion all over the work piece.



Steel media



Corncob granules

## Drying

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

## Compounds: indispensable for optimum finishing results

### Compounds for waste water flocculation and maintenance of recycling processes

Compound	Type	Application
Liquid	LAC	For flocculation in waste water treatment systems
	F	Enlarges the flakes and cleans the water
	R, V	For flocculation in recycling systems
Powder	ESM	Universal flocculent
	ESB	For special applications
	ESZ	For recycling

### Compounds for recycling

Application for	Steel	Non-ferrous metals	Compound	Flocculants
Lots of oil, little abrasion	Yes	Yes	DE 97 KFL	ESM ESM
Lots of oil, lots of abrasion or high cleanliness	Yes	Yes	DE 97 KFL	R ESM
No oil, lots of abrasion from plastic chips	Yes	Yes	KS 66	V
No oil, lots of abrasion from ceramic chips	Yes	Yes	KR 50 KFL KS 66	No
Magnesium	No	Mg only	MK 20	No
Little abrasion, high demands to work pieces	Yes	Yes	SGE	ESZ

### Liquid compounds for mass finishing applications

Type		pH-value	For iron	For non-ferrous metals	Corrosion protection	Degreasing capabilities	Cleaning capabilities	Foaming	Brightness	Centrifugal recycling	Ball bur-nishing
ARF	Brightening and cleaning of non-ferrous metals	9	2	10	2	1	10	8	9	3	3
ARO 1	Good corrosion protection, bright surface	8	10	8	8	0	6	4	8	0	0
AWS	Slightly acid pickling and brightening agent	3	0	2	0	6	9	2	10	7	10
DE 97	Very good degreasing, good corrosion protection	8	9	9	8	10	7	3	8	10	0
GB 13	Slightly acid, foaming pickling and brightening agent	3	0	2	0	7	9	10	10	7	10
KE 61	Good corrosion protection with degreasing features	8	10	8	10	5	5	5	8	0	0
KFL	Very good degreasing, good corrosion protection	8	8	10	5	10	5	4	7	8	0
KH 65	Very good corrosion protection, bright surfaces	9	10	8	10	2	7	5	8	0	0
KR 50	Universal recycling compound	9	10	9	10	3	7	2	5	10	0
KS 66	Very good corrosion protection, bright surfaces	9	10	8	9	2	6	2	9	10	0
LZ 11	Very acidic pickling compound	1	10	10	0	1	4	2	10	10	8
M 10	Universal compound for non-ferrous metals and die-cast	8	6	10	4	6	6	6	10	0	0
MK 20	For magnesium	11	0	10	1	1	3	2	5	10	0
RD	Stable compound for very bright finish, very good passivation	9	1	10	2	3	9	6	10	10	8
S 70	Universal compound for steel	9	10	8	10	2	8	7	5	0	0
SGE	Excellent degreasing, good corrosion protection	11	10	8	6	10	8	8	8	8	10
T 77	Excellent corrosion protection for steel	9	10	9	10	2	10	7	6	0	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 in different concentrations.

## Special compounds

For special applications where acid resistance, a minimum of foam, or pickling capabilities are required, Trowal offers special compounds with 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. Geometry and size

Chips size and geometry are 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 chips



Selection of plastic chips

