



GMA GARNET®

The most popular Garnet abrasive,
worldwide – near you!



www.GARNETsales.com

Blast Cleaning

GMA Garnet consists of totally natural almandite garnet known for its natural hardness, durability and abrasive characteristics. **GMA Garnet** is free of any heavy metals or toxic components and meets all Occupational Health and Safety requirements.

GMA Garnet provides a perfect symbiosis of grain size, density and hardness/durability. This ensures optimum abrasive efficiency in terms of lowest abrasive consumption and highest production rates at safe environmental and health conditions.

GMA Garnet is a cost effective alternative to silica sand, mineral slags and steel grits and shot because of its low consumption (kg/m²) and high productivity(m²/hr).

GMA Garnet can be recycled 5 -10 times depending on the application because of its superior toughness and low friability.

GMA Garnet is mined and processed by the world's largest producer of industrial garnet situated in Western Australia. **GMA Garnet** is processed to the highest standard of quality in respect of mineral purity and meets the stringent requirements of ISO 11126-10:2000E for chloride and free silica content. **GMA Garnet** is free of metallic iron, making it suitable for all areas of surface preparation including stainless steel, anti-magnetic steel and all special alloys. Special fine grades of **GMA Garnet** are also available for aluminium, turbine blades, fibreglass and other specialist surface preparation applications.

GMA Garnet is used and approved by major oil companies, shipyards and other large and small clients around the world and approved by major paint manufacturers. **GMA Garnet** is available through an extensive network of dedicated and professional distributors with strategic stockpiles located around the world.



Surface Preparation Applications

GMA Garnet is well suited to most fields of the surface preparation industry with and without subsequent coatings, in particular:

- Shipyards, new building, conversion and repair, including antimagnetic and other special steels, as well as aluminium superstructures and aluminium and fibreglass hulls.
- Oil and petrochemical industry maintenance, work in refineries and storage tanks as well as on-shore and off-shore installations.
- Construction and maintenance of chemical plants, nuclear and fossil power stations, gas and sewerage plants, desalination and industrial plants.
- Bridge and weir locks.
- Building industry and structural steel.
- Construction and maintenance of containers and tanks, tank trucks and rail tanks as well as wagons and coaches.
- Stone building facades and monuments.
- Non-ferrous surfaces and turbine blades (special mesh).
- Stainless Steel.

Advantages Over Other Abrasives

GMA Garnet is a totally natural product, chemically inert and free of any toxic metals or crystalline silica. In practice the use of **GMA Garnet** results in:

Cost-effective Blast Cleaning

You can quickly calculate the cost benefits of **GMA Garnet** over other abrasives by using our Blasting Cost Comparison Calculator.
www.garnetsales.com

Low Dusting

Blast cleaning with **GMA Garnet** means significantly lower dust emissions because of the incoherent toughness of the material and rapid settling due to its high specific gravity. This ensures minimum disruption and danger to adjoining operations and improved operator visibility and safety.

High Productivity

GMA Garnet is very fast cutting due to the large number, speed and shape of grains impacting on the surface. The acceleration and speed of a grain in an air stream is a function of the inertia and hence the size of the grain. Smaller grains accelerate much more readily, thus imparting higher impact energy to the surfaces resulting in a superior cleaning rate - usually twice the m²/hr of conventional abrasives.

Low Consumption

GMA's unique grain size ensures that there are many more active grains impacting on the surface resulting in greatly reduced abrasive consumption.

Superior Surface Quality

GMA Garnet grains clean deep into the cavities and pitted areas down to the bare metal, thoroughly removing all rust, soluble salts and other contaminations. The blasted surface is free of embedments and free of rogue peaks and troughs. SA3 White Metal is effortlessly achieved. A surface profile of 50 - 75 microns is easily achieved along with a much greater number of peaks per unit area.

Improved Health And Safety

GMA Garnet is non-toxic. There is no silicosis hazard, leachable heavy metals or radioactive contaminants. Lower consumption and recyclability result in greatly reduced disposal volumes of non-toxic product.

Recycling

GMA Garnet is suitable for multiple usage. It can be recycled 5 times or more without losing its superior cutting ability. Special **GMA Garnet** recycling systems are available upon request.

All of which adds up to natural, clean and cost effective blasting.



Surface Cleanliness

The ability of a paint system to adhere to the substrate and resist corrosion is determined by the cleanliness and profile of the substrate. Use of **GMA Garnet** as recommended provides the highest quality because:

Even Profile

The shape and size of **GMA Garnet** grains ensures an even profile of 50 - 75 microns (controlled by blast pressure and air flow). This ensures maximum surface area plus maximum number of peaks (reactive sites) for enhanced bonding. The use of **GMA Garnet** totally eliminates rogue peaks and troughs leading to a direct reduction in the amount of paint needed.

Low Dust

GMA Garnet lowers dust emissions and the incidence of dust on the workpiece, meaning reduced cleaning after blasting and less contamination of the work area.

Improved Surface Cleanliness

There is almost no embedment on the substrate. The scouring action of the natural **GMA Garnet** grains removes all salts, corrosion and contaminants from within deeply corroded and pitted areas. **GMA Garnet** meets all international specifications for chlorides and silica. (ISO 11126-10:2000E)



Maximising The Performance Of GMA Garnet

GMA Garnet does not need costly special equipment. To maximise the performance of your **GMA Garnet** simply give attention to:

Control Of Abrasive Flow Rate

As less than half the amount of **GMA Garnet** is needed to clean a unit area and as it is also dense and free flowing the normal abrasive flow and valve setting must be cut well back. This can be achieved by the use of a good quality abrasive valve or by a simple **GMA** abrasive ball valve with fixed orifice size matched to the size of the nozzle.

Adequate Pressure, Volume And Quality Of Air

This is achieved by ensuring that the compressor, couplings and the diameter of hoses used are able to supply the required minimum pressure at, and airflow through, the nozzle. High pressure with maximum airflow consistent with pressure and nozzle diameter gives maximum productivity, particularly on heavier coatings. It is recommended that air pressure at the nozzle should not drop below 100 psi. The air must be dry and free of oil. '1" whip hoses' severely restrict air flow through and pressure at the nozzle thereby appreciably reducing productivity.

Venturi Nozzles

The use of Long Venturi Blast Nozzles is strongly recommended as these further enhance the velocity of the **GMA Garnet** grains thereby increasing exponentially their impact energy on the steel surface. Nozzles should be checked regularly for wear and replaced as required in order to avoid pressure drops and abrasive wastage.

Recycling

Normal use of **GMA Garnet** will not lead to excessive material breakdown of the tough, dense **GMA Garnet** grains. Independent tests confirm that the average level of breakdown will result in approximately 10-15% of the abrasive being removed by a standard recycling unit. Recycling units specially designed to handle **GMA Garnet** are available through your **GMA** distributor. The number of recycles obtained will be determined by the blast equipment and its setting, the coating to be removed, the profile required and the ability to constantly add new **GMA Garnet** to the blasting cycle. Consult your **GMA** distributor.

Best efficiency is achieved with good controlled blasting practice - not expensive equipment.



GMA Garnet complies with the requirements of

Australian Standards
European Standards
Other International Standards
Californian Air Resources Board (CARB)
Military specifications worldwide

All major protective coatings manufacturers
Oil and Gas companies worldwide
HSE Authorities worldwide
U.S. Navy specification MIL-A-22262 B(SH)
ISO 11126-10:2000E (silica & chlorides)



GARNET INTERNATIONAL RESOURCES PTY LTD

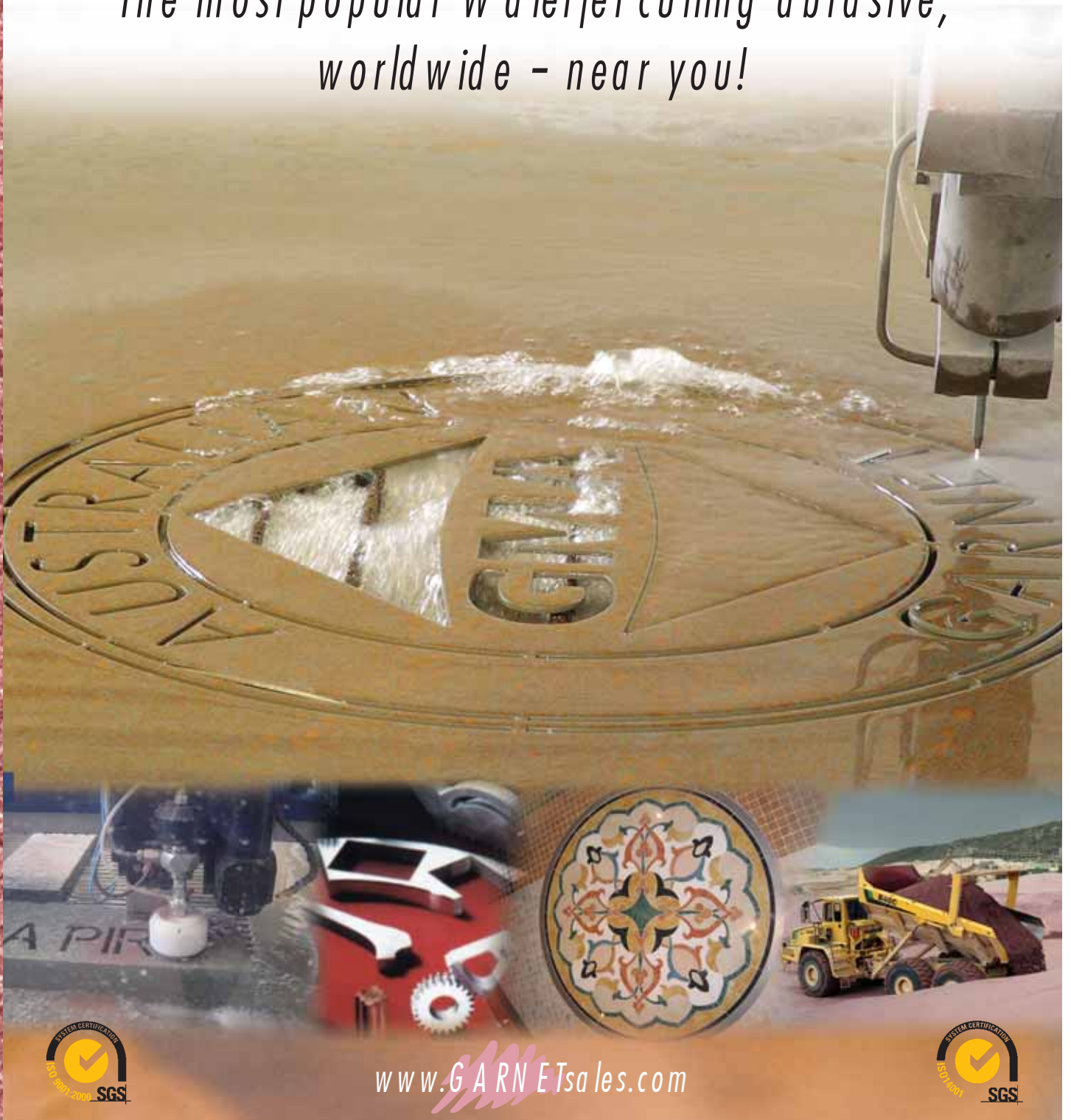
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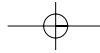
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GMA Garnet

The **GMA Garnet group** is the global market leader of high quality waterjet cutting garnet abrasives. Mining and processing facilities are located approximately 500km north of Perth, Western Australia. **GMA Garnet's** Head office is located in Perth, Western Australia and regional distribution centres are located in Hamburg and Frankfurt (Germany), Manchester (UK), Dubai (UAE), Houston (USA) plus many more regional GMA sales locations and distributors around the world.

GMA Garnet owns and operates the world's largest mining and processing facility of industrial garnet. **GMA Garnet** is processed to the highest quality, with strict in house and external quality control at every stage of processing, grading, packaging and transportation. This ensures a constant high quality standard from the mining/processing right through to the end user.

GMA Garnet is certified under ISO 9001:2000 Quality Management Systems, demonstrating our commitment to product quality and customer service. **GMA Garnet** is also certified under ISO 14001:2004 Environmental Management Systems demonstrating **GMA Garnet's** commitment to the environment with a socially responsible production process.

GMA Garnet consists of totally natural Almandite garnet known for its superior hardness and abrasive ability. **GMA Garnet** is free of any heavy metals or toxic compounds and meets all Occupational Health and Safety regulations. **GMA Garnet** provides a perfect balance of grain shape (sub angular) size and density.

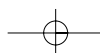
GMA Garnet is extensively used in all renowned waterjet cutting machines the world over.



Waterjet Cutting Applications

GMA Garnet Waterjet cutting abrasives grades are available to meet all of your specific project requirements. **GMA Garnet** is ideally suited for all applications including:

- Carbon steel
- Copper
- Granite
- Aluminium
- Rubber
- Glass
- Stainless steel
- FRP / CRP
- Marble
- Wood



Why GMA Garnet -

You've made a significant investment in your Waterjet cutting equipment, with **GMA Garnet** you can be confident you maximise production and safeguard your investment.

GMA Garnet's world best processing ensures highest purity garnet and highly accurate sizing of grains. This ensures there is no dust or ineffective fine grains to restrict garnet free flow, and no oversize grains to block focusing tubes. A steady flow of garnet to the focusing tube and no blockages allows uninterrupted production without downtime resulting in optimum efficiency and lowest production costs.

You can be confident that each delivery and each bag of **GMA Garnet** is up to the same highest quality standard that you would expect from the world's leading supplier of premium Waterjet abrasives.

Millions of years of weathering means that **GMA Garnet's** hard and tough sub angular grains provide the perfect balance between cutting speed and edge quality with reduced wear and tear to equipment and in particular the cutting head and focusing tube. The reduced wear and tear on components using **GMA Garnet** alluvial grains result in direct cost savings and longer service life.

High quality alluvial garnet does not contain any fracture lines that weaken the grain inherent with crushed garnet.

GMA Garnet Optimum Setup

GMA Garnet offers a choice of grade to match any focusing tube and orifice for any given cutting application.

GMA Garnet 80 Mesh, the most popular waterjet abrasive grade used worldwide, delivers the optimum balance of cutting speed and precision edge.

For high speed cutting, we recommend **GMA Garnet 50 or 60 Mesh**, which in some cases can deliver up to a 30% increase in cutting speed, but at the expense of a reduced precision edge.

Where a high precision and minimum tolerance edge is required, we recommend **GMA Garnet 100 or 120 Mesh**.

Please refer to the table at the right for the correct combinations of **GMA Garnet** grades, focusing tube and orifice dimensions to suit your particular waterjet cutting requirements.



	GMA Garnet Grade	Focusing Tube	Orifice
Industry Standard Configuration	80 mesh	0.4"	0.013-0.014"
	300-150 micron	1.02mm	0.330-0.356mm
High Speed Cutting	60 mesh	0.5"	0.014-0.018"
	400-200 micron	1.27mm	0.356-0.457mm
	50 mesh 600-200 micron		
High Precision Edge	80 mesh	0.36"	0.012-0.013"
	300-150 micron	0.91mm	0.305-0.330mm
	120 mesh 200-100 micron		
Super Fine Precision Edge	120 mesh	0.3"	0.010-0.011"
	200-100 micron	0.76mm	0.254-0.279mm



Product Data Sheet

Waterjet Grade Product Range

typical weight % retained

	50 Mesh (600-200)	60 Mesh (400-200)	80 Mesh (300-150)	120 Mesh (200-100)
US Mesh microns				
35	500	2	-	-
40	425	14	0.2	-
45	355	45	10	-
50	300	85	45	20
60	250	96	78	50
70	212	95	96	85
80	180	99.9	99	95
90	150	-	99.8	99
115	125	-	-	99
150	106	-	-	99.9

Packaging:

- 80 x 25kg multilayer paper bags shrinkwrapped to 2 MT pallets, or
- 80 x 25kg multilayer paper bags packed into 2 MT bulk bags, or
- 2 MT top and bottom spouted bulk bags with internal PVC liner

Mineral Composition (Typical)

Garnet (Almandite).....	97-98 %
Ilmenite.....	1-2 %
Zircon.....	0.20 %
Quartz (free silica).....	<0.5 %
Others.....	0.25 %

Physical Characteristics (typical)

Bulk Density.....	2.3 T/m ³
Specific Gravity.....	4.1
Hardness (Moh).....	7.50 – 8.0
Melting Point.....	1250 °C
Shape of natural grains.....	sub-angular

Average Chemical Composition (Typical)

SiO ₂ *	36 %
Al ₂ O ₃	20 %
FeO	30%
Fe ₂ O ₃	2 %
TiO ₂	1 %
MnO	1 %
CaO	2 %
MgO	6 %

* refers to SiO₂ bound within the lattice of the homogenous garnet crystal (no free silica)

Other Characteristics (Typical)

Conductivity.....	10-15ms/m (max 25ms/m)
Radioactivity.....	Not detectable above background
Moisture Absorption.....	Non-hygroscopic, inert
Total Chlorides.....	10-15ppm (max 25ppm)
Ferrite (free iron).....	< 0.01 %*
Lead.....	< 0.002 %*
Copper.....	< 0.005 %*
Other Heavy Metals.....	< 0.01 %*
Sulphur.....	< 0.01 %*

* Generally below detectable levels.

