

SAFETY DATA SHEET

Visico™ FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Visico FR4451

Recommended use of the chemical and restrictions on use

Recommended use : Raw material for plastics industry
Restrictions on use : Use only according to our recommendations.

Manufacturer or supplier's details

Supplier : Borealis AG
Trabrennstrasse 6-8, 1020 Vienna, Austria
Telephone: +43 1 22400 0

Emergency telephone number : 080-880-0455 (3E), Access code: 336296

E-mail address : sds@borealisgroup.com

2. HAZARDS IDENTIFICATION

GHS Classification

Not a hazardous substance or mixture.
Not applicable

GHS label elements

Not a hazardous substance or mixture.

Other hazards which do not result in classification

During crosslinking reaction in combination with catalyst masterbatch: methanol (Flam. Liq. 2; H225, Acute Tox. 3; H301, Acute Tox. 3; H311, Acute Tox. 3; H331, STOT SE 1; H370 - see chapter 16) may be released.

In contact with water or moisture methanol will be released.

The product burns, but is not classified as flammable.

Dust from the product gives a potential risk for dust explosion.

Inhalation of dust may irritate the respiratory tract.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture
Chemical nature : The product is a silane crosslinkable polyethylene copolymer.

Components

Visico is a trademark of the Borealis group.

Borealis AG | Trabrennstrasse 6-8 | 1020 Vienna | Austria
Telephone +43 1 224 00 0 | Fax +43 1 22 400 333
FN 269858a | CCC Commercial Court of Vienna | Website www.borealisgroup.com



SAFETY DATA SHEET

Visico FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

Chemical name	Common Name	CAS-No.	Concentration (% w/w)
limestone	limestone	1317-65-3	$\geq 30 - < 35$
4-(1-methyl-1-phenylethyl)-N-[4-(1-methyl-1-phenylethyl)phenyl]aniline	4-(1-methyl-1-phenylethyl)-N-[4-(1-methyl-1-phenylethyl)phenyl]aniline	10081-67-1	$\geq 0.25 - < 1$

4. FIRST AID MEASURES

- In case of eye contact : Flush eyes with water as a precaution.
Get medical attention if irritation develops and persists.
- In case of skin contact : Wash off with soap and plenty of water.
Call a physician if irritation develops or persists.
If molten material comes in contact with the skin, cool with plenty of water. DO NOT remove solidified product, as removal could result in severe tissue damage.
- If inhaled : Move to fresh air.
If symptoms persist, call a physician.
- If swallowed : Rinse mouth with water.
Consult a physician if necessary.
- Most important symptoms and effects, both acute and delayed : Inhalation of dust may irritate the respiratory tract.
Prolonged inhalation of high doses of decomposition products may give headache or irritation of the respiratory tract.
Skin contact may provoke the following symptoms:
Local irritation
Symptoms of poisoning (methanol):
Daze
Dizziness
Nausea
Abdominal pain
Respiratory disorders
Symptoms of poisoning, prolonged exposure (methanol):
Blindness
- Notes to physician : Treat symptomatically.
No specific instructions needed.

5. FIREFIGHTING MEASURES

Suitable and unsuitable extinguishing media

- Suitable extinguishing media : Water in spread jet, dry chemicals, foam or carbon dioxide.
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during : Principal toxicant in the smoke is carbon monoxide.

SAFETY DATA SHEET

Visico FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

firefighting

Special protective equipment : Wear self-contained breathing apparatus and protective suit.
for firefighters

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.

Environmental precautions : Should not be released into the environment.

It is recommended to implement systems and practices (such as Operation Clean Sweep®) to prevent accidental release of plastics in to the environment.

Methods and materials for containment and cleaning up : Vacuum or sweep up spill.
All spill of material must be removed immediately to prevent slipping accidents.
Recycle or dispose loose material properly.
Do not flush into surface water or sanitary sewer system.

7. HANDLING AND STORAGE

Advice on protection against fire and explosion : Dust from the product gives a potential risk for dust explosion.
All equipment shall be grounded.
Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

Advice on safe handling : During processing and thermal treatment of the product, small amounts of volatile hydrocarbons may be released.
Provide adequate ventilation.
Local exhaust ventilation may be necessary.
Avoid inhalation of dust and decomposition fumes.
Avoid contact with skin and eyes.
The product contains small amounts of a substance classified as sensitising, which may produce an allergic reaction to susceptible personnel.
Personnel sensitised to this substance should not be allowed to handle the product.

Conditions for safe storage : Safety aspects do not require any special precautions in terms of storage.

Further information on storage stability : Keep in a dry place.

SAFETY DATA SHEET

Visico FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
limestone	1317-65-3	TWA	10 mg/m3	KR OEL

Other ingredients, which are listed in section 3 but not listed in this section, do not have established occupational exposure limit values.

Occupational exposure limits of decomposition products

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
methanol	67-56-1	TWA	200 ppm	KR OEL
			Further information: Substances designated by 'Skin' may be absorbed into the bloodstream through the skin, mucous membrane and eye and contribute to the overall effect. (Skin notation does not apply to the skin irritant)	
		STEL	250 ppm	KR OEL
			Further information: Substances designated by 'Skin' may be absorbed into the bloodstream through the skin, mucous membrane and eye and contribute to the overall effect. (Skin notation does not apply to the skin irritant)	
		TWA	200 ppm	KR PEL
		STEL	250 ppm	KR PEL
		TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH

Engineering measures : Provide adequate ventilation.
Local exhaust ventilation may be necessary.

Personal protective equipment. Among the following personal protective equipment, the PPEs which require safety certification need to be certified by KOSHA.

Respiratory protection : In case of dust development use dust mask.
In the case of vapour formation use a respirator with an approved filter.
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used.

Eye protection : Safety glasses

Hand protection

SAFETY DATA SHEET

Visico FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

Material : butyl-rubber
Break through time : >= 480 min
Glove thickness : 0.5 mm

Material : Fluorinated rubber
Break through time : >= 480 min
Glove thickness : 0.4 mm

Remarks : 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, abrasion, and the contact time.

Skin and body protection : Protective clothing
Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
When using do not eat, drink or smoke.
Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : pellets
Colour : opaque, white
Odour : odourless
pH : Not applicable insoluble
Melting point/range : 100 - 140 °C
Boiling range : Decomposes on heating.
Flash point : Not applicable (solid)
Evaporation rate : Not applicable (solid)
Flammability (solid, gas) : The product is not flammable.
Upper explosion limit / Upper flammability limit : Not applicable
Lower explosion limit / Lower flammability limit : Not applicable
Vapour pressure : Not applicable (solid)
Bulk density : 500 - 600 kg/m³

SAFETY DATA SHEET

Visico FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

Solubility(ies)	
Water solubility	: insoluble
Relative vapour density	: Not applicable
Density	: 1.1 - 1.2 g/cm ³
Partition coefficient: n-octanol/water	: Not applicable insoluble
Auto-ignition temperature	: > 320 °C
Viscosity	
Viscosity, kinematic	: No data available
Explosive properties	: Not explosive
Oxidizing properties	: The substance or mixture is not classified as oxidizing.
Particle size	: 3 - 10 mm Method: Image analysis (surface-based)

10. STABILITY AND REACTIVITY

Chemical stability and possibility of hazardous reactions	: Stable under recommended storage conditions. The product is a stable thermoplastic, with no chemical reactivity. The intended crosslinking reaction occurs in combination with the catalyst masterbatch and moisture: at ambient conditions, in steam or hot water bath. None known.
Conditions to avoid	: Extremes of temperature and direct sunlight. Exposure to moisture
Incompatible materials	: None known.
Hazardous decomposition products	: Under fire conditions: Carbon monoxide During processing and thermal treatment of the product, small amounts of volatile hydrocarbons may be released. During crosslinking reaction in combination with catalyst masterbatch: methanol In contact with water or moisture methanol will be released.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of : No data available

SAFETY DATA SHEET

Visico FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

exposure

Health hazard information

Acute toxicity

Based on available data, the classification criteria are not met.

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation

Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation

Respiratory sensitisation

Based on available data, the classification criteria are not met.

Skin sensitisation

Based on available data, the classification criteria are not met.

Carcinogenicity

Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Reproductive toxicity

Based on available data, the classification criteria are not met.

STOT - single exposure

Based on available data, the classification criteria are not met.

STOT - repeated exposure

Based on available data, the classification criteria are not met.

Repeated dose toxicity

No data available

Aspiration toxicity

Based on available data, the classification criteria are not met.

Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Product:

SAFETY DATA SHEET

Visico FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

Remarks : Inhalation of dust may irritate the respiratory tract.
Prolonged inhalation of high doses of decomposition products may give headache or irritation of the respiratory tract.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish :
Remarks: No data available

Toxicity to daphnia and other :
aquatic invertebrates : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: Not readily biodegradable.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Does not accumulate in organisms.

Mobility in soil

Product:

Mobility : Remarks: Not expected to adsorb on soil.
Remarks: The product is insoluble and sinks in water.

Other adverse effects

Product:

Additional ecological : Should not be released into the environment.
information

SAFETY DATA SHEET

Visico FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

13. DISPOSAL CONSIDERATIONS

Disposal methods

- Waste from residues : Dispose of contents/ container to an approved waste disposal plant.
Reuse or recycle if not contaminated.
Check with local regulations.
- Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

Disposal precautions

Dispose of contents and container according to wastes control act.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG

- UN number : Not applicable
Proper shipping name : Not applicable
Class : Not applicable
Subsidiary risk : Not applicable
Packing group : Not applicable
Labels : Not applicable

IATA-DGR

- UN/ID No. : Not applicable
Proper shipping name : Not applicable
Class : Not applicable
Subsidiary risk : Not applicable
Packing group : Not applicable
Labels : Not applicable
Packing instruction (cargo aircraft) : Not applicable
Packing instruction (passenger aircraft) : Not applicable

IMDG-Code

- UN number : Not applicable
Proper shipping name : Not applicable
Class : Not applicable
Subsidiary risk : Not applicable
Packing group : Not applicable
Labels : Not applicable
EmS Code : Not applicable
Marine pollutant : Not applicable

SAFETY DATA SHEET

Visico FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

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

Not applicable for product as supplied.

National Regulations

Refer to section 15 for specific national regulation.

Special precautions for user

Remarks : Not dangerous goods in the meaning of ADR/RID, ADN, IMDG-Code, ICAO/IATA-DGR

15. REGULATORY INFORMATION

National regulatory information

Regulation under the Occupational Safety and Health Act

Harmful Substances Prohibited from Manufacturing

Not applicable

Harmful Substances Required Permission for Manufacture

Not applicable

Harmful Agents to be kept below Occupational Exposure Limits

Chemical name	CAS-No.
Limestone	1317-65-3

Harmful Agents Required to be kept below Permission Levels

Not applicable

Hazardous substances requiring management

Not applicable

Special Management Materials

Not applicable

Controlled Substances Subject to Environment Monitoring

Not applicable

Regulation under the Chemicals Control Act

Toxic Chemicals

Not applicable

Restricted Chemicals

Not applicable

Prohibited Chemicals

Not applicable

Toxic Release Inventory

Not applicable

SAFETY DATA SHEET

Visico FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

Accident Precaution Chemicals

Not applicable

Wastes Control Act

Industrial waste

Follow article 13 of the act to dispose the product waste

16. OTHER INFORMATION

Further information

Sources of key data used to compile the Safety Data Sheet : The classification information of components is based on raw material supplier data.

Issuing date : 2024/04/09

Revision number and date

Number of Revision : 1.0

Revision Date : 2024/04/09

Other information : Issued according to Regulation (EC) No 1907/2006, Annex II, and its amendments.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

Issued according to: Standards for classification and labeling of chemical substances and material safety data sheet (ministry of employment and labor public notice No. 2016-19)

Issuer : Borealis, Group Product Stewardship

Date format : yyyy/mm/dd

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

KR OEL : Harmful Agents to be kept below Occupational Exposure Limits

KR PEL : Harmful Agents Required to be kept below Permission Levels

ACGIH / TWA : 8-hour, time-weighted average

ACGIH / STEL : Short-term exposure limit

KR OEL / TWA : Time Weighted Average

KR OEL / STEL : Short Term Exposure Limit

KR PEL / TWA : TWA

KR PEL / STEL : STEL

SAFETY DATA SHEET

Visico FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

AllC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECl - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

SAFETY DATA SHEET

Visico FR4451

Version 1.0

Revision Date:
2024/04/09

Date of last issue: -
Date of first issue: 2024/04/09

Disclaimer

To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication; however we do not assume any liability whatsoever for the accuracy and completeness of such information.

Borealis makes no warranties which extend beyond the description contained herein. Nothing herein shall constitute any warranty of merchantability or fitness for a particular purpose.

It is the customer's responsibility to inspect and test our products in order to satisfy itself as to the suitability of the products for the customer's particular purpose. The customer is responsible for the appropriate, safe and legal use, processing and handling of our products.

No liability can be accepted in respect of the use of Borealis' products in conjunction with other materials. The information contained herein relates exclusively to our products when not used in conjunction with any third party materials.

KR / EN