What are Ochre and Umber?

100% Natural Iron Oxide Pigments

"The most economical pigments in the industry."

Ochre (pronounced o'-ker) is a natural, mineral, earth pigment. Chemically, it is a hydrated ferric oxide, chemical formulation: FeO(OH). Ochre is inorganic, chemically inert, non-reactive with cement, mortar or brick, and non-toxic.

New Riverside produces two grades of Ochre pigments that are called 548 Ochre and NIROX 412. 548 Ochre is slightly darker. NIROX 412 is more yellow and has a greater tint strength.

Ochre is mined and processed in Cartersville, GA at the only year-round

Ochre mining and processing operation in the United States.

How is Ochre used? Ochre can be used alone as a single pigment to achieve a range of colors from light buff to dark buff simply by varying the addition rate. As a way to achieve a broader range of colors with a higher yellow or red shade, Ochre may also be blended with synthetic pigments and used as a cost effective base.

548 Ochre

548 Ochre is a brown-yellow, refined natural iron oxide pigment (Fe_2O_3) with an average particle size of ~3 microns. It is the most economical buff color in the pigment industry. Broad application use for all cement applications.

Umber is a controlled product from a manganese enriched form of goethite, a naturally occurring inorganic iron oxide. It is a brown earth pigment that is darker than the Ochre because of its manganese and iron oxide content. It is highly valued as a permanent pigment either in the raw or burnt state. Umber is lightfast, insoluble in water, resistant to alkalis and weak acids and non-reactive with cement, solvents, oils, and most resins.

How is Umber used? Raw Umber can be used to achieve a range of brown colors simply by varying the addition rate. Burnt Umber may be used as the base for producing more reddish brown shades.

Umber RM

Umber RM is a controlled brown, raw umber pigment with an average particle size of ~3 microns. It's cost effective pricing make it suitable for a broad range of applications. It is also available as Umber RM XF, which is an extra fine powder that is ideal for the coatings industry and capable of meeting a 7 on the Hegman scale.

Redwood

Redwood (Burnt Umber) is a milled, calcined umber with good heat stability and suitable for all concrete applications. Also available as Redwood XF, which is an extra fine powder that is ideal for the coatings industry and capable of meeting a 7 on the Hegman scale.

Advantages of Ochre and Umber:

Economical, Permanent, Color Consistent...

Cost Performance: Economy and versatility are the primary reasons why ochre and umber pigments have enjoyed over 110 years of success in the pigment industry.

Economical: Ochre and Umber are the most economical buff colorants available today. Ochre based blends repeatedly outperform synthetic iron oxide colors where earth tone shades are desired. On jobs ranging from a residential driveway to a 100,000-plus cubic yard drainage canal, ochre has been chosen because of its economy and performance quality.

Permanence: Because Ochre and Umber are iron oxides, their color is permanent. They will not fade or wash out. The cave paintings by prehistoric man, as well as the earth pigments used extensively in Renaissance art, attest vividly to the beauty and permanence of natural iron oxide pigments.

Ease of Use: As natural pigments, Ochre and Umber blend easily and uniformly in all applications.

Custom Colors containing Ochre and Umber as a base can be formulated to create a new "natural" range of color.

SAFETY DATA SHEET

PRODUCT NAME: Umber

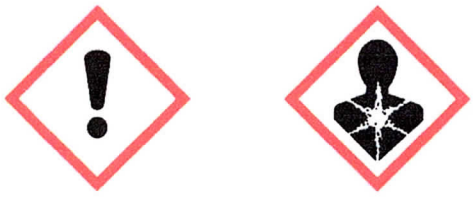
1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier:	Umber
CAS Number:	12713-03-0
General Use:	Pigmenting Agent
Product Description:	Umber, Burnt Umber, NRO Brown, Redwood, Redwood XF, Burnt Umber NRO Umber, Burnt Umber 3M, Burnt Umber CM, Umber RM, Umber BK, Walnut
MANUFACTURER:	NEW RIVERSIDE OCHRE COMPANY, INC. P.O. Box 460 Cartersville, Georgia 30120
Contact:	Customer Service
Telephone:	(770) 382-4568 or (800) 248-0176

2. HAZARDS IDENTIFICATION

Component	Product Identifier	Physical	Health	Environmental
Quartz (SiO_2)	(CAS No.) 14808-60-7	Not hazardous	Carcinogen Category 1A May cause respiratory irritation May cause silicosis (damage to lungs) with long-term overexposure by inhalation May cause skin irritation Causes eye irritation	Not Hazardous

GHS / Hazcom 2012 Label:



Signal word (GHS-US): Danger

3. COMPOSITION / INFORMATION ON INGREDIENTS

Umber is a naturally occurring hydrated iron oxide pigment. Its chemical components present at levels >1% by weight are:

Component	Typical Weight %	CAS Number	Mineral
Fe(OH)O	62 – 76	20344-49-4	goethite
SiO_2	**15 – 20**	**14808-60-7**	**quartz**
MnO_2	6.0 – 9.0	1313-13-9	pyrolusite

Components present at <1% comprise less than 1% of total weight percentage.

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4. FIRST AID MEASURES

INHALATION: Remove victim from the area where TLV has been exceeded. If victim is not breathing, give artificial respiration. Call a physician. Remediate work area as described in Section 8.

EYE CONTACT: Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT: Wash with soap and water. Get medical attention if irritation develops.

INGESTION: If conscious, give large quantities of water. Get medical attention.

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5. FIREFIGHTING MEASURES

FLASHPOINT: Non-flammable.

EXTINGUISHING MEDIA: As appropriate for surrounding combustibles. Product does not burn or support combustion. Not a fire or explosion hazard.

FIREFIGHTING EQUIPMENT: Respiratory and eye protection required for firefighting personnel in addition to normal individual fire protective equipment.

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6. ACCIDENTAL RELEASE MEASURES

GENERAL: Refer to local, State or Federal regulations for specific disposal information. Pursuant to 40 CFR Part 261 of the Resources Conservation and Recovery Act (RCRA) regulations currently in effect, discarded iron oxide would not be classified as a hazardous waste.

LAND SPILL: Vacuum or scoop up spilled material for recovery or disposal, avoid dusting conditions and use good ventilation. Wetting the spill area with water spray may help to keep airborne dust levels down.

WATER SPILL: Product is inert and stable. Decomposition and polymerization will not occur.

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7. HANDLING AND STORAGE

STORAGE TEMPERATURE: Ambient. STORAGE PRESSURE: Atmospheric.

CONDITIONS FOR STORAGE INCLUDING ANY INCOMPATIBILITIES: Maintain packaging intact until ready for use in a clean storage area. See Sections 8 and 10.

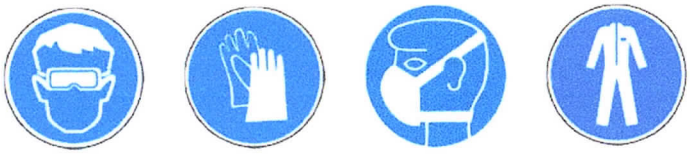
HYGIENE MEASURES: Handle in accordance with good industrial hygiene and safety procedures. Always wash hands immediately after handling this product, and once again before leaving the workplace. Do not eat, drink or smoke in areas where product is used.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Component	**EXPOSURE LIMITS 8 Hrs. TWA**		
	OSHA – PEL RESPIRABLE DUST (TABLE Z-3)	OSHA-PEL TOTAL DUST (TABLE Z-3)	ACGIH-TLV RESPIRABLE DUST (1997)
(Quartz) SiO_2	10 mg/m^3	30 mg/m^3	0.025 mg/m^3

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation or other engineering controls to control airborne levels below recommended exposure limits. Provide mechanical ventilation of confined spaces.

PERSONAL PROTECTION:



EYE PROTECTION: Safety glasses or tight goggles.

SKIN PROTECTION: Rubber, cloth or plastic gloves if appropriate for job conditions. This includes dust proof clothing.

RESPIRATOR: If exposure limits are exceeded, an appropriate NIOSH dust respirator should be used.

9. PHYSICAL AND CHEMICAL PROPERTIES

Specific Gravity (Absolute):	~ 4.0
Average Particle Diameter (Microns):	3
Bulk Density – Loose / Lbs. Cu. Ft.:	42
Odor:	None
Appearance:	Solid Brown Powder

10. STABILITY AND REACTIVITY

REACTIVITY: Hazardous reactions will not occur under normal conditions.

CHEMICAL STABILITY: Stable under normal temperature and pressure.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

CONDITIONS TO AVOID: None known.

INCOMPATIBLE MATERIALS: Quartz (SiO_2) will dissolve in hydrofluoric acid producing a corrosive gas, silicon tetrafluoride and strong oxidizing agents.

HAZARDOUS DECOMPOSITION: None known.

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11. TOXICOLOGICAL INFORMATION

Information on Toxicological Effects

POTENTIAL HEALTH EFFECTS:

INHALATION: Inhalation of the dust may cause mechanical irritation to the respiratory tract. Excessive exposure above the TLV can give mild pulmonary irritation. Long term overexposure to silica causes silicosis. This product is considered a carcinogen by IARC because it contains crystalline silica at levels greater than 0.1%.

EYE CONTACT: Will result in no specific effects other than general particulate irritation in the eye.

SKIN CONTACT: Not absorbed by the body. Skin contact may cause mechanical irritation due to abrasion.

INGESTION: Not absorbed by the body.

CHRONIC: See INHALATION above.

SIGNS AND SYMPTOMS OF EXPOSURE: Exposure to dust may cause mucous membrane and respiratory irritation, cough, sore throat, nasal congestion, sneezing and shortness of breath. However, there may be no immediate signs or symptoms of exposure to hazardous concentrations of respirable crystalline silica (quartz). See **Long-Term Overexposure** below for symptoms of silicosis. The absence of symptoms is not necessarily indicative of safe conditions.

ACUTE TOXICITY VALUES: **Silica**: LD50 oral rat > 22,500 mg/kg
Iron Oxide LD 50 oral rat > 15,000 mg/kg

LONG-TERM OVEREXPOSURE: See Section 2.

CARCINOGENICITY:

Component	Product Identifier	IARC	National Toxicity Program (NTP) Status
Quartz (SiO_2) 20-29%	(CAS No.) 14808-60-7	Group 1	Known Human Carcinogen

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12. ECOLOGICAL INFORMATION

Eco toxicity: No recognized unusual toxicity to plants or animals

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13. DISPOSAL CONSIDERATIONS

See Sections 6 and 15.

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14. TRANSPORT INFORMATION

Not regulated for transportation under: DOT / TDG / ADR / RID / IMDG / ICAO / IATA / EU Regulations. Transport in Bulk According to Annex II of MARPOL 73/78: None

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15. REGULATORY INFORMATION

DISPOSAL: Iron oxides are not hazardous waste per 40 CFR Part 261.24 or Part 261.3. However, the user should consult with the State environmental regulatory agency before disposing of this material.

SPILL REPORTING: Natural iron oxides are not CERCLA hazardous substances per 40 CFR Part 302.4. These are not on the list of hazardous substances under the Clean Water Act (40 CFR Part 116 and Part 117), nor are they included on the list of Extremely Hazardous Substances under SARA, 40 CFR Part 355, Appendix A. Thus, there are no Federal reporting requirements in the event of release of these materials.

SARA REPORTING: Natural iron oxides are not subject to the reporting requirements of Section 304 of SARA, since they are not Extremely Hazardous Substances. NRO's natural iron oxides contain manganese compounds in excess of 1% Mn. under Section 313 of EPCRA, releases of manganese are reportable if the criteria for SIC Code, Number of Employees and Threshold Quantity are met. These products are also regulated as mixtures under the reporting requirements of Sections 311 and 312 of EPCRA due to the presence of silica (quartz). See Section 3 of this MSDS.

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16. OTHER INFORMATION

NFPA Hazard Rating:	Health: 1	Fire: 0	Reactivity: 0
HMIS Hazard Rating:	Health: *	Fire: 0	Physical: 0

*Warning – Long-Term Overexposure – inhalation of dust containing silica (quartz) may cause silicosis. See sections 3, 8 and 11.

Revision Date: April 24, 2019
Supersedes: August 11, 2017

SAFETY DATA SHEET

PRODUCT NAME: Ochre

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier:	Ochre
CAS Number:	1343-81-3
General Use:	Pigmenting Agent
Product Description:	Natural Iron Oxide, 548 Ochre, Sesame 404 Ochre, NIROX™ 412 (Powder and Granules), NIROX™ 512 (Powder and Granules), Curry N500, Curry Yellow
MANUFACTURER:	NEW RIVERSIDE OCHRE COMPANY, INC. P.O. Box 460 Cartersville, Georgia 30120
Contact:	Customer Service
Telephone:	(770) 382-4568 or (800) 248-0176

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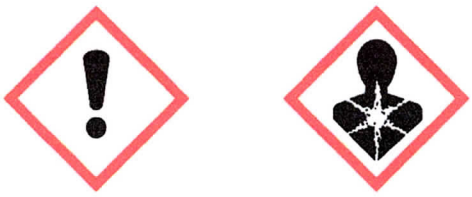
2. HAZARDS IDENTIFICATION

Component	Product Identifier	Physical	Health	Environmental
Quartz (SiO_2)	(CAS No.) 14808-60-7	Not hazardous	Carcinogen Category 1A May cause respiratory irritation May cause silicosis (damage to lungs) with long term overexposure by inhalation May cause skin irritation Causes eye irritation	Not Hazardous

GHS / Hazcom 2012 Label:



Signal word (GHS-US): Danger

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3. COMPOSITION / INFORMATION ON INGREDIENTS

Ochre is a naturally occurring hydrated iron oxide pigment. Its chemical components present at levels >1% by weight are:

Component	Typical Weight %	CAS Number	Mineral
Fe(OH)O	52 – 63	20344-49-4	goethite
SiO_2	20 – 29	14808-60-7	quartz
(K,Na,Ca)(Al,Mg,Fe)2(SiAl)4)10(OH,F)2	12 – 18	12001-26-2	muscovite mica
MnO_2	1.5 – 4.0	1313-13-9	pyrolusite

Components present at <1% comprise less than 1% of total weight percentage.

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4. FIRST AID MEASURES

INHALATION: Remove victim from the area where TLV has been exceeded. If victim is not breathing, give artificial respiration. Call a physician. Remediate work area as described in Section 8.

EYE CONTACT: Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT: Wash with soap and water. Get medical attention if irritation develops.

INGESTION: If conscious, give large quantities of water. Get medical attention.

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5. FIREFIGHTING MEASURES

FLASHPOINT: Non-flammable.

EXTINGUISHING MEDIA: As appropriate for surrounding combustibles. Product does not burn or support combustion. Not a fire or explosion hazard.

FIREFIGHTING EQUIPMENT: Respiratory and eye protection required for firefighting personnel in addition to normal individual fire protective equipment.

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6. ACCIDENTAL RELEASE MEASURES

GENERAL: Refer to local, State or Federal regulations for specific disposal information. Pursuant to 40 CFR Part 261 of the Resources Conservation and Recovery Act (RCRA) regulations currently in effect, discarded iron oxide would not be classified as a hazardous waste.

LAND SPILL: Vacuum or scoop up spilled material for recovery or disposal, avoid dusting conditions and use good ventilation. Wetting the spill area with water spray may help to keep airborne dust levels down.

WATER SPILL: Product is inert and stable. Decomposition and polymerization will not occur.

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7. HANDLING AND STORAGE

STORAGE TEMPERATURE: Ambient. STORAGE PRESSURE: Atmospheric.

CONDITIONS FOR STORAGE INCLUDING ANY INCOMPATIBILITIES: Maintain packaging intact until ready for use in a clean storage area. See Sections 8 and 10.

HYGIENE MEASURES: Handle in accordance with good industrial hygiene and safety procedures. Always wash hands immediately after handling this product, and once again before leaving the workplace. Do not eat, drink or smoke in areas where product is used.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Component	**EXPOSURE LIMITS 8 Hrs. TWA**		
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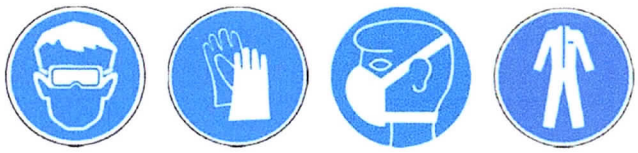
ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation or other engineering controls to control airborne levels below recommended exposure limits. Provide mechanical ventilation of confined spaces.

PERSONAL PROTECTION:



EYE PROTECTION: Safety glasses or tight goggles.

SKIN PROTECTION: Rubber, cloth or plastic gloves if appropriate for job conditions. This includes dust proof clothing.

RESPIRATOR: If exposure limits are exceeded, an appropriate NIOSH dust respirator should be used.

9. PHYSICAL AND CHEMICAL PROPERTIES

Specific Gravity (Absolute):	~ 3.5
Average Particle Diameter (Microns):	2
Bulk Density – Loose / Lbs. Cu. Ft.:	55
Odor:	None
Appearance:	Solid Yellowish / Brown Powder

10. STABILITY AND REACTIVITY

REACTIVITY: Hazardous reactions will not occur under normal conditions.

CHEMICAL STABILITY: Stable under normal temperature and pressure.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

CONDITIONS TO AVOID: None known.

INCOMPATIBLE MATERIALS: Quartz (SiO_2) will dissolve in hydrofluoric acid producing a corrosive gas, silicon tetrafluoride and strong oxidizing agents.

HAZARDOUS DECOMPOSITION: None known.

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11. TOXICOLOGICAL INFORMATION

Information on Toxicological Effects

POTENTIAL HEALTH EFFECTS:

INHALATION: Inhalation of the dust may cause mechanical irritation to the respiratory tract. Excessive exposure above the TLV can give mild pulmonary irritation. Long term overexposure to silica causes silicosis. This product is considered a carcinogen by IARC because it contains crystalline silica at levels greater than 0.1%.

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INGESTION: Not absorbed by the body.

CHRONIC: See INHALATION above.

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ACUTE TOXICITY VALUES: **Silica**: LD50 oral rat > 22,500 mg/kg
Iron Oxide LD 50 oral rat > 15,000 mg/kg

LONG-TERM OVEREXPOSURE: See Section 2.

CARCINOGENICITY:

Component	Product Identifier	IARC	National Toxicity Program (NTP) Status
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12. ECOLOGICAL INFORMATION

Eco toxicity: No recognized unusual toxicity to plants or animals.

13. DISPOSAL CONSIDERATIONS

See Sections 6 and 15.

14. TRANSPORT INFORMATION

Not regulated for transportation under: DOT / TDG / ADR / RID/ IMDG / ICAO / IATA / EU Regulations. Transport in Bulk According to Annex II of MARPOL 73/78: None

15. REGULATORY INFORMATION

DISPOSAL: Iron oxides are not hazardous waste per 40 CFR Part 261.24 or Part 261.3. However, the user should consult with the State environmental regulatory agency before disposing of this material.

SPILL REPORTING: Natural iron oxides are not CERCLA hazardous substances per 40 CFR Part 302.4. These are not on the list of hazardous substances under the Clean Water Act (40 CFR Part 116 and Part 117), nor are they included on the list of Extremely Hazardous Substances under SARA, 40 CFR Part 355, Appendix A. Thus, there are no Federal reporting requirements in the event of release of these materials.

SARA REPORTING: Natural iron oxides are not subject to the reporting requirements of Section 304 of SARA, since they are not Extremely Hazardous Substances. NRO's natural iron oxides contain manganese compounds in excess of 1% Mn. under Section 313 of EPCRA, releases of manganese are reportable if the criteria for SIC Code, Number of Employees and Threshold Quantity are met. These products are also regulated as mixtures under the reporting requirements of Sections 311 and 312 of EPCRA due to the presence of silica (quartz). See Section 3 of this SDS.

16. OTHER INFORMATION

NFPA Hazard Rating:	Health: 1	Fire: 0	Reactivity: 0
HMIS Hazard Rating:	Health: *	Fire: 0	Physical: 0

*Warning – Long-Term Overexposure – inhalation of dust containing silica (quartz) may cause silicosis. See sections 3, 8 and 11.

Revision Date: January 25, 2017
Supersedes: March 15, 2016