

GARNET

Company:

A.G.P. SAS
 20, avenue Reille
 75014 PARIS
 Tel. +33 (0) 1 45 89 84 44
 Fax +33 (0) 1 45 89 66 54
 E-mail: contact@agp-abrasifs.com

1 – Identification of the substance

1.1 Product identifier

Product Name: GARNET
Synonym: Almandine and Pyrope Garnet
Product Code: -

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified use(s): Industrial abrasives

2 – Hazards Identification

EU/EEC

According to Regulation (EC) n° 1272/2008 (CLP)/REACH 1907/2006 [amended by 2015/830]

2.1 Classification of the substance or mixture

CLP Not classified

2.2 Label Elements

CLP

Hazard statements No label element(s) required

2.3 Other Hazards

CLP According to Regulation (EC) n° 1272/2008 (CLP) this material is not considered hazardous

3 – Composition/information on Ingredients

3.1 Substances

Material does not meet the criteria of a substance in accordance with Regulation (EC) No 1272/2008.

3.2 Mixtures

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Almandine-Ferric Aluminium	CAS:1302-62-1	94% to 99.6%	NDA	EU CLP: Not classified	NDA
Quartz	CAS:14808-60-7 EC Number:238-878-4	< 0.5%	NDA	EU CLP: Self Classified: STOT RE 1, H372	NDA

Iron	CAS:7439-89-6 EC Number:231-096-4	0.01% to 0.2%	Ingestion/Oral- Rat LD50 • 750 mg/kg	EU CLP: Self Classified: STOT SE 3: Resp. Irrit., H335; STOT RE 2 (Lungs, Liver), H373; Acute Tox. 4 (oral), H302	NDA
Hornblende	CAS:12178-42-6	0.01% to 0.2%	NDA	EU CLP: Not Classified	NDA
Feldspars	CAS:68476-25-5 EC Number:270-666-7	0.01% to 0.2%	NDA	EU CLP: Not Classified	NDA

4 – First Aid Measures

4.1 Description of first aid measures

- Inhalation** Move victim to fresh. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing.
- Skin** In case of contact with substance, immediately flush skin with running water for at least 20 minutes.
Wash skin with soap and water.
- Eye** In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.
- Ingestion** Rinse mouth. Get medical attention if symptoms occur.

4.2 Most important symptoms and effects, both acute and delayed

Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician:

All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

5 – Fire Fighting Measures

5.1 Extinguishing media

- Suitable Extinguishing Media** In case of fire use media as appropriate for surrounding fire.
- Unsuitable Extinguishing Media** No data available.

5.2 Special hazards arising from the substance or mixture

- Unusual Fire and Explosion Hazards** None
- Hazardous Combustion Products** No data available.

5.3 Advice for firefighters

Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

6 – Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions Do not walk through spilled material. Wear appropriate Personal Protective Equipment (PPE)

Emergency Procedures As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.

6.2 Environmental precautions

Avoid run off to waterways and sewers.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Avoid generating dust.

Measures Sweep or vacuum up material for disposal or recovery.

6.4 Reference to other sections

Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

7- Handling and Storage

7.1 Precautions for safe handling

Handling No special precautions necessary for normal handling of the material. Use only with adequate ventilation.

Do not breathe dust.

Wear appropriate personal protective equipment, avoid direct contact.

7.2 Conditions for safe storage, including any incompatibilities

Storage No special precautions necessary for normal storage of the material.

Keep container/package tightly closed and in a well-ventilated place. Store locked up.

7.3 Specific end use(s)

Refer to Section 1.2 - Relevant identified uses.

8 – Exposure Controls / Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines		
	Result	ACGIH
Quartz (14808-60-7)	TWAs	0.025 mg/m ³ TWA (respirable fraction)

8.2 Exposure controls

Engineering

Measures/controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective

Equipment Respiratory

For limited exposure use an N95 dust mask. For prolonged exposure use an air-purifying respirator with high efficiency particulate air (HEPA) filters. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face

Wear safety glasses.

Skin/Body

Wear protective clothing and gloves.

Environmental Exposure Controls

Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

LLV = Limit Level Values is the exposure limit for 8-ur work day

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

MAC = Maximum Allowable Concentration

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

PEL = Permissible Exposure Level determined by the Occupational Safety and Health Administration (OSHA)

STEL = Short term Exposure Limits are based on 15 minute exposures

STEV = Short Term Exposure Value

TLV = Threshold Limit Value determined by American Conference of Governmental Industrial Hygiene (ACGIH)

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

9 – Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Solid	Appearance/Description	Reddish brown to pink grains with no odor.
Color	Reddish brown to pink.	Odor	Odorless
Particulate Size	Varies upon customer demand	Odor Threshold	Data lacking
General Properties			
Boiling Point	Data lacking	Melting Point	1315 °C (2399 °F)
Decomposition Temperature	> 750 C(> 1382 F)	pH	Not relevant
Specific Gravity/Relative Density	4.1 Water=1	Bulk Density	2.4 g/cm ³
Water Solubility	Insoluble	Viscosity	Data lacking
Explosive Properties	Non-explosive	Oxidizing Properties:	Data lacking
Volatility			
Vapor Pressure	Not relevant	Vapor Density	Not relevant
Evaporation Rate	Not relevant	VOC (Wt.)	Not relevant
Flammability			
Flash Point	Not relevant	UEL	Not relevant
LEL	Not relevant	Autoignition	Data lacking
Flammability (solid, gas)	Non-flammable		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

No additional physical and chemical parameters noted.

10 – Stability and Reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable

10.3 Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4 Conditions to avoid

No data available.

10.5 Incompatible materials

None known.

10.6 Hazardous decomposition products

None known.

11 – Toxicological Information

11.1 Information on toxicological effects

Components		
Iron (0.01% TO 0.2%)	7439- 89-6	Acute Toxicity: Ingestion/Oral-Rat LD50 • 750 mg/kg; Blood: Changes in serum composition (e.g., TP, bilirubin cholesterol); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: Transaminases
Quartz (< 0.5%)	14808- 60-7	Acute Toxicity: Inhalation-Human TClO • 16 mppcf 8 Hour(s) 17.9 Year(s)-Intermittent; <i>Lungs, Thorax, or Respiration: Fibrosis, focal (pneumoconiosis); Lungs, Thorax, or Respiration: Cough; Lungs, Thorax, or Respiration: Dyspnea;</i> Inhalation-Rat TClO • 200 mg/kg; <i>Lungs, Thorax, or Respiration: Fibrosis, focal (pneumoconiosis); Lungs, Thorax, or Respiration: Other changes; Nutritional and Gross Metabolic: Changes in Chemistry or Temperature: Fe;</i> Multi-dose Toxicity: Inhalation-Hamster TClO • 3 mg/m ³ 6 Hour(s) 78 Week(s)-Intermittent; <i>Lungs, Thorax, or Respiration: Fibrosis (interstitial); Lungs, Thorax, or Respiration: Changes in lung weight;</i> Inhalation-Rat TClO • 6.2 mg/m ³ 6 Hour(s) 6 Week(s)-Intermittent; <i>Lungs, Thorax, or Respiration: Other changes; Blood: Changes in spleen; Immunological Including Allergic: Increase in cellular immune response;</i> Inhalation-Rat TClO • 80 mg/m ³ 26 Week(s)- Intermittent; <i>Lungs, Thorax, or Respiration: Fibrosis, focal (pneumoconiosis); Blood: Changes in spleen; Immunological Including Allergic: Decrease in cellular immune response;</i> Tumorigen / Carcinogen: Inhalation-Rat TClO • 50 mg/m ³ 6 Hour(s) 71 Week(s)-Intermittent; <i>Tumorigenic: Carcinogenic by RTECS criteria; Liver: Tumors</i>

GHS Properties	Classification
Acute toxicity	EU/CLP: Data lacking
Skin corrosion/Irritation	EU/CLP: Data lacking
Serious eye damage/Irritation	EU/CLP: Data lacking
Skin sensitization	EU/CLP: Data lacking
Respiratory sensitization	EU/CLP: Data lacking
Aspiration Hazard	EU/CLP: Data lacking
Carcinogenicity	EU/CLP: Data lacking
Germ Cell Mutagenicity	EU/CLP: Data lacking
Toxicity for Reproduction	EU/CLP: Data lacking
STOT-RE	EU/CLP: Data lacking
STOT-SE	EU/CLP: Data lacking

Potential Health Effects

Inhalation

Acute (Immediate) Exposure to dust may cause irritation.

Chronic (Delayed) Inhalation of respirable dusts containing crystalline silica may cause lung injury or disease including silicosis and/or cancer.

Skin

Acute (Immediate) May cause abrasions.

Chronic (Delayed) No data available.

Eye

Acute (Immediate) Exposure to dust may cause irritation.

Chronic (Delayed) No data available.

Ingestion

Acute (Immediate) No known effects, however ingestion not recommended.

Chronic (Delayed) No data available.

Carcinogenic Effects May cause cancer. This product contains crystalline silica as cristobalite and/or quartz. IARC Monographs on Evaluation of Carcinogenic Risk of Chemicals to Humans (Monograph 68, 1997) concludes that there is sufficient evidence for the carcinogenicity of crystalline silica to humans (IARC Group I). Crystalline Silica is classified as a Known Carcinogen according to NTP.

Carcinogenic Effects			
	CAS	IARC	NTP
Quartz	14808-60-7	Group 1-Carcinogenic	Known Human Carcinogen

Key to abbreviations

LD = Lethal Dose

TC = Toxic Concentration

12 – Ecological information

12.1 Toxicity

Material data lacking.

12.2 Persistence and degradability

Material data lacking.

12.3 Bioaccumulative potential

Material data lacking.

12.4 Mobility in Soil

Material data lacking.

12.5 Results of PBT and vPvB assessment

No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

No studies have been found.

13 – Disposal Considerations

13.1 Waste treatment methods

Product waste Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

14 – Transport information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	NDA	Not Regulated	NDA	NDA	NDA
TDG	NDA	Not Regulated	NDA	NDA	NDA
IMO/MDG	NDA	Not Regulated	NDA	NDA	NDA
IATA/ICAO	NDA	Not Regulated	NDA	NDA	NDA

14.6 Special precautions for user None specified.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Data lacking.

15 – Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications

Chronic

Inventory		
Component	EU EINECS	EU ELNICS
Almandine-Ferric Aluminum Silicate	No	No
Feldspars	Yes	No
Hornblende	No	No
Iron	Yes	No
Quartz	Yes	No

Europe

Environment

EU - Air Pollution (2001/379/EC) - Heavy Metal Pollutants

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

EU - Substances Depleting the Ozone layer (1005/2009) - Annex I Substances

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

EU - Plant Protection Products (1107/2009/EC) - Active Substances

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Only uses as repellent may be authorized (sand; <=0.1% of particles of crystalline Silica with diameter <50 µm); Conditions of use shall include, where appropriate, risk mitigation measures (sand; <=0.1% of particles of crystalline Silica with diameter <50 µm)
•Hornblende	12178-42-6	Not Listed

EU - Industrial Emissions (2010/75/EU) - Integrated Pollution Prevention and Control Directive - List of Polluting Substances

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

EU - Seveso III Directive (2012/18/EU) - Qualifying Quantities of Dangerous Substances - Lower-Tier Requirements

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

EU - Seveso III Directive (2012/18/EU) - Qualifying Quantities of Dangerous Substances - Higher-Tier Requirements

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

Other

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification

•Iron	7439-89-6	Not Listed
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•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits		
•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling		
•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations		
•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed
EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases		
•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed
EU - Endocrine Disrupters (COM (2001)262) - List of Evaluated Substances and their Exposure Concern		
•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed
EU - Export and Import Restrictions (649/2012) - Chemicals and Articles Subject to Export Ban		
•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed
EU - Export and Import Restrictions (649/2012) - Chemicals Qualifying for PIC Notification		
•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed
EU - Export and Import Restrictions (649/2012) - Chemicals Subject to the PIC Procedure under the Rotterdam Convention		
•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed
EU - Export and Import Restrictions (649/2012) - Chemicals Subject to Export Notification Procedure		
•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed
EU - Food Additives (1333/2008/EC) - Annex III - Carriers in Food Additives		
•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed
EU - Hazardous Substances Restricted or Prohibited in Electrical Equipment (2011/65/EU) (RoHS)		
•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

EU - Inventory of Cosmetic Ingredients Directive (INCI) (76/768/EEC) - Other Ingredients

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

EU - Inventory of Cosmetic Ingredients Directive (INCI) (76/768/EEC) - Perfume and Aromatic Materials

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

EU - Narcotics (273/2004) - Drug Precursors - Annex I - Scheduled Substances

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

EU - Narcotics (273/2004) - Drug Precursors - Annex II - Threshold Quantities

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

EU - No-Longer Polymers List (67/548/EEC)

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

EU - Water Framework Directive (2000/60/EC) - List of Priority Substances - Annex X

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

EU - REACH (1907/2006) - Article 59(1) - Candidate List of Substances for Eventual Inclusion in Annex XIV

•Iron	7439-89-6	Not Listed
•Feldspars	68476-25-5	Not Listed
•Almandite-Ferric Aluminum Silicate	1302-62-1	Not Listed
•Quartz	14808-60-7	Not Listed
•Hornblende	12178-42-6	Not Listed

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out

16 – Other Information**Relevant Phrases (code & full text)**

H335 - May cause respiratory irritation
H302 - Harmful if swallowed
H372 - Causes damage to organs through prolonged or repeated exposure.
H373 - May cause damage to organs through prolonged or repeated exposure.
R22 - Harmful if swallowed.
R37 - Irritating to respiratory system.
R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.

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Key to abbreviations

NDA = No Data Available