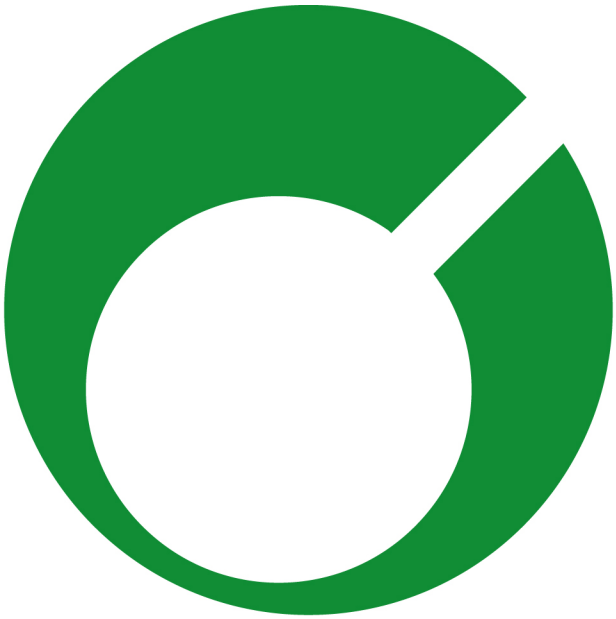
PLASTIC MEDIA
FOR
SOFT SANDBLASTING
IN
AEROSPACE MAINTENANCE



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(OCT. 2008)

UKAS
QUALITY
MANAGEMENT

Registration No. 60

WCS
WORLD CERTIFICATION SERVICES

CERTIFICATE OF REGISTRATION

This Certificate has been awarded to:

AVIOCHEM srl

via Artigianale, 29
Montirone (BS) - Italy

In Recognition of the Organisation's Quality Management System which complies with:

ISO9001:2000

For the Scope of Activities described below:

Commercializzazione di prodotti ed attrezzature per uso aereonautico e industriale.

Trading of products and equipment for aeronautical and industrial use.

EA 29

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Certificate No:
4087

Date First Registered:
6th January 2003

Date Certificate Issued:
6th January 2006

Date Certificate Expires:
6th January 2009

La responsabilità per la corretta implementazione del Sistema di gestione è a carico dell'Organizzazione titolare del certificato.

La validità del certificato emesso è subordinata all'esecuzione con esito favorevole delle verifiche ispettive periodiche previste e può essere verificata sul sito www.wcsplanet.com

World Certification Services Ltd.
1 Bridge Road,
Liverpool,
UK

Issued by: G. Hitchell

For World Certification Services Ltd.

The use of the Accreditation Mark indicates accreditation in respect of those activities covered by accreditation certificate number 60

Index

PLASTIC MEDIA FOR :

- PAINT STRIPPING
- DEOXIDATION
- SOFT SAND BLASTING
- ORGANIC COATINGS REMOVAL
- SPECIAL TREATEMENTS

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Paint stripping of an aluminium shape
using an "MB" type media.

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DIFFERENT MEDIA COMPARISON IN DENSITY AND HARDNESS

PART DESIGNATION	**MATERIAL**	**DENSITY** gr/cc	**HARDNESS** Barcol	**HARDNESS** Rockwell/MoHS
	walnut	1.00		3.00
AC	acrylic	1.10 – 1.2	46 to 54	3.50
EG	polystyrene	1.15 – 1.25	34 to 42	3.00
MB	urea beads	1.47 – 1.52	54 to 62	3.50
MC	melamine beads	1.47 – 1.52	64 to 72	4.00
MS	polycarbonate media	1.28 – 1.33	30 to 40	3.0

TYPES AND APPLICATIONS OF THE DIFFERENT PLASTIC MEDIA BY USAGE AND CONSUMPTION

Type	Description	
Paint stripping		
Maxi Clean (hard)	MC	granulated
Multi Blast (medium)	MB	granulated
Enduro Grade (soft)	EG	granulated
Acrylic	AC	granulated
Transportation vehicles cleaning and renovation		
Multi Blast (medium)	MB	granulated
Maxi Clean (hard)	MC	granulated
Steel and chrome plated mould cleaning		
Maxi Clean (hard)	MC	granulated
Multi Blast (medium)	MB	granulated
Maxi Six	MS	granulated
Aluminum mould cleaning		
Multi Blast (medium)	MB	granulated
Enduro Grade (soft)	EG	granulated
Maxi Six	MS	granulated
Acrylic	AC	granulated

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EXAMPLES OF PAINT AND COATING REMOVAL

Application	**Comments**
Auto Bodies • Fiberglass and rigid plastic • Sheet metal • Flexible plastic bumpers and panels • Accessories	Uncontaminated plastic will strip paint from these surfaces without etching adjacent chrome, rubber or glass (masking is still recommended). Auto bodies have been stripped in 2 hours. Rigid plastic can be totally stripped with only minimal etch to the surface
Buses, Truck cabs and Trailers • Aluminum Step Vans and Trailers • Fiberglas Cabs and Trailers • Scuff and paint surface preparation	Strips paint without etching aluminum or sheet metal. Plastic media will not stretch or warp metal when parameters are followed.
Aircraft Airframe Skins • Alclad or anodised Aluminum; Titanium	Excellent replacement for toxic chemicals. Technical training for operators is essential due to sensitivity of the process. Advantages over chemicals include low water usage, environmental safety, reduced disposal costs. Alclad aluminum is textured, providing excellent profile.
Aircraft Airframe Skins • Magnesium ; Fiberglass and other composites	Eliminates hand sanding. No critical softening of plastic resin as seen with chemical stripping. Highly corroded magnesium may perforate during blasting. Composites with "rain erosion" coatings (elastomeric) should not be attempted. Only resin-coated composites should be dry stripped.
Aircraft Components • Aluminum or Magnesium	Wheels, landing gear, brake housings, propellers etc. can be stripped. Able to remove coating without removing anodizing. Removes Teflon lubricant band on props very rapidly. Actuator Assembly stripped in 5 minutes compared to 2.4 hours chemically - no disassembly.
Aircraft Components • Carbon Graphite, Metal Helicopter Components	Removes paint and surface residue without need to disassemble component. Strips rotors without debonding laminates.
Aircraft Components • Copper Armature Wires	Able to remove polyamide coating without damage to copper wiring. Aluminum oxide causes rapid oxidation.

Aircraft Engine Components • Aluminum and Exotic Alloys and Metals	Will not change tolerances. Removes ceramic thermal protective coatings. Removes light carbon found on jet engine turbines and turbine exhausts.
Appliances • Painted Sheet Metal (Refrigerators, Stoves, etc.)	Can be used for stripping paint- defective appliances. Excellent on popular granular "no fingerprint" type sheet steel.
Boat Hulls & Superstructures • Aluminium	Cuts through barnacles and marine scale. Removes paint without damaging aluminum
Boat Hulls & Superstructures • Fiberglas	Works well on non-resilient type paints

Graph displaying the wide array of plastic media sizes and their relative hardness

			GRANULATED								
	Specific Gravity	**Hardness (MoSH)**									
Maxi-Clean ™ (Granulated)	1.5	4.0		MC-5	**MC-4**	**MC-3**	**MC-2**	MC-1.5	**MC-1**		
Multi-Blast ® (Granulated)	1.5	3.5		MB-5	**MB-4**	**MB-3**	**MB-2**	MB-1.5	MB-1	MB-11/14	MB-8/12
Aero-Clean ™ (Granulated)	1.15 - 1.19	3.5		AC-5	AC-4	AC-3	**AC-2**	AC-1.5	AC-1		
Maxi – Six (Granulated)	1.28 – 1.33	3.0		MS-5	MS-4	MS-3	MS-2	MS-1.5	**MS-1**		
Enduro-Grade ® (Granulated)	1.15	3.0		EG-5	EG-4	EG-3	EG-2	EG-1.5	**EG-1**		
Wet Blast Media	1.5	3.5	WBM-6	WBM- 5	WBM-4	WBM-3	WBM-2				
	Mesh		70/170	60/100	40/60	30/40	20/30	16/20	12/16	11/14	8/12

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MAXI-CLEAN

Hard Grade Granulated
Plastic Blast Cleaning Media

Part Designation	U.S. Standard Sieve	PARTICLE SIZES[1]	
		Inches	Millimeters
MC - 1	12/ 16	.066 - .047	1.68-1.19
MC –1.5	16/ 20	.047 - .033	1.19 - 0.84
MC –2	20 / 30	.033 - .023	0.84 - 0.58
MC – 3	30 / 40	.023 - .017	0.58 - 0.42
MC – 4	40 / 60	.017 - .010	0.42 - 0.25
MC – 5	60 / 100	.010 - .006	0.25 - 0.15

Hardness: 4 Mohs
Specific Gravity 1.47 - 1.52
Packaging - 125 Kg. Drums or 20 Kg. Bags
Conforming to MIL - 85891A Ty III

FEATURES AND BENEFITS

- Cleans metal surfaces with no abrasion or effect on critical tolerances saving money on tooling expense.
- Lasts significantly longer than glass bead increasing the value of your investment.
- Sharp, granular edges produce quick cleaning action in less time, saving money.
- Causes no abrasion to blast cabinet, nozzles, windows or fixtures eliminating the need for frequently replacing costly parts.
- Media is non-toxic and produces no silicosis hazards contributing to a safer work environment.
- Leaves no residue deposits eliminating costly and time-consuming post-washing or other treatment of parts.
- Media is treated with anti-static solution which helps keep dust levels low, reduces static and keeps parts cleaner.

COMMON APPLICATIONS

- Cleaning steel and chrome-plated moulds.
- Cleaning sealant and adhesives from metal surfaces.
- Stripping ground vehicles of paint and various coatings.
- Deflashing and resin bleed removal from moulded electronic components.

[1] Irregular Shapes May Yield Up To 15 Percent Size Deviation

AVIOCHEM

MULTI-BLAST™

Medium Grade Granulated
Plastic Blast Cleaning Media

Part Designation	U.S. Standard Sieve	PARTICLE SIZES[1]	
		Inches	Millimeters
MB – 8/12	8 / 12	.093 - .066	2.36 - 1.70
MB – 11/14	11 / 14	.078 - .055	2.00 - 1.40
MB – 1	12 / 16	.066 - .047	1.68 - 1.19
MB – 1.5	16 / 20	.047 - .033	1.19 - 0.84
MB – 2	20 / 30	.033 - .023	0.84 - 0.58
MB – 3	30 / 40	.023 - .017	0.58 - 0.42
MB-- 4	40 / 60	.017 - .010	0.42 - 0.25
MB – 5	60 / 100	.010 - .006	0.25 - 0.15

Hardness: 3.5 Mohs
Specific Gravity 1.47 – 1,52
Water absorption less than 1%
Packaging - 125 Kg. Drums or 20 Kg. Bags
Conforming to MIL - 85891A Ty II

FEATURES AND BENEFITS

- Produces far less dust than walnut shells or glass bead allowing for a clean, easily visible work atmosphere.
- Properly used, will not abrade sensitive surfaces, prolonging the life of expensive moulds, tools and parts.
- Deburrs and deflashes aluminium, zinc and magnesium parts without damaging part surfaces or altering critical tolerances.
- Sharp, granular edges produce quick cleaning action in less time, saving money.
- All media is an inert substance, non-toxic, not classified as dangerous, not burning and produces no silicosis hazards contributing to a safer work environment.
- Can be used in air and wheel-blast equipment eliminating the need to acquire new equipment in most cases.

COMMON APPLICATIONS

- Depainting airframes and aircraft components.
- Cleaning aluminium and steel moulds in the rubber and plastics industry.
- Stripping powder coated part rejects.
- Depainting automobile bodies, boat surfaces and components.
- Depainting vacuum-metallized part rejects.
- Deburring machine parts.
- Deflashing electronic components.

[1] Irregular Shapes May Yield Up To 15 Percent Size Deviation

AVIOCHEM

AERO-CLEAN™

Thermoplastic Acrylic Granulated Blast Cleaning Media

Part Designation	U.S. Standard Sieve	PARTICLE SIZES[1]	
		Inches	Millimeters
AC - 1	12 / 16	.066 - .047	1.68 - 1.19
AC - 1.5	16 / 20	.047 - .033	1.19 - 0.84
AC - 2	20 / 30	.033 - .023	0.84 - .058
AC - 3	30 / 40	.023 - .017	0.58 - 0.42
AC - 4	40 / 60	.017 - .010	0.42 - 0.25
AC - 5	60 / 100	.010 - .006	0.25 - 0.15

Hardness: 3.5 Mohs
Specific Gravity 1.10 - 1.20
Package - 125 Kg. Drums or 20 Kg. Bags
Conforming to MIL-P- 85891A Ty V

FEATURES AND BENEFITS

- Produces far less dust than walnut shells allowing for a clean, easily visible work atmosphere.
- Properly used, will not abrade or warp sensitive surfaces, allowing parts to be salvaged and money saved.
- Media is treated with anti-static solution which reduces dust, static, and keeps parts cleaner.
- Sharp, granular edges produce quick cleaning action in less time, saving money.
- All media is non-toxic and produces no silicosis hazards contributing to a safer work environment.
- Can be used in air and wheel-blast equipment eliminating the need to acquire new equipment on most cases.
- Offers excellent longevity reducing finishing costs.
- Will not remove plating, anodise, and conversion coatings when properly used, allowing for very controlled blasting on delicate substrates.

COMMON APPLICATIONS

- Dry stripping: Aluminium body ground vehicles
  Fiberglas body vehicles / Aluminium extrusions / Aircraft components (wheels, brakes, landing gear) / Airframes
- Deflashing thermoset plastic parts
- Deburring steel, aluminium and zinc parts
- Deflashing electronic components and assemblies
- Cleaning steel and aluminium moulds.

[1] Irregular Shapes May Yield Up To 15 Percent Size Deviation

AVIOCHEM

MAXI - VI®

Soft Grade Granulated
Plastic Blast Cleaning Media

Part Designation	U.S. Standard Sieve	PARTICLE SIZES[1]	
		Inches	Millimeters
MS - 1	12 / 16	.066 - .047	1.68 - 1.19
MS - 1.5	16 / 20	.047 - .033	1.19 - 0.84
MS - 2	20 / 30	.033 - .023	0.84 - .058
MS - 3	30 / 40	.023 - .017	0.58 - 0.42
MS - 4	40 / 60	.017 - .010	0.42 - 0.25
MS - 5	60 / 100	.010 - .006	0.25 - 0.15

Hardness: 3.0 Mohs
Specific Gravity 1.28 - 1.33
Package - 125 Kg. Drums or 20 Kg. Bags
Conforming to MIL - P - 85891 A Type VI

FEATURES AND BENEFITS

- Less aggressive than Multi Blast® (MB) media with similar cutting action
- Very low dust and static levels.
- Sharp, granular edges produce quick cleaning action in less time, saving money.
- Causes no abrasion to blast cabinet, nozzles, windows or fixtures eliminating the need for frequently replacing costly parts.
- Media is non-toxic and produces no silicosis hazards contributing to a safer work environment.
- Leaves no residue deposits eliminating costly and time-consuming post-washing or other treatment of parts.
- Media is treated with anti-static solution which helps keep dust levels low, reduces static and keeps parts cleaner.
- Recommended for suction blast equipment or low pressure blasting applications.

COMMON APPLICATIONS

- Deflashing electronic components and assemblies
- Stripping coatings from sensitive substrates
- Cleaning aluminium and steel moulds in the rubber and plastics industry.
- Depainting automobile bodies, boat surfaces and components.
- Sealants and adhesive removals from metal surfaces

[1] Irregular Shapes May Yield Up To 15 Percent Size Deviation

ENDURO - GRADE®

Soft Grade Granulated
Plastic Blast Cleaning Media

Part Designation	U.S. Standard Sieve	PARTICLE SIZES[1]	
		Inches	Millimeters
EG - 1	12 / 16	.066/.047	1.68 - 1.19
EG - 1.5	16 / 20	.047/.033	1.19 - 0.84
EG - 2	20 / 30	.033/.023	0.84 - .058
EG - 3	30 / 40	.023/.017	0.58 - 0.42
EG - 4	40 / 60	.017/.010	0.42 - 0.25
EG - 5	60 / 100	.010/.006	0.25 - 0.15

Hardness: 3.5 Mohs
Specific Gravity 1.15 - 1.25
Package - 125 Kg. Drums or 20 Kg. Bags
Conforming to MIL.- P - 85891A Ty I

FEATURES AND BENEFITS

- Produces far less dust than walnut shells allowing for a clean, easily visible work atmosphere.
- Properly used, will not abrade or warp sensitive surfaces, allowing parts to be salvaged and money saved.
- Media is treated with anti-static solution which reduces dust, static, and keeps parts cleaner.
- Sharp, granular edges produce quick cleaning action in less time, saving money.
- All media is non-toxic and produces no silicosis hazards contributing to a safer work environment.
- Can be used in air and wheel-blast equipment eliminating the need to acquire new equipment on most cases.
- Offers excellent longevity reducing finishing costs.
- Will not remove plating, anodise, and conversion coatings when properly used, allowing for very controlled blasting on delicate substrates.

COMMON APPLICATIONS

- Dry stripping: Fiberglass body vehicles
- Aluminium body ground vehicles (i.e., panel trucks) Aluminium extrusions
- Aircraft components (wheels, brakes, landing gear) Airframes
- Deflashing thermoset plastic parts
- Deburring steel, aluminium and zinc parts
- Deflashing electronic components and assemblies
- Cleaning steel and aluminium moulds.

[1] Irregular Shapes May Yield Up To 15 Percent Size Deviation

AEROBLAST
MIL-P-85891 A

PLASTIC MEDIA BLASTING PROCESS
FOR AIRCRAFT USE

A choice of different hardness is made possible by manufacturing from different formulations of synthetic plastic compounds. Irregular in shape, the inert (ph neutral) plastic particles retain or re-fracture sharp angular cutting edges during blast stripping. Reclamation and recycling are intended for these durable, static-resistant medias. Their water-resistant nature enables use in wet-blasting applications.

Conforming to: **MIL - P - 85891 A** as follow :

Table n° 1

TYPE	CHEMICAL TYPE	OUR PRODUCTS
I	Polyester (Thermoset)	**EG** (soft)
II	Urea Formaldehyde (Thermoset)	**MB** (medium)
III	Melamine formaldehyde (Thermoset)	**MC** (hard)
IV	Phenol formaldehyde (Thermoset)	-
V	Acrylic (Thermoplastic)	**AC**
VI	Poly (allyl diglycol carbonate) (Thermoset)	**MS**

Table n° 2 **Categories of Plastic Blast Media**

Type	DESCRIPTION
I	The softest plastic blast media, this grade strips delicate metals quickly, without marring their surfaces.
II	A medium-hardness plastic blast media, this grade cleans moulds, tooling, and sensitive substrates without damage, leaving anodised, galvanized, and other base coats intact.
III	The hardest plastic blast media, this grade completely removes sealants and adhesives from metal surfaces, without altering critical tolerances.
V	A low-density/moderate-hardness plastic blast media, this grade is ideal for stripping fiberglass, kevlar, composites, and other soft substrates.

Specific information on plastic media type:

EG : Used when the integrity of the substrate is critical and the coating is not tenacious. The least aggressive of our plastic medias, EG leaves an unmarred surface on soft metals. Faster stripping than walnut shell.

AC : Fills a critical niche in its low density/moderate hardness. AC is often ideal in stripping composites like fibreglass or Kevlar. Leaves a smooth surface on soft metals.

MB : Harder and denser than the above types, MB provides greater aggressiveness without being too harsh for most delicate metals. Preserves anodised or galvanized sub-treatment. Safe for most composites.

MC : The most aggressive of our plastic blast medias, AB succeeds in tough cleaning jobs like sealant or adhesive removal. Its rapid stripping of tenacious coatings will generally offset the slightly higher friability

Table n° 3 : **characteristics**

	Vegetal	**I (EG)**	**II (MB)**	**III (MC)**	**V (AC)**	**Glass beads**	**Silica sand**	**AlO_2 beads**
Mohs	2,5 - 3,5	3,0	3,5	4,0	3,5	5,5	6,0	9,0
Barcol		34-42	54-62	64-72	46-54			
Spec. Gravity		1,15-1,25	1,47-1,52	1,47-1,52	1,20-1,10			
Ignition Temperature (°C)		440°	530°	530°	390°			
Friability (10=sand)		5	4	7	3			
Water Absorption (24h, 25°C)		0.13%	0.5%	0.25%	0.1%			
Chemical nature		inert	inert	inert	inert			

Table n° 4 : **chemical type and advantages**

Type	**I**	**II**	**III**	**V**
chemical type	Polyester (thermoset)	Urea (thermoset)	Melamine formaldehyde	Acrylic (Thermoplastic)
Advantages	Thin or delicate surfaces and soft metals; e.g. composite aircraft components, glass comp. And aluminium steel metals	Most metal and composite surfaces; e.g. die cast aluminium and brass parts, steel sheet metal and Fiberglas automobile bodies	Removing hard coating from steel; e.g. heavy gauge steel sheet metal, forged and cast steel parts	Excellent on steel moulds chromate and non chromate

Table n° 5 : **sieve size**

Tipo	Sieve Size	Inches	Millimeters
1	12 / 16	0.066 - 0.047	1.68 - 1.19
1,5	16 / 20	0.047 - 0.033	1.19 - 0.84
2	20 / 30	0.033 - 0.023	0.84 - 0.58
3	30 / 40	0.023 - 0.017	0.58 - 0.42
4	40 / 60	0.017 - 0.010	0.42 - 0.25
5	60 / 100	0.010 - 0.006	0.25 - 0.15

Table n° 6 :**Comparative aggression**

LOW	Walnut Shell	EG	MB	AC	MC	Glass Beads	*HIGH*

METALLIC EROSION TEST REPORT

PLASTIC MEDIA VS GLASS BEADS

SCOPE: establish the confront rate for metal removal in applications with plastic media in confrontation to glass beads Test were run on aluminium and steel test panels, i.e. the most common alloys used in the production of rubber moulds.

TEST PANELS: "Freemax 45" of hot rolled steel and brought to the dimension of 0,32 x 5,08 x 7,72 cm (1/8 x 2 x 3 inches). Hardness: Rockwell 26B, Brinell 65 (500 kg load).

"K 100" of aluminium brought to the dimension of 0,65 x 6,35 x 8,25 cm (1/4 x 2 1/2 x 3 1/4 inches). Hardness: Rockwell 86B, Brinell 145 (500 kg load).

TEST PARAMETERS:

Sand Blasting cabinet:	SB3630/DC100 with separated vessel
Nozzle:	2" 1/8"
Aspiration hose:	open at 50% for *plastic media* MB ed MC and at 90% for glass beads
Sand blasting gun:	5/16" nozzle made of carburated and airjet accessories of 0,4 cm (5/32")
Sand blasting pressure:	80 psi
Sand blasting angle:	80°, nozzle at 15,24 cm (6 inches) away from the test panel

TEST PROCEDURE

1) Load the vessel with 22,68 kg (50 lb) of brand new material
2) Weigh the test panel with a 0,0001g precision and note the value before start blasting
3) Put the test panel into the machine and fix it with an adequate system. This will result in a flat side facing the nozzle to have a defined sand blasting pattern.
4) Sand Blast the test panel for 20 minutes; weigh and note the value. Repeat operation after 40 and 60 minutes.
5) After 20 minutes, suspend testing, weigh the media in the separate vessel, subtract the result from the initial load, multiply by 2 to determine the average flow in the hour. Note the value

6) Reload the vessel with the recycled media.
7) Measure the depth of the erosion after 60 minutes and note the value.

RESULTS

Test n°1

Test panel: "K 100" (aluminium)

***Media*: mix 50/50 of MB-2 ed MB-3**

Average flow: 39 kg (86 lb) an hour

Test panel weight	Time	Period loss	Total loss
100,9533	0		
100,8521	20 min	0,1012	0,1012
100,7996	40 min	0,0525	0,1537
100,7564	60 min	0,0432	0,1969

Depth of eroded area: less than 0.00254 cm

Test n°2

Test panel: "K 100" (aluminium)

***Media*: mix 50/50 of glass beads 100/170 e 170/325**

Average flow: 41,28 kg (91 lb) an hour

Test panel weight	Time	Period loss	Total loss
98,9242	0		
98,2885	20 min	0,6357	0,6357
97,5415	40 min	0,7470	1,3827
96,7773	60 min	0,7642	2,1469

Depth of eroded area: 0,18 cm

Test n°3

Test panel: "Freemax 45" (steel)

***Media*: mix 50/50 of MC-2 ed MC-3**

Average flow: 40,82 kg (90 lb) an hour

Test panel weight	Time	Period loss	Total loss
98,0912	0		
98,0883	20 min	0,0029	0,0029
98,0881	40 min	0,0002	0,0031
98,0863	60 min	0,0018	0,0049

Depth of eroded area: less than 0.00254 cm

Test n°4

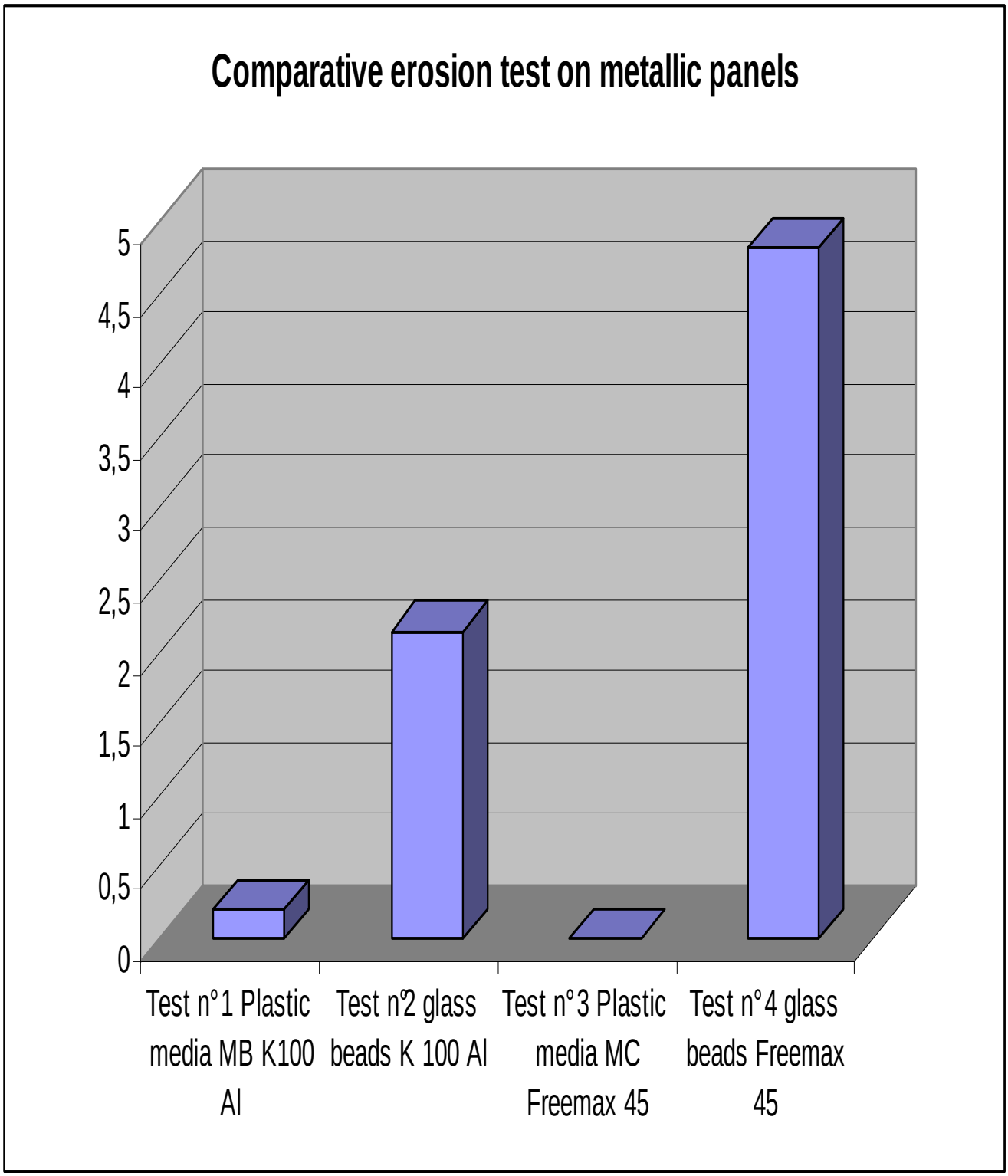
Test panel: "K 100" (aluminium)

***Media*: mix 50/50 of glass beads 100/170 e 170/325**

Average flow: 41,28 kg (91 lb) an hour

Test panel weight	Time	Period loss	Total loss
98,1363	0		
96,5753	20 min	1,5610	1,5610
94,9369	40 min	1,6384	3,1994
93,3230	60 min	1,6139	4,8133

Depth of eroded area: 0,112 cm


Comparative erosion test on metallic panels
5
4,5
4
3,5
3
2,5
2
1,5
1
0,5
0
Test n°1 Plastic media MB K100 Al
Test n°2 glass beads K 100 Al
Test n°3 Plastic media MC Freemax 45
Test n°4 glass beads Freemax 45

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