

DEGUSSIT®

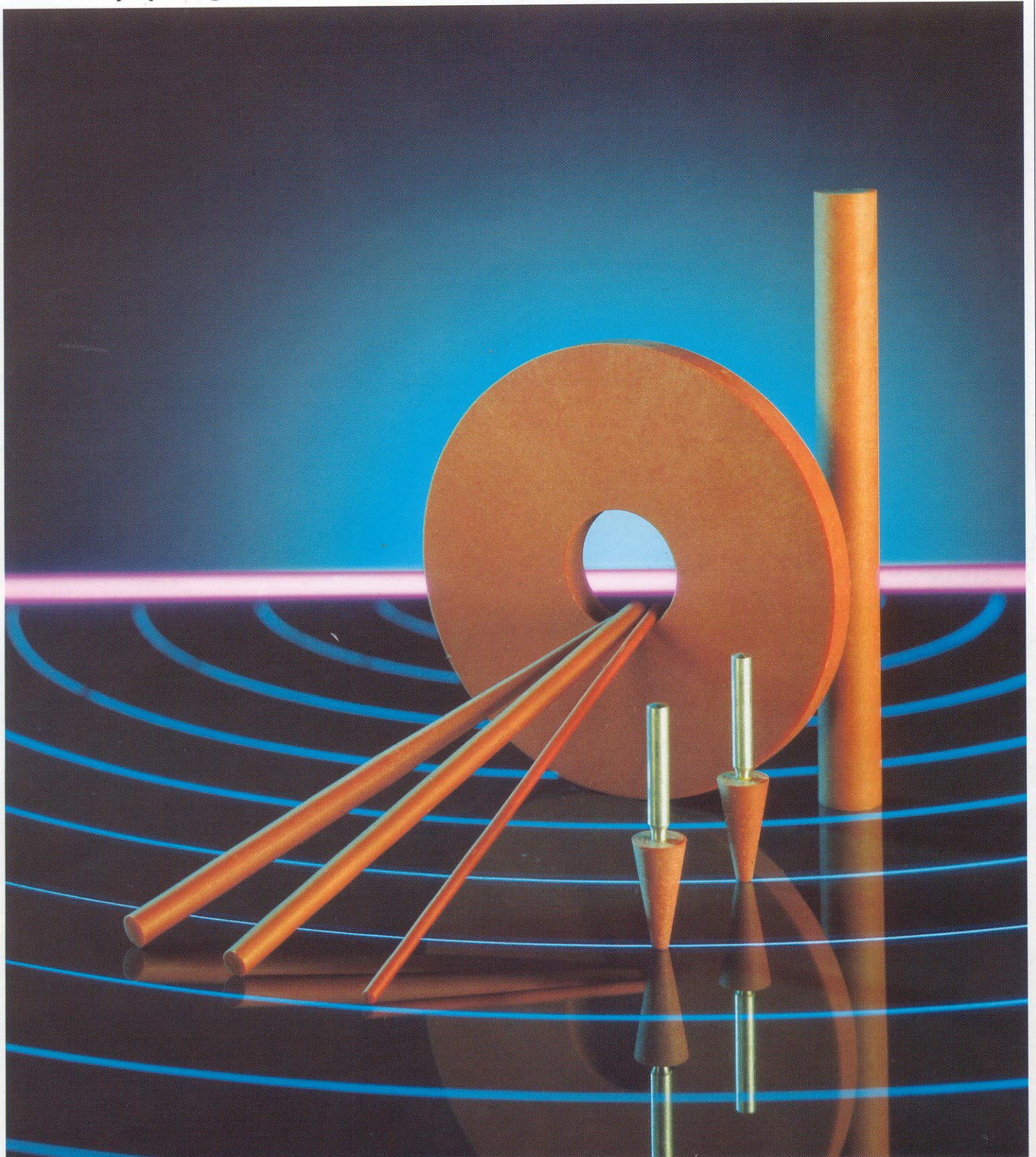


Whetstones and Fine Grinding Tools

D 150/2



Delivery programme and application



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Efficiency

The following pictures compare the performance of a bonded and a bondfree abrasive file:

Picture 1 contrasts the profile of a bonded with the bondless DEGUSSIT file. Each file has been used to cut a groove into a piece of steel of 60 Rockwell hardness under identical conditions. The bonded file shows a trough 1 mm deep on the whole working length. The sharp edge of the file is completely gone and a slight camber can be observed.

The DEGUSSIT file however has no damage to its sharp edge.

Properties

DEGUSSIT Fine Grinding Tools

Whetstones

Files

Midget files

Grinding wheels

Mounted points

Burnishing Wheels

present the following advantages:

Extreme hardness as a result of their highly-sintered, bondfree structure of aluminium oxide

Great wear resistance

Excellent stability of edges and profiles

Outstanding surface finish of the machined parts achieved by the fine, densely sintered structure of the fine grinding tools

Economical working

of extremely hard materials

Extensive size and shape availability

facilitate the selection of the correct DEGUSSIT Fine Grinding Tools for all precision work

DEGUSSIT Fine Grinding Tools consist of a mixed crystal of exceptional hardness; the main element is aluminium oxide. The characteristic red colour of the tools is the result of an admixture of chromium oxide. This crystal is found in nature as ruby.

DEGUSSIT Fine Grinding Tools are bond-free, and the great hardness of the sintered crystals results in high wear resistance and excellent shape stability. This property is particularly important for precision work to ensure finest surface finishes and accuracy of shapes. The outstanding wear resistance also offers economical advantages.

You may chip cut the surface of a workpiece, and at the same time pressure strengthen and polish (the latter with the fine type of tools only).

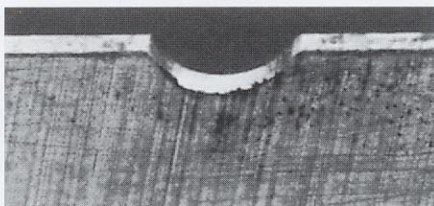
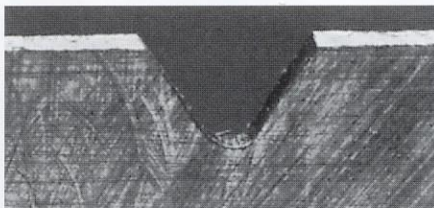
Picture 2 shows the working area on the steel piece. The area abraded on with the bonded file does not show the original profile any more. This file has left a wide groove only, because after a short period of abrading the bonded file has lost its sharp edge.

Picture 1:
Profile of triangular files after treatment with hardened steel
above: DEGUSSIT file
below: bonded file



The groove made by the DEGUSSIT file is well shaped and shows a sharp angle.

Picture 2:
Ground grooves into hardened steel (2 mm, 60 Rockwell)
above: with DEGUSSIT file
below: with a bonded file



Application

DEGUSSIT Fine Grinding Tools

are used for fine grinding, touching up and deburring. Particular economical advantages are obtained when working with hardened steel, glass and porcelain.

Tool and die manufacturers

DEGUSSIT Whetstones and abrasive files are used for the manufacture of cutting, stamping, bending and pressing tools as well as for the sharpening and deburring of all kinds of tools. The use of midget files and mounted points is advantageous for after treatment of holes, slits and formed parts. Mounted points and wheels serve also for the last finish at extrusion, pressing and casting tools, as well as all tool molds for manufacturing plastics.

Fine Mechanics and Watch Industry

DEGUSSIT fine grinding tools are needed in the watch, sewing machine, office machine, phonograph and instrument industry for the following purposes:

Fine grinding, deburring, adjusting, smoothing, polishing.

Pivots, axles, bearing and guide bushes are being ground and burnished. Burnishing is a fine cutting method for which DEGUSSIT burnishing wheels are best suited.

Electrical Industry

DEGUSSIT fine grinding tools are used in manufacturing processes and assemblage. DEGUSSIT profiled wheels are especially suitable for spiral grinding of high ohmic resistances. The shape stability of the profile is considerably higher than that of bonded wheels.

Optical Industry

DEGUSSIT wheels and whetstones are needed for deburring and chamfering of lenses and for grinding mold marks after pressing. DEGUSSIT mounted points are used for marking and lettering on cameras, binoculars, telescopes, microscopes and other measuring instruments.

General machine and apparatus manufacturers

DEGUSSIT fine grinding tools find many applications in manufacture and assemblage; in the deburring of tools and workpieces; sharpening; touching up and chamfering of cutting tools; grinding of center-holes; fine grinding of hardened and highly strengthened workpieces (hydraulic cylinders, injection pumps, valves steering parts, etc.); scaling; chamfering and fine grinding of gauges and standard measures.

Glass Industry

DEGUSSIT wheels are successfully used for cutting, grinding and chamfering of fluorescent, television and electronic tubes, moreover, for grooving, graduating and gauging of laboratory ware and measuring ampules. With mounted points and wheels it is possible to inscribe, to decorate and frost cups and bottle glass. In decorating and grinding lines on drinking glasses on automatic grinding machines, the finished picture is excellent. The life of the profile of DEGUSSIT wheels is outstanding in comparison with bonded wheels. DEGUSSIT wheels can be reprofiled from time to time with diamond wheels. Deep engraving of lead crystal glass cannot be achieved with DEGUSSIT wheels.

Porcelain Industry

DEGUSSIT wheels are used for grinding off soilings and defects. Brims of plates and cups are finished with DEGUSSIT fine grinding tools.

Other Industries

DEGUSSIT fine grinding tools are also used for any other fine grinding work, for instance in the following branches:

- car industry
- metal ware industry
- plastic industry
- rubber and tire industry
- fountain pen industry
- textile industry
- wood industry
- ironworks
- chemical industry
- ceramic industry
- craft and trade.

Type fine with a very fine surface obtained by diamond grinding is used for the finest precision work.

fine



Type medium has a better grip.

medium



Type coarse is roughened by silicon carbide powder. Only whetstones and abrasive files are delivered in this type.

coarse



Whetstones Abrasive Files Midget Files

are the ideal handtools for all kinds of sharpening, polishing, deburring and fine grinding work

They are used for sharpening any kind of tool. They are also used for chamfering cutting tools, for engraving profiles and for working on pieces of hardened steel and all other hard and abrasive material, such as quartz, glass and ceramics. Whetstones and abrasive files can be used dry or wet. When working wet a moistening with petrol or cutting oil has proved useful. Cleaning after use can be achieved by means of a grease solvent. When working dry the surface of the stones is cleaned with an india-rubber.

Edges of DEGUSSIT tools can be resharpened by grinding with another DEGUSSIT tool of the same or coarser type or with a Boron Carbide handlapper.

Whetstones and Abrasive Files

are delivered in the types fine, medium and coarse.

The grip of the DEGUSSIT fine grinding tools depends on how coarse or fine the surface of the tool has been dressed.

To use the tools for various applications the surfaces can be refined or coarsened within certain limits by diamond wheels or diamond lapping paste.

DEGUSSIT Abrasive Files Assortment No. F 900-00-700-0 (Picture 2) containing one each of the following files:

Shape	No.	dimension	type
▲	F 902-41 203-0	100 x 10 mm	medium
■	F 902-41 213-0	100 x 10 mm	medium
■	F 901-41 221-0	100 x 8 x 6 mm	fine
◐	F 903-44 231-0	100 x 10 mm	coarse
●	F 902-41 271-0	100 x 6 mm	medium

Picture 1:



DEGUSSIT Type fine Midget Files Assortment No. F 900-41 420-0

Picture 1 containing one holder and two collets and one each of the following files:


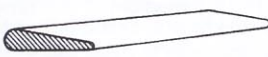
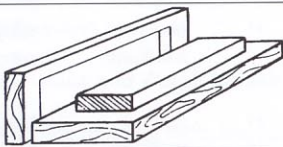
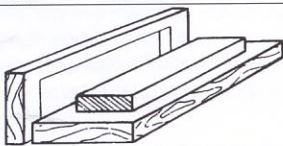



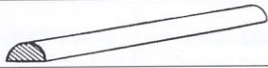

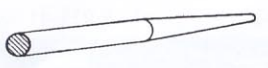
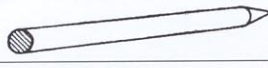
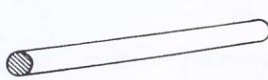
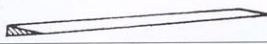
DEGUSSIT Midget Files are available in different profiles. The finest types can be fitted in settings which are screwed into a holder. This guarantees an easy working

Picture 2:



Shape	No.	dimension in mm	Shape	No.	dimension in mm
▲	F 901-41 400-0 F 901-41 403-0	50 x 1 100 x 2	■	F 901-41 406-0	50 x 3 x 0,3
■	F 901-41 402-0 F 901-41 413-0	50 x 2 100 x 3	◐	F 901-41 407-0	100 x 4
●	F 901-41 401-0 F 901-41 404-0 F 901-41 405-0	50 x 1 100 x 2 100 x 3	▲	F 901-41 409-0	100 x 5 x 1,5
			●	F 901-41 411-0	100 x 4 x 1,5

Whetstones Abrasive Files

Shape	Description*	Approx. dimensions	Availability		
			fine	medium	coarse
	Benchstone	100 x 25 x 10 150 x 25 x 15 200 x 50 x 12	F 901-41 100-0 F 901-41 101-0 F 901-41 102-0	F 902-41 100-0 F 902-41 101-0 F 902-41 102-0	- - -
	Tapered stone	100 x 30 x 7/2	-	F 902-41 105-0	-
	Benchstone in wooden case	100 x 25 x 10 120 x 50 x 10 200 x 50 x 12	F 901-41 110-0 F 901-41 111-0 F 901-41 112-0	F 902-41 110-0 F 902-41 111-0 F 902-41 112-0	- - -
	Benchstone in wooden case - removable -	120 x 50 x 10	F 904-41 111-0 1 face fine 1 face medium		
	Triangular	100 x 4 100 x 6 100 x 8 100 x 10 100 x 13	F 901-41 200-0 F 901-41 201-0 F 901-41 202-0 F 901-41 203-0 F 901-41 205-0	F 902-41 200-0 F 902-41 201-0 F 902-41 202-0 F 902-41 203-0 F 902-41 205-0	- F 903-44 201-0 F 903-44 202-0 F 903-44 203-0 F 903-44 205-0
	Quadrangular	100 x 4 100 x 6 100 x 8 100 x 10 100 x 13	F 901-41 210-0 F 901-41 211-0 F 901-41 212-0 F 901-41 213-0 F 901-41 214-0	F 902-41 210-0 F 902-41 211-0 F 902-41 212-0 F 902-41 213-0 F 902-41 214-0	- F 903-44 211-0 F 903-44 212-0 F 903-44 213-0 F 903-44 214-0
	Flat	100 x 6 x 3 100 x 8 x 6	F 901-41 220-0 F 901-41 221-0	F 902-41 220-0 F 902-41 221-0	- F 903-44 221-0
	Half-round	100 x 10	-	F 902-41 231-0	F 903-44 231-0
	Rhomboid	100 x 13 x 5	-	-	F 903-44 240-0
	Round, one end tapered	100 x 5 x 2	F 901-41 255-0	-	F 903-44 255-0
	Pencil	100 x 5	F 901-41 261-0	-	-
	Round	100 x 4 100 x 6 100 x 8 100 x 10	F 901-41 270-0 F 901-41 271-0 F 901-41 272-0 F 901-41 273-0	F 902-41 270-0 F 902-41 271-0 F 902-41 272-0 F 902-41 273-0	- F 903-44 271-0 F 903-44 272-0 F 903-44 273-0
	Knife	100 x 15 x 3/0,5	F 901-41 291-0	F 902-41 291-0	-

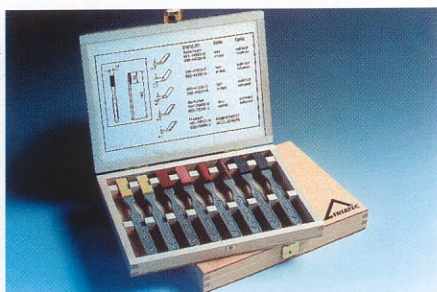
* According to DIN 69171 (German Standard Ass.)

Handlappers

especially suitable for the fine grinding of any kind of tools, particularly of hard metals and oxide ceramics.



The wooden case contains 8 of the 10 available handlappers.
Of course you may buy all types separately.



Fine Grinding Wheels

are mainly used for the fine grinding of very hard materials. They are deliverable in „fine“ and „medium“ (on request).

We recommend the following rotary velocity:

1 - 5 m/s type „fine“

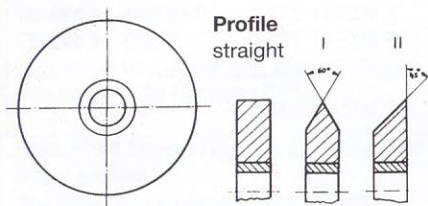
3 - 15 m/s type „medium“

For cooling and rinsing, paraffin, cutting oil and emulsion are recommended.

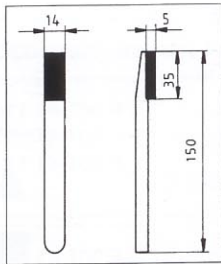
The correct dressing of the wheels should be done on the working spindle by diamond-wheels, diamond multi-grained dressers or by Boron Carbide handlappers.

The selection of the dressing wheel grain size depends upon how fine or coarse the surface should be.

Single dressing diamonds are unsuitable. To clean the tools most efficiently a felt moistened with paraffin should be rubbed on the surface.



Profile I and II on request.

Handlapper assortment in wooden case	No.	containing 8 handlappers marked H		
	F 990-00800-0			
Handlappers	No.	Type	colour	
	Sintered ruby			
	F 991-41223-0	H	fine	ruby
	F 992-44223-0	H	medium	ruby
	F 991-41205-0		fine	ruby
	F 992-44205-0	H	medium	ruby
	F 991-41231-0	H	fine	ruby
	F 992-44231-0		medium	ruby
	Boron carbide			
	F 991-79002-0	H	fine	black
	F 992-79001-0	H	medium	black
	Diamond			
	F 991-79003-0	H	K400N/D46/75	
F 991-79004-0	H	M702J/D46/75		

Outside dia in mm	Width mm	Hole diametre		fine
		with metal bushing	without metal bushing	
75	3	20	30	F 911-41 373-0
75	4	20	30	F 911-41 374-0
75	6	20	30	F 911-41 376-0
75	8	20	30	F 911-41 378-0
75	10	20	30	F 911-41 380-0
100	8	32	42	F 911-41 488-0
100	10	32	42	F 911-41 490-0

If not stated on the order otherwise, wheels with metal bushings are furnished.

Further sizes on request.

Mounted Points

are especially suitable when working on hard materials.


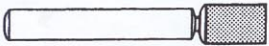
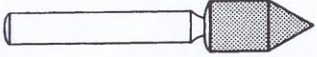
DEGUSSIT mounted points are available in the types „fine“ and „medium“ (on request). When working with mounted points, care will have to be taken that the speed will not be too high.

DEGUSSIT mounted points are adapted best for use in infinitely variable grinding machines.

A better grinding effect is achieved by lower speeds; a better polishing effect by higher speeds.

The following speeds are recommended;
type fine: 1 – 5 m/s (200 – 1000 SFM)
type medium: 3 – 15 m/s (600 – 3000 SFM).

For dressing, cooling and cleaning, the recommendations on page 6 should be observed.

available in the types fine and medium	Dimensions in mm			No. fine
	o. d.	height	shaft dia	
cylindrical mounted point* 	2	4	2,35	F 921-41 002-1
	2	4	3	F 921-41 002-0
	3	6	2,35	F 921-41 003-1
	3	6	3	F 921-41 003-0
cylindrical mounted point 	4	8	2,35	F 921-41 104-1
	4	8	3	F 921-41 110-0
	6	12	6	F 921-41 116-0
	8	10	6	F 921-41 128-0
	8	16	6	F 921-41 136-0
	10	12	6	F 921-41 150-0
mounted point  angle 60°	4	8	2,35	F 921-41 204-1
	4	8	3	F 921-41 204-0
	5	10	3	F 921-41 210-0
	6	12	6	F 921-41 216-0
	8	16	6	F 921-41 236-0
	10	20	6	F 921-41 255-0

* According to DIN 69171 (German Standard Ass.)
Length of the shaft 30 ... 35 mm

Burnishing Wheels

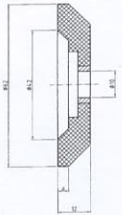


are well suited for prerolling of hardened pivots in the watch and instrument industry. Excellent results can also be achieved for ready rolling.

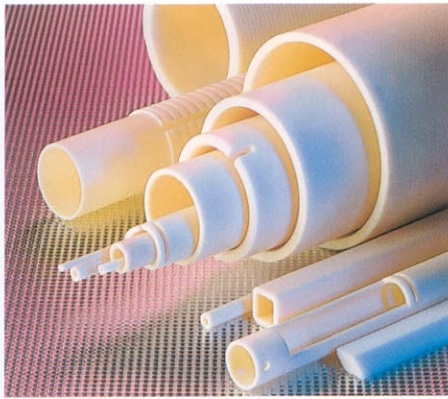
The surface finish of the pivot and the volume of the chips depends on the roughness of the surface of the DEGUSSIT wheel. The roughness can be altered within limits by dressing the DEGUSSIT wheels with diamond wheels of different grain sizes. With increasing roughness of the burnishing wheel the surface finish of the burnished pivot becomes coarser and the working time gets shorter. The final dressing must be done by the user on the working spindle in order to guarantee a correct circular run. Approximate working data are shown in the following table:

DEGUSSIT burnishing wheels are available in fine type only.

Diamond wheel: D 30-D 250
Surface finish of the burnishing wheel: 2-15 μm
Surface finish of the pivot: 0,2-1 μm
Coolant, lubricant: Parafin oil
Cutting oil
vaseline

Diameter of the pivot: 0,05 - 8 mm
Overmeasure: 0,005 - 0,05 mm
Burnishing time: 2 - 40 sec.
Speed for the burnishing wheel: 180 - 300 m/min. (3 - 5 m sec.)
Speed for the workpiece: 3 - 10 m/min.

	Dimensions in mm				No.
	D	D ₁	d	a	
	62	42	10	3	F 931-41 906-1
				4	F 931-41 906-2
				6	F 931-41 906-3
	70	60	10	8	F 931-41 970-4
				10	F 931-41 970-5
				12	F 931-41 970-6
	80	60	10	15	F 931-41 970-7
				8	F 931-41 980-4
				10	F 931-41 980-5
				12	F 931-41 980-6
			15	F 931-41 980-7	



Rohre und Kapillaren

zum Schutz und zur Isolierung von Thermoelementen, für die Gasentnahme und -zuführung.

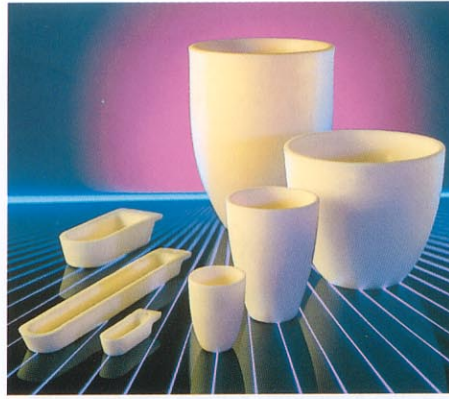
Tubes and multi-bore tubes

for protection and insulation of thermocouples, for gas extraction and gas feeding

Tubes et capillaires

pour protection et isolement de pyromètres, pour prélèvement et alimentation de gaz.

Prospekt 977



Laborgeräte

Tiegel, Schiffchen zum Glühen und Schmelzen bei hohen Temperaturen.

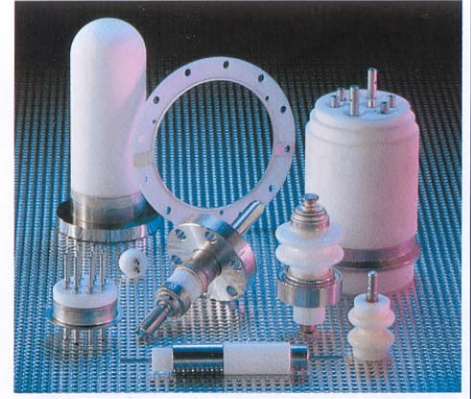
Laboratory ware

crucibles, boats for annealing and melting at high temperatures.

Appareillage laboratoire

creusets, nacelles pour combustion et fusion à haute température.

Prospekt 977



FRIALIT-Elektrische Durchführungen

hochvakuumdicht, temperaturbeständig und höchste Isolationseigenschaften für Meßtechnik Hochspannungs- und Hochstromanwendungen.

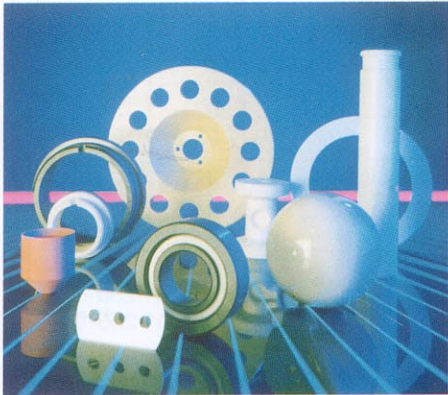
FRIALIT electrical feedthroughs

highvacuumproof, temperature resistant and high insulated for high voltage, high and low current.

Traversées électriques FRIALIT

étanches au vide poussée, résistants à la température et haute valeur d'isolation pour haute tension, courants forts et faibles.

Prospekt 1126/2



Verschleißschutzteile

Kolben und Plunger
Gleitringe, Präzisionskugeln
Dichtscheiben für Armaturen

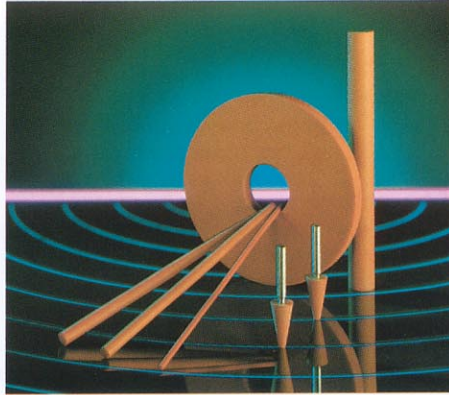
Abrasion and Corrosion resistant parts

Pistons and Plungers
Bearing rings, precision balls
Ceramic sealing discs. For valves
and water-mixing taps.

Pièces d'usure

Pistons et Plongeurs
Bagues de friction, billes de précision
Disques d'étanchéité pour robinetterie.

Prospekt 1279



Feinschleifwerkzeuge

Scheiben, Abziehsteine, Kleinstfeilen, Handlapper zum Bearbeiten harter Werkstoffe und für alle Feinschleifarbeiten.

Fine grinding tools

wheels, whetstones, midget files, hand-lappers for various fine grinding operations on hard materials.

Outils de finition

meules, pierres à affûter, petites limes et affiloirs pour la finition de matériaux durs et pour toutes opérations de rectification fine.

Prospekt 998

FRIALIT® - DEGUSSIT®

Erzeugnisse aus Oxidkeramik

Products of Oxide Ceramics

Produits en oxydes céramiques

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PLZ (6 - 9 + 0)

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Kaufm.	Technik
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- 13 85	- 13 45
- 12 40	- 15 02
- 13 46	



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