WesBond Corporation
Safety Data Sheet

Wesrock RFC #17

Revision Date: 06/30/2017	Supersedes: 08/12/2014	First Issued: 01/01/1999

Section 1. Product and Company Identification

1.1 Product Identifier	
Trade Name	**Wesrock RFC #17**
Product Description and Use	Alumina Bonded Alumina and Zircon Grains
1.2 Relevant identified uses of the substance and restrictions on use	
Use of the substance	Refractory Compound
1.3 Details of the supplier of the safety data sheet	
Company	Wesbond Corporation 1135 East 7th St Wilmington, DE 19801
Telephone	302-655-7917
Fax	302-656-7885
E-mail address	sales@wesbond.com
Web site	www.wesbond.com
Contact	Wes M Jones
Approved by	Wes M Jones
1.4 Emergency telephone number	
US – CHEMTREC (24 hrs)	800-424-9300
CANADA – CANUTEC (24 hrs)	613-996-6666
MSDS and Product Information (0800 – 1630 EST)	302-655-7917

Section 2. Hazard Identification	
2.1 Classification of the substance	
	Carcinogen : Category 1A STOT Chronic : (respiratory) Category 2 Eye Irritation : Category 2B Skin Irritation : Category 2
2.2 Label elements	
Signal Word	**Danger**
Pictogram	
Hazard statements	
H313	May be harmful in contact with skin
H320	Causes eye irritation
H350	May cause cancer by inhalation.
H371	May cause damage to lungs through prolonged or repeated inhalation.
Precautionary Statements	
P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.
P103	Read label before use.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P501	Dispose of contents /container in accordance with local/regional/national/international regulations.
2.3 Other hazards	
Hazards not otherwise classified:	The zircon fraction of this product contains trace amounts of the Naturally Occurring Radioactive Materials (NORMs) uranium at 0.003% and thorium at 0.008%. Chronic inhalation exposure to uranium and thorium may cause lung cancer.

Section 3. Composition / Information on Ingredients

3.1 Substance

Not applicable, this product is a mixture

3.2 For Mixtures

Component	CAS Number	Concentration (wt %)
Aluminum Oxide	1344-28--1	30 – 50%
Proprietary Metal Salt	n/a	< 5%
Aluminum Oxide Hydroxide	24623-77-6	< 3%
Proprietary Mineral Acid	n/a	< 1%
Zirconium Silicate	14940-28-1	40 – 60%
Aluminum Silicate (Kyanite)	1302-76-7	0.5 – 1 %
Titanium Dioxide	13463-67-7	Trace (<0.15%)
Crystalline Silica (Quartz)	14808-60-7	Trace (<0.15%)
Natural uranium (NORMs)	7440-61-1	Trace (0.0014- 0.015%)
Natural thorium (NORMs)	7440-29-1	Trace (0.0043-0.0083%)

The specific chemical identity and/or exact percentage (concentration) has been withheld as a trade secret.

Section 4. First Aid Measures

4.1 Description of first aid measures

General Advice	• Show this safety datasheet to the doctor in attendance. • First responder needs to protect herself..
INHALATION	• This product is not considered an inhalation hazard. However, if the product dries, it may form a dust which when breathed may irritate upper respiratory tract upon repeated or prolonged contact. When dried, this material is a nuisance dust and as such, does not produce significant organic disease or toxic effect with reasonable exposures.
SKIN	• Wash with water, use skin cream if necessary. • Remove all contaminated clothing, and launder before reuse. • Repeated or prolonged contact can cause redness, irritation, and scaling of the skin (dermatitis). Normal care and personal hygiene should prevent skin effects.
EYES	• Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. • Seek medical advice.
INGESTION	• Immediately rinse mouth with water. Finally drink water. • If necessary seek medical attention. • No hazard under normal circumstances. Ingestion of large quantities may lead to discomfort, nausea, and vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Medical Conditions Possibly Aggravated By Exposure	• Skin contact may aggravate existing skin disease.

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. • Treat symptomatically. No specific antidote available.

Section 5. Fire Fighting Measures

5.1 Extinguishing Media	
Suitable extinguishing media	Any. Use media appropriate for surrounding fire.
Unsuitable extinguishing media	None.
5.2 Special hazards arising from the substance or mixture	
Specific hazards during firefighting/ Specific hazards arising from the chemical	Product will not burn, not explosive.
5.3 Advice for firefighters	
Special protective equipment for firefighters	Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing.
Further information	None.

Section 6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures	
Personal precautions, protective equipment and emergency procedures	• Wear appropriate protective gear for the situation. • For further information see Personal Protection information in Section 8.
6.2 Environmental precautions	
Environmental and Regulatory Reporting	• Do not flush to drain. • Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.
6.3 Methods and materials for containment and cleaning up	
Recovery	• Stop leak if safe to do so. • Contain spillage, soak up with non-combustible absorbent material (e.g., sand, earth, vermiculite) and transfer to a container for disposal according to local/national regulations (see section 13). • Shovel or sweep up. Never return spills to original containers for re-use. • Keep in properly labeled containers. Keep in suitable closed containers for disposal.
Decontamination/cleaning	• Wash non-recoverable remainder with large amounts of water. • Clean contaminated surface thoroughly.

	• Recover the cleaning water for subsequent disposal. • Decontaminate tools, equipment and personal protective equipment in a segregated area.
Disposal	• Dispose of in accordance with local regulations.
Additional advice	• Material can create slippery conditions. • For personal protection see section 8
6.4 References to other sections	
	7. Handling and Storage 8. Exposure Controls/Personal Protection 13. Disposal Considerations.

Section 7. Handling and Storage

7.1 Precautions for safe handling

Technical measures	• Provide adequate ventilation.
Advice on safe handling and usage	• Handle in accordance with good industrial hygiene and safety practice. • Avoid breathing vapors and mists. • Avoid direct or prolonged contact with skin and eyes. • In cold weather, this product may freeze. This could damage the product. If freezing occurs, thaw, remix and test before using. Mix thoroughly to assure homogeneity.
Hygiene measures	Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) Do not store, use and /or consume food, beverages, tobacco products, or cosmetics in areas where this material is stored. 2) Wash hand and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet. 3) Wash exposed skin promptly to remove accidental splashes or contact with material.

7.2 Conditions for safe storage, including any incompatibilities

Requirement for storage areas and containers	Store in tightly closed containers. Store in an area that is dry, well-ventilated, away from compatible materials (see Section 10. Stability and Reactivity).
Minimum/Maximum Storage Temperatures	Ambient. Protect from freezing and temperatures above 150°F / 66°C.
Usual Shipping Containers	Plastic bottles.
Advice on common storage	No special restrictions on storage with other products
Storage and Handling Materials	Plastic or stainless steel. Do not store in light metal containers (aluminum).

Section 8. Exposure Controls/Personal Protection

Introductory Remarks	These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. While developing safe handling procedures, do not overlook the need to clean equipment and piping systems for maintenance and repairs. Waste resulting from these procedures should be handled in accordance with Section 13: Disposal Considerations. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

8.1 Control Parameters

Component	Percent	Exposure Limits, mg/m^3		
		OSHA PEL	ACGIH TLV	NIOSH REL
Aluminum Oxide 1344-28-1	30 - 50	15 mg/m^3, total dust 5 mg/m^3, respirable dust	10 mg/m^3	no information
Proprietary Metal Salt	< 5	2 mg/m^3 as metal	2 mg/m^3 as metal	no information
Aluminum Oxide Hydroxide 24623-77-6	< 3	15 mg/m^3, total dust 5 mg/m^3, respirable dust	10 mg/m^3	no information
Proprietary Mineral Acid	< 1	2 mg/m^3	2 ppm	no information
Zirconium Silicate 14940-28-1	40- 60	5 mg/m^3 (as ZR), TWA	5 mg/m^3 (as ZR), TWA	5 mg/m^3 (as ZR), TWA
Aluminum Silicate 1302-76-7	0.5 – 1.0	15 mg/m^3 (50 MMPCF)(Total Dust); 5 mg/m^3 (15 MMPCF) (Respirable Fraction), TWA	1 mg/m^3 (Respirable Fraction)	Not established
Titanium Dioxide 13463-67-7	Trace (<0.15)	15 mg/m^3 (50 MMPCF)(Total Dust)	10 mg/m^3 (Total Dust) TWA	2.4 mg/m^3 (Respirable) TWA
U – natural 7440-61-1	Trace (0.0014 – 0.015)	0.25 mg/m^3 insoluble as U, TWA	0.2 mg/m^3 as insoluble U, TWA	0.2 mg/m^3 as insoluble U, TWA
Th – natural 7440-29-1	Trace (0.0043 – 0.0083)	Not established	Not established	Not established
Crystalline Silica (Quartz) 14808-60-7	Trace (<0.15)	10/(%SiO2)+2 mg/m^3 (Respirable fraction)	0.025 mg/m^3 (Respirable fraction)	0.025 mg/m^3 (Respirable fraction)

		250/(%SiO2)+2 MMPCF (Respirable fraction) 30/(%SiO2)+2 mg/m^3 (Total dust)		

NOTES:
OSHA Permissible Exposure Limits (PEL) and ACGIH Threshold Limit Values (TLVs) are an 8-hour time-weighted average (TWA) concentration during a 40-hour work week. NIOSH Recommended Exposure Limit (REL) is a time-weighted average concentration for up to a 10-hour workday during a 40-hour work week.
MMPCF = Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.
(%SiO2) = The percentage of crystalline silica determined from airborne samples, except in those instances in which other methods have been shown to be applicable. Both concentration and percent quartz determined from fraction passing size-selector impactor having characteristics set forth in 29 C.F.R. 1910.1000 Table Z-3 footnote (e).

8.2 Exposure controls	
Engineering Controls	
	Where engineering controls are indicated by use conditions or a potential for excessive exposure exists, the following traditional exposure control techniques may be used to effectively minimize employee exposures: No specific measures required.
8.3 Personal Protective Equipment	
Eyes	• Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Appropriate ANSI Z87 approved equipment should be selected for the particular use intended for this material. • Eye contact should be prevented through use of chemical safety glasses with side shields or splash proof goggles. An emergency eye wash must be readily accessible to the work area.
Hand protection	• Recommended preventive skin protection: Gloves. • Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts and abrasion, and the contact time.
Skin	• Impervious clothing. • Footwear protecting against chemicals.
Respiratory Protection	• When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations. • For reasonably foreseeable industrial end uses of this material, respiratory protection should not be necessary.
Personal Hygiene	Personal hygiene is an important work practice exposure control measure and the

	following general measures should be taken when working with or handling this material: (1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored. (2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet. (3) Wash exposed skin promptly to remove accidental splashes or contact with this material.
Protective measures	• The protective equipment must be selected in accordance with current local standards and in cooperation with supplier of the protective equipment. • Ensure that eyewash stations and safety showers are close to the workstation location. • Emergency equipment immediately accessible, with instructions for use. • Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the potential hazards and/or risks that may occur during use.
General Hygiene	Equipment in contact with material should be rinsed with water prior to repair and maintenance.

Section 9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance:	White Dense Powder
Odor:	Odorless.
Odor threshold:	Not Available
pH	4 - 5
1927°C / 3500°F	1927°C / 3500°F
Initial boiling point and boiling range	n/a
Flash point:	n/a
Evaporation Rate	no data available
Flammability (solid/gas)	Nonflammable.
Upper/lower flammability or explosive limits	Nonflammable.
Vapor pressure	n/a
Vapor density	no data available
Relative density	2.5 to 2.7 at 25 °C (77 °F)
Solubilities	Water: Dispersable.
Partition Coefficient: n-octanol/water	no data available
Auto-ignition temperature	no data available
Decomposition Temperature	no data available
Viscosity, Dynamic	no data available
Viscosity, Kinematic	no data available

Explosive Properties	no data available
Oxidizing Properties	Not classified as oxidizing.
9.2 Other Information	
This safety datasheet contains only information relating to safety and does not replace any product information or product specification.	

Section 10. Stability and Reactivity	
10.1 Reactivity	No data available
10.2 Chemical Stability	This material is stable under normal handling and storage conditions described in Section 7.
10.3 Possibility Of Hazardous Reactions	No dangerous reaction known under conditions of normal use.
10.4 Conditions To Avoid	
Conditions to avoid	Freezing and temperatures above 150°F / 66°C.
10.5 Incompatible Materials	
Materials to avoid	None.
10.6 Hazardous Decomposition Products	
Hazardous decomposition products	None.
Thermal decomposition	Will not occur.

Section 11. Toxicological Information	
11.1 Likely routes of exposure	
Inhalation	Likely mode of exposure.
Skin	Likely mode of exposure.
Eyes	Likely mode of exposure.
Ingestion	Ingestion not likely.
11.2 Symptoms related to the physical, chemical and toxicological characteristics	
Inhalation	INHALATION EXPOSURE to respirable crystalline silica (quartz) may result in silicosis, a serious adverse health effect. Silicosis is a lung disease (pneumoconiosis) that can occur after chronic exposure to airborne respirable crystalline silica (quartz). Silicosis may be progressive and cause lung lesions, changes in lung function, including wheezing, shortness of breath, cough and sputum production that may be disabling. Advanced silicosis may be fatal. The International Agency for Research on Cancer (IARC) concluded that

	crystalline silica inhaled in the form of quartz from occupational sources is carcinogenic to humans (Group 1). See: IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Vo. 68, "Silica, Some Silicates…" (1997). The National Toxicology Program (NTP) in its Ninth Annual Report on Carcinogens, classified respirable crystalline silica as a known human carcinogen. There is evidence that exposure to respirable crystalline silica is associated with autoimmune diseases; increased risk of tuberculosis and kidney disease. INHALATION EXPOSURE to zircon (zirconium silicate): Pulmonary granuloma in zirconium workers has been reported. INHALATION EXPOSURE to aluminum silicate and aluminum oxide (non-fibrous): Inhalation exposure to respirable dust particles not otherwise regulated (PNOR) can result in pneumoconiosis. INHALATION EXPOSURE to NORMs may cause cancer. INGESTION EXPOSURE: No adverse effects expected for incidental ingestion of this product. INHALATION EXPOSURE to titanium dioxide in the form of unbound particles of respirable size has been listed as known to the State of California to cause cancer based on IARC classification 2B "possible human carcinogen." NIOSH determined ultrafine particulate 0.1µm to be a potential occupational carcinogen but found insufficient data to classify respirable size titanium dioxide particulate. ACGIH classifies titanium dioxide as A4 not classifiable as a human carcinogen.
Skin	Irritant. Can cause redness, irritation, inflammation, on prolonged contact.
Eyes	Irritant. Can cause redness, irritation..
Ingestion	None.
11.3 Immediate, delayed and chronic effects from short- and long-term exposure	
Chronic effects	This product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as probable or suspected human carcinogens.
11.4 Numerical measures of toxicity	
Acute Oral Toxicity	Crystalline Silica (Quartz): Oral approximate lethal dose (ALD): >11,000 mg/kg, rat. Crystalline Silica (Quartz): Aquatic toxicity (LC50) carp >10,000mg/L/72 hr. Aluminum silicate: Oral toxicity (LD50): 16000 mg/kg,rat. Aluminum oxide: Oral toxicity (LD50): > 2000 mg/kg (rat); no deaths reported following an acute 4-hour exposure to up to 1,000 mg Al/m3 as aluminum oxide in groups of 12–18 male Fischer 344 rats (Thomson et al. 1986). Zircon: Oral toxicity (LD50): > 200 mg/kg, mice. Titanium dioxide : Oral toxicity (LD50): > 10000 mg/kg, rat
Acute Inhalation Toxicity	No data available
Acute Dermal Toxicity	Not classified as harmful by contact with skin.
Acute Respiratory Irritation	No test data found for product

Acute Skin Irritation	No data available.
Acute Eye Irritation	No data available.
11.5 Carcinogenicity	
	This product does not contain any ingredient designated as probable or suspected human carcinogens by: NTP, IARC, OSHA, ACGIH

Section 12. Ecological Information

12.1 Ecotoxicity	
Aquatic Compartment	No data available.
Ecotoxicity assessment	No data available
12.2 Persistence and degradability	
Biodegradability	Not relevant, inorganic product.
12.3 Bioaccumulative potential	
Partition coefficient: n-octanol/water	No data available.
12.4 Mobility in soil	
Known distribution to environmental compartments	• Ultimate destination of the material: water. • Ultimate destination of the material: sediment
12.5 Results of PBT and vPvB assessment	
Results of PBT and vPvB assessment	No data available.
12.6 Other Adverse Effects	No data available

Section 13. Disposal Considerations

13.1 Waste Disposal Method	
Advice on disposal	Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material.
Waste Code	EPA: hazardous waste: NO
13.2 Contaminated packaging	
Advice	• Any containers or equipment used should be decontaminated immediately after use. • Empty container should be taken to an approved waste handling site for recycling or disposal.

Section 14. Transport Information

14.1 UN number	Not applicable
14.2 Proper shipping name	Not regulated
14.3 Transport hazard class	Not classified as dangerous for transport.
14.4 Packing group	Not applicable
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	Not applicable

Section 15. Regulatory Information

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

	Federal					State (Right to Know)			
Component	RCRA	CERCLA RQ?	SARA 313	SARA EHS	TSCA Listed	PA	NJ	MA	CA
Aluminum Oxide 1344-28-1	NO	NO	NO	NO	YES	YES	YES	YES	NO
Proprietary Metal Salt	NO	NO	NO	NO	YES	NO	NO	NO	NO
Aluminum Oxide Hydroxide 24623-77-6	NO	NO	NO	NO	YES				NO
Proprietary Mineral Acid	NO	NO		YES	YES				NO
Zirconium Silicate 14940-28-1	NO	NO	NO	NO	YES	NO	NO	NO	NO
Aluminum Silicate 1302-76-7	NO	NO	NO	NO	YES	YES	NO	NO	NO
Titanium Dioxide 13463-67-7	NO	NO	NO	NO	YES	YES	YES	YES	NO
U – natural 7440-61-1	NO	YES*	NO	NO	YES	YES	YES	YES	YES
Th – natural 7440-29-1	NO	YES*	NO	NO	YES	YES	YES	YES	YES
Crystalline Silica (Quartz) 14808-60-7	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: (*) CERCLA Reportable Quantity (RQ) for radionuclides at 40 C.F.R. 302.4 Appendix B lists RQ for

U (natural) at 1 E11 pCi (3.7E9 Bq) and Th (natural) at 1E10 pCi (3.7E7 Bq). RQ reporting for these constituents would be triggered by the "release" of 18,000 pounds of zircon in a 24-hour period.

Section 16. Other Information

HMIS – National Paint & Coating Hazardous Materials Identification System	
1	Health Hazard Rating - slight
0	Flammability Rating – Minimal
0	Reactivity Rating - Minimal
B	Personal Protection – Safety Glasses, Gloves
NFPA – National Fire Protection Association Hazard Ratings	
1	Health Hazard Rating - Slight
0	Flammability Rating – Minimal
0	Instability Rating - Minimal

Abbreviations			
ACGIH	American Conference of Governmental Industrial Hygienists	**NIOSH**	National Institute for Occupational Safety and Health
CAS	Chemical Abstract Service	**OSHA**	Occupational Safety and Health Administration
HMIS	National Paint & Coating Hazardous Materials Identification System	**SARA**	Superfund Amendment and Reauthorization Act
IARC	International Agency for Research on Cancer	**PEL**	Permissible Exposure Limit
N/A	Not Applicable	**TLV**	Threshold Limit Value
NFPA	National Fire Protection Association Hazard Ratings	**TWA**	Time Weighted Average

The information on this safety data sheet is believed to be accurate and it is the best information available to WesBond Corporation. This document is intended only as a guide to the appropriate precautions for handling a chemical by a person trained in chemical handling. WesBond Corporation makes no warranty of merchantability or any other warranty, express or implied with respect to such information of the product to which it relates, and we assume no liability resulting from the use or handling of the product to which this safety data sheet relates. Users and handlers of this product should make their own investigations to determine the suitability of the information provided herein for their own purposes.