

SAFETY DATA SHEET

According to US Regulation 29 CFR 1910.1200 (HazCom 2012)

1. Identification

Product identifier: Isopropyl Alcohol

Other means of identification

Synonyms: 2-Propanol, Dimethyl carbinol, sec-Propyl alcohol
Product No.: 0562, 3031, 3032, 3043, 3590, 3591, 3593, 8288, 9037, 9080, H604, U298, V555, V566, 13483, 33312

Recommended restrictions

Recommended use: For Laboratory, Research or Manufacturing Use.
Restrictions on use: Not determined.

Details of the supplier of the safety data sheet

Company Name: Avantor Performance Materials, LLC
Address: 100 Matsonford Rd, Suite 200
 Radnor, PA 19087

Telephone: Customer Service: 855-282-6867

Contact Person: Product Information Compliance
E-mail: info@avantormaterials.com

Emergency telephone number:

CHEMTREC: 1-800-424-9300 within US and Canada (24 hrs/day, 7 days/week)

2. Hazard(s) identification

Hazard Classification

Physical Hazards

Flammable liquids Category 2

Health Hazards

Serious Eye Damage/Eye Irritation Category 2A

Specific Target Organ Toxicity - Single Exposure Category 3¹

Aspiration Hazard Category 2

Target Organs

- Narcotic effect.

Label Elements

Hazard Symbol:



| | |
|---|---|
| Signal Word: | Danger |
| Hazard Statement: | Highly flammable liquid and vapor. Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion. Causes serious eye irritation. May cause drowsiness or dizziness. May be harmful if swallowed and enters airways. |
| Precautionary Statements | |
| Prevention: | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting] equipment. Use non-sparking tools. Take action to prevent static discharges. Avoid breathing dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/eye protection/face protection. These alone may be insufficient to remove static electricity. |
| Response: | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. In case of fire: Use water spray, foam, dry powder or carbon dioxide for extinction. |
| Storage: | Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up. |
| Disposal: | Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. |
| Hazard(s) not otherwise classified (HNOC): | Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion. |

3. Composition/information on ingredients

Substances

| Chemical Identity | CAS number | Content in percent (%)* |
|-------------------|------------|-------------------------|
| Isopropyl alcohol | 67-63-0 | 98 - 100% |

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

General information: Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

| | |
|----------------------|---|
| Ingestion: | Call a physician or poison control center immediately. Rinse mouth. Do NOT induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. |
| Inhalation: | Move to fresh air. Get medical attention if symptoms persist. |
| Skin Contact: | Wash skin thoroughly with soap and water. Get medical attention if symptoms occur. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse. |
| Eye contact: | Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention. |

Most important symptoms/effects, acute and delayed

| | |
|------------------|---|
| Symptoms: | Harmful if swallowed. Narcotic effect. Irritating to eyes, respiratory system and skin. |
| Hazards: | None known. |

Indication of immediate medical attention and special treatment needed

| | |
|-------------------|---|
| Treatment: | Treat symptomatically. Symptoms may be delayed. |
|-------------------|---|

| |
|----------------------------------|
| 5. Fire-fighting measures |
|----------------------------------|

| | |
|------------------------------|-----------------------------|
| General Fire Hazards: | Flammable liquid and vapor. |
|------------------------------|-----------------------------|

Suitable (and unsuitable) extinguishing media

| | |
|--|--|
| Suitable extinguishing media: | Water spray, foam, dry powder or carbon dioxide. |
| Unsuitable extinguishing media: | Avoid water in straight hose stream; will scatter and spread fire. |

| | |
|--|---|
| Specific hazards arising from the chemical: | Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations. Vapor from the solvent may accumulate in container headspace resulting in flammability hazard. Heat may cause the containers to explode. |
|--|---|

Special protective equipment and precautions for firefighters

| | |
|--|--|
| Special fire fighting procedures: | Use water spray to keep fire-exposed containers cool. Water may be ineffective in fighting the fire. Fight fire from a protected location. Move containers from fire area if you can do so without risk. |
|--|--|

| | |
|--|--|
| Special protective equipment for fire-fighters: | Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. |
|--|--|

| |
|---------------------------------------|
| 6. Accidental release measures |
|---------------------------------------|

| | |
|---|---|
| Personal precautions, protective equipment and emergency procedures: | ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Keep upwind. Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid breathing mists or vapors. Ventilate closed spaces before entering them. See Section 8 of the SDS for Personal Protective Equipment. |
| Methods and material for containment and cleaning up: | In case of leakage, eliminate all ignition sources. Use non-sparking tools. Take precautionary measures against static discharges. Stop leak if possible without any risk. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal. |
| Notification Procedures: | Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved. |
| Environmental Precautions: | Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. |

7. Handling and storage

| | |
|--|--|
| Precautions for safe handling: | Do not handle until all safety precautions have been read and understood. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting] equipment. Use non-sparking tools. Wear protective gloves/protective clothing/eye protection/face protection. Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after handling. Use only with adequate ventilation. Do not breathe mist or vapor. |
| Conditions for safe storage, including any incompatibilities: | Keep away from food, drink and animal feeding stuffs. Keep container tightly closed in a cool, well-ventilated place. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids. |

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

| Chemical Identity | Type | Exposure Limit Values | Source |
|-------------------|--------|-----------------------|---|
| Isopropyl alcohol | TWA | 200 ppm | US. ACGIH Threshold Limit Values (2011) |
| | STEL | 400 ppm | US. ACGIH Threshold Limit Values (2011) |
| | REL | 400 ppm 980 mg/m3 | US. NIOSH: Pocket Guide to Chemical Hazards (2010) |
| | STEL | 500 ppm 1,225 mg/m3 | US. NIOSH: Pocket Guide to Chemical Hazards (2010) |
| | PEL | 400 ppm 980 mg/m3 | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| | STEL | 500 ppm 1,225 mg/m3 | US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989) |
| | TWA | 400 ppm 980 mg/m3 | US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989) |
| | TWA | 400 ppm 980 mg/m3 | US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A (06 2008) |
| | ST ESL | 2,000 ppb | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (12 2010) |
| | AN ESL | 200 ppb | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (12 |

| | | | |
|--|---------|---------------------|--|
| | | | 2010) |
| | ST ESL | 4,920 µg/m3 | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (12 2010) |
| | AN ESL | 492 µg/m3 | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (12 2010) |
| | STEL | 500 ppm 1,225 mg/m3 | US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (08 2010) |
| | TWA PEL | 400 ppm 980 mg/m3 | US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (08 2010) |
| | STEL | 500 ppm 1,225 mg/m3 | US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A (01 2019) |
| | AN ESL | Health 200 ppb | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (06 2018) |
| | ST ESL | Health 4,920 µg/m3 | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (06 2018) |
| | ST ESL | Health 2,000 ppb | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (06 2018) |
| | AN ESL | Health 492 µg/m3 | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (06 2018) |

Biological Limit Values

| Chemical Identity | Exposure Limit Values | Source |
|---|-----------------------|---------------------|
| Isopropyl alcohol (acetone: Sampling time: End of shift at end of work week.) | 40 mg/l (Urine) | ACGIH BEI (03 2013) |

Appropriate Engineering Controls

No special requirements under ordinary conditions of use and with adequate ventilation.

Individual protection measures, such as personal protective equipment

General information:

Good general ventilation (typically 10 air changes per hour) 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. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Eye/face protection:

Wear safety glasses with side shields (or goggles).

Skin Protection

Hand Protection:

Chemical resistant gloves

Other:

Wear suitable protective clothing.

Respiratory Protection:

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Chemical respirator with organic vapor cartridge.

Hygiene measures:

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower. Avoid contact with eyes, skin, and clothing.

9. Physical and chemical properties

Appearance

| | |
|--|---|
| Physical state: | Liquid |
| Form: | Liquid |
| Color: | Colorless |
| Odor: | Alcohol |
| Odor threshold: | No data available. |
| pH: | No data available. |
| Melting point/freezing point: | -88.5 °C |
| Initial boiling point and boiling range: | 82.3 - 82.5 °C |
| Flash Point: | 12 °C (Closed Cup) |
| Evaporation rate: | 21 (ether=1) 2.9 (n-butyl acetate=1) |
| Flammability (solid, gas): | Class IB Flammable Liquid |
| Upper/lower limit on flammability or explosive limits | |
| Flammability limit - upper (%): | 12 %(V) |
| Flammability limit - lower (%): | 2.5 %(V) |
| Explosive limit - upper (%): | No data available. |
| Explosive limit - lower (%): | No data available. |
| Vapor pressure: | 6.053 kPa (25 °C) 44 hPa (20 °C) |
| Vapor density: | 2.1 (Air=1) |
| Density: | 0.79 g/ml (20 °C) |
| Relative density: | 0.79 (20 °C) |
| Solubility(ies) | |
| Solubility in water: | Miscible |
| Solubility (other): | benzene: Soluble chloroform: Miscible |
| Partition coefficient (n-octanol/water): | 0.05 |
| Auto-ignition temperature: | 399 °C |
| Decomposition temperature: | No data available. |
| Viscosity: | 2.4 mm ² /s (20 °C) |
| Other information | |
| Liquid conductivity: | 35 μS/cm (25 °C) |
| Minimum ignition energy: | 0.65 mJ |
| Molecular weight: | 60.10 g/mol (C ₃ H ₈ O) |

10. Stability and reactivity

| | |
|--|---|
| Reactivity: | No dangerous reaction known under conditions of normal use. |
| Chemical Stability: | Material is stable under normal conditions. |
| Possibility of hazardous reactions: | Hazardous polymerization does not occur. |
| Conditions to avoid: | Heat, sparks, flames. Sunlight. |
| Incompatible Materials: | Strong oxidizing agents. Acids. Isocyanates. Hydrogen peroxide (H ₂ O ₂) Sulfuric acid. Acetaldehyde. Acetylene. Chlorine. Aluminum. Ethylene Oxide |

Hazardous Decomposition Products: Thermal decomposition may release oxides of carbon.

11. Toxicological information

Information on likely routes of exposure

- Inhalation:** May cause irritation to the mucous membranes and upper respiratory tract.
May cause central nervous system effects.
- Skin Contact:** Prolonged or repeated skin contact may cause drying, cracking, or irritation.
- Eye contact:** Causes serious eye irritation.
- Ingestion:** Irritating. May cause nausea, stomach pain and vomiting.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

- Oral Product:** LD 50 (Rat): 5,045 - 5,840 mg/kg
- Dermal Product:** LD 50 (Rabbit) 12,800 mg/kg
- Inhalation Product:** LC 50 (Rat, 6 h) > 10000 ppm
LOAEL (Rat, 6 h): 5000 ppm

Repeated dose toxicity Product: No data available.

Skin Corrosion/Irritation Product: Prolonged or repeated skin contact may cause drying, cracking, or irritation.

Serious Eye Damage/Eye Irritation Product: Causes serious eye irritation.

Respiratory or Skin Sensitization Product: Not a skin nor a respiratory sensitizer.

Carcinogenicity Product: This substance has no evidence of carcinogenic properties.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):
No carcinogenic components identified

Germ Cell Mutagenicity

In vitro
Product: No mutagenic components identified

In vivo
Product: No mutagenic components identified

Reproductive toxicity

Product: No components toxic to reproduction

Specific Target Organ Toxicity - Single Exposure

Product: Central nervous system. - Narcotic effect.

Specific Target Organ Toxicity - Repeated Exposure

Product: None known.

Target Organs

Specific Target Organ Toxicity - Single Exposure: Narcotic effect.

Aspiration Hazard

Product: May be harmful if swallowed and enters airways.

Other effects: None known.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: LC 50 (Western mosquitofish (*Gambusia affinis*), 96 h): > 1,400 mg/l

Aquatic Invertebrates

Product: LC 50 (Water flea (*Daphnia magna*), 24 h): 10,000 mg/l

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Aquatic Invertebrates

Product: No data available.

Toxicity to Aquatic Plants

Product: No data available.

Persistence and Degradability

Biodegradation

Product: Expected to be readily biodegradable.

BOD/COD Ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product: No data available on bioaccumulation.

Partition Coefficient n-octanol / water (log Kow)

Product: Log Kow: 0.05

Mobility in soil: The product is partly soluble in water. May spread in the aquatic environment.

Other adverse effects: The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

13. Disposal considerations

Disposal instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws.

Contaminated Packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN Number: UN 1219
 UN Proper Shipping Name: Isopropanol
 Transport Hazard Class(es)
 Class: 3
 Label(s): 3
 Packing Group: II
 Marine Pollutant: No
 Special precautions for user: Not determined.

IMDG

UN Number: UN 1219
 UN Proper Shipping Name: ISOPROPANOL
 Transport Hazard Class(es)
 Class: 3
 Label(s): 3
 EmS No.: F-E, S-D
 Packing Group: II
 Marine Pollutant: No
 Special precautions for user: Not determined.

IATA

UN Number: UN 1219
 Proper Shipping Name: Isopropanol
 Transport Hazard Class(es):
 Class: 3
 Label(s): 3
 Packing Group: II
 Marine Pollutant: No
 Special precautions for user: Not determined.

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

| <u>Chemical Identity</u> | <u>Reportable quantity</u> |
|--------------------------|----------------------------|
| Isopropyl alcohol | 100 lbs. |

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

- Flammable (gases, aerosols, liquids, or solids)
- Serious eye damage or eye irritation
- Specific target organ toxicity (single or repeated exposure)
- Hazards Not Otherwise Classified (HNOC)

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

| <u>Chemical Identity</u> | <u>Reportable quantity</u> |
|--------------------------|----------------------------|
| Isopropyl alcohol | 100 lbs. |

SARA 311/312 Hazardous Chemical

| <u>Chemical Identity</u> | <u>Threshold Planning Quantity</u> |
|--------------------------|------------------------------------|
| Isopropyl alcohol | 10000 lbs. |

SARA 313 (TRI Reporting)

| <u>Chemical Identity</u> | <u>Reporting threshold for other users</u> | <u>Reporting threshold for manufacturing and processing</u> |
|--------------------------|--|---|
| Isopropyl alcohol | 10000 lbs. | 25000 lbs. |

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3):

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

No ingredient requiring a warning under CA Prop 65.

US. New Jersey Worker and Community Right-to-Know Act

| <u>Chemical Identity</u> |
|--------------------------|
| Isopropyl alcohol |

US. Massachusetts RTK - Substance List

| <u>Chemical Identity</u> |
|--------------------------|
| Isopropyl alcohol |

US. Pennsylvania RTK - Hazardous Substances

| <u>Chemical Identity</u> |
|--------------------------|
| Isopropyl alcohol |

US. Rhode Island RTK

Chemical Identity

Isopropyl alcohol

International regulations

Montreal protocol

Not applicable

Stockholm convention

Not applicable

Rotterdam convention

Not applicable

Kyoto protocol

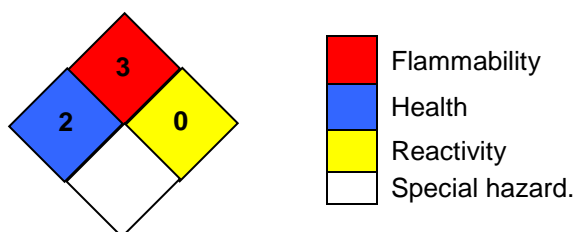
Not applicable

Inventory Status:

| | |
|--|--|
| Australia AICS: | On or in compliance with the inventory |
| Canada DSL Inventory List: | On or in compliance with the inventory |
| EINECS, ELINCS or NLP: | On or in compliance with the inventory |
| Japan (ENCS) List: | On or in compliance with the inventory |
| China Inv. Existing Chemical Substances: | On or in compliance with the inventory |
| Korea Existing Chemicals Inv. (KECI): | On or in compliance with the inventory |
| Philippines PICCS: | On or in compliance with the inventory |
| US TSCA Inventory: | On or in compliance with the inventory |
| New Zealand Inventory of Chemicals: | On or in compliance with the inventory |
| Japan ISHL Listing: | On or in compliance with the inventory |
| Mexico INSQ: | On or in compliance with the inventory |
| Taiwan Chemical Substance Inventory: | On or in compliance with the inventory |

16. Other information, including date of preparation or last revision

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

| | |
|------------------------------|---------------|
| Issue Date: | 02-25-2020 |
| Revision Information: | Not relevant. |
| Version #: | 1.5 |

| | |
|-------------------------------|---|
| Source of information: | Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, information from the Toxicology Data Network (TOXNET), European Chemical Agency (ECHA) substance dossiers, IARC Monographs, US National Toxicology Program data, the Agency for Toxic Substances and Disease Registry, other manufacturer's SDSs and other sources, as appropriate. |
| Further Information: | No data available. |
| Disclaimer: | The information provided in this Safety Data Sheet (SDS) was prepared based on data believed to be accurate as of the date of this SDS. TO THE GREATEST EXTENT PERMITTED BY LAW, AVANTOR PERFORMANCE MATERIALS ("AVANTOR") EXPRESSLY DISCLAIMS ANY AND ALL REPRESENTATIONS AND WARRANTIES REGARDING THE INFORMATION CONTAINED HEREIN INCLUDING, WITHOUT LIMITATION, AS TO ACCURACY, COMPLETENESS, FITNESS FOR PURPOSE OR USE, MERCHANTABILITY, NON-INFRINGEMENT, PERFORMANCE, SAFETY, SUITABILITY AND STABILITY. This SDS is intended as a guide to the appropriate use, handling, storage and disposal of the product to which it relates by properly trained personnel, and is not intended to be comprehensive. Users of Avantor's products are advised to perform their own tests and to exercise their own judgment to determine the safety, suitability and appropriate use, handling, storage and disposal of each product and product combination for their own purposes and uses. TO THE GREATEST EXTENT PERMITTED BY LAW, AVANTOR DISCLAIMS LIABILITY FOR, AND BY USING AVANTOR'S PRODUCTS PURCHASER AGREES THAT UNDER NO CIRCUMSTANCES SHALL AVANTOR BE LIABLE FOR, SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES OF ANY TYPE OR KIND, INCLUDING WITHOUT LIMITATION, FOR LOSS OF PROFITS, REPUTATIONAL DAMAGE, PRODUCT RECALL OR BUSINESS INTERRUPTION. |