

List of R-phrases

R-phrases (short for **Risk Phrases**) are defined in Annex III of [European Union Directive 67/548/EEC](#): *Nature of special risks attributed to dangerous substances and preparations.*

These risk phrases are used internationally not just in Europe and there is an ongoing effort towards complete international harmonisation. (*Note: missing R-number combinations indicate phrases that were deleted or replaced by another phrase.*)

- **R1**: Explosive when dry
- **R2**: Risk of explosion by shock, friction, fire or other sources of ignition
- **R3**: Extreme risk of explosion by shock, friction, fire or other sources of ignition
- **R4**: Forms very sensitive explosive metallic compounds
- **R5**: Heating may cause an explosion
- **R6**: Explosive with or without contact with air
- **R7**: May cause fire
- **R8**: Contact with combustible material may cause fire
- **R9**: Explosive when mixed with combustible material
- **R10**: Flammable
- **R11**: Highly flammable
- **R12**: Extremely flammable
- **R14**: Reacts violently with water
- **R15**: Contact with water liberates extremely flammable gases
- **R16**: Explosive when mixed with oxidising substances
- **R17**: Spontaneously flammable in air
- **R18**: In use, may form flammable/explosive vapour-air mixture
- **R19**: May form explosive peroxides
- **R20**: Harmful by inhalation
- **R21**: Harmful in contact with skin
- **R22**: Harmful if swallowed
- **R23**: Toxic by inhalation
- **R24**: Toxic in contact with skin
- **R25**: Toxic if swallowed
- **R26**: Very toxic by inhalation
- **R27**: Very toxic in contact with skin
- **R28**: Very toxic if swallowed
- **R29**: Contact with water liberates toxic gas.
- **R30**: Can become highly flammable in use
- **R31**: Contact with acids liberates toxic gas
- **R32**: Contact with acids liberates very toxic gas
- **R33**: Danger of cumulative effects
- **R34**: Causes burns
- **R35**: Causes severe burns
- **R36**: Irritating to eyes
- **R37**: Irritating to respiratory system
- **R38**: Irritating to skin
- **R39**: Danger of very serious irreversible effects
- **R40**: Limited evidence of a carcinogenic effect
- **R41**: Risk of serious damage to eyes
- **R42**: May cause sensitisation by inhalation

- R43: May cause sensitisation by skin contact
- R44: Risk of explosion if heated under confinement
- R45: May cause cancer
- R46: May cause heritable genetic damage
- R48: Danger of serious damage to health by prolonged exposure
- R49: May cause cancer by inhalation
- R50: Very toxic to aquatic organisms
- R51: Toxic to aquatic organisms
- R52: Harmful to aquatic organisms
- R53: May cause long-term adverse effects in the aquatic environment
- R54: Toxic to flora
- R55: Toxic to fauna
- R56: Toxic to soil organisms
- R57: Toxic to bees
- R58: May cause long-term adverse effects in the environment
- R59: Dangerous for the ozone layer
- R60: May impair fertility
- R61: May cause harm to the unborn child
- R62: Possible risk of impaired fertility
- R63: Possible risk of harm to the unborn child
- R64: May cause harm to breast-fed babies
- R65: Harmful: may cause lung damage if swallowed
- R66: Repeated exposure may cause skin dryness or cracking
- R67: Vapours may cause drowsiness and dizziness
- R68: Possible risk of irreversible effects

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- R14/15: Reacts violently with water, liberating extremely flammable gases
 - R15/29: Contact with water liberates toxic, extremely flammable gases
 - R20/21: Harmful by inhalation and in contact with skin
 - R20/22: Harmful by inhalation and if swallowed
 - R20/21/22: Harmful by inhalation, in contact with skin and if swallowed
 - R21/22: Harmful in contact with skin and if swallowed
 - R23/24: Toxic by inhalation and in contact with skin
 - R23/25: Toxic by inhalation and if swallowed
 - R23/24/25: Toxic by inhalation, in contact with skin and if swallowed
 - R24/25: Toxic in contact with skin and if swallowed
 - R26/27: Very toxic by inhalation and in contact with skin
 - R26/28: Very toxic by inhalation and if swallowed
 - R26/27/28: Very toxic by inhalation, in contact with skin and if swallowed
 - R27/28: Very toxic in contact with skin and if swallowed
 - R36/37: Irritating to eyes and respiratory system
 - R36/38: Irritating to eyes and skin
 - R36/37/38: Irritating to eyes, respiratory system and skin
 - R37/38: Irritating to respiratory system and skin
 - R39/23: Toxic: danger of very serious irreversible effects through inhalation
 - R39/24: Toxic: danger of very serious irreversible effects in contact with skin
 - R39/25: Toxic: danger of very serious irreversible effects if swallowed
 - R39/23/24: Toxic: danger of very serious irreversible effects through inhalation and in contact with skin

- [R39/23/25](#): Toxic: danger of very serious irreversible effects through inhalation and if swallowed
- [R39/24/25](#): Toxic: danger of very serious irreversible effects in contact with skin and if swallowed
- [R39/23/24/25](#): Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed
- [R39/26](#): Very Toxic: danger of very serious irreversible effects through inhalation
- [R39/27](#): Very Toxic: danger of very serious irreversible effects in contact with skin
- [R39/28](#): Very Toxic: danger of very serious irreversible effects if swallowed
- [R39/26/27](#): Very Toxic: danger of very serious irreversible effects through inhalation and in contact with skin
- [R39/26/28](#): Very Toxic: danger of very serious irreversible effects through inhalation and if swallowed
- [R39/27/28](#): Very Toxic: danger of very serious irreversible effects in contact with skin and if swallowed
- [R39/26/27/28](#): Very Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed
- [R42/43](#): May cause sensitisation by inhalation and skin contact
- [R48/20](#): Harmful: danger of serious damage to health by prolonged exposure through inhalation
- [R48/21](#): Harmful: danger of serious damage to health by prolonged exposure in contact with skin
- [R48/22](#): Harmful: danger of serious damage to health by prolonged exposure if swallowed
- [R48/20/21](#): Harmful: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin
- [R48/20/22](#): Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed
- [R48/21/22](#): Harmful: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed
- [R48/20/21/22](#): Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed
- [R48/23](#): Toxic: danger of serious damage to health by prolonged exposure through inhalation
- [R48/24](#): Toxic: danger of serious damage to health by prolonged exposure in contact with skin
- [R48/25](#): Toxic: danger of serious damage to health by prolonged exposure if swallowed
- [R48/23/24](#): Toxic: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin
- [R48/23/25](#): Toxic: danger of serious damage to health by prolonged exposure through inhalation and if swallowed
- [R48/24/25](#): Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed
- [R48/23/24/25](#): Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed
- [R50/53](#): Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
- [R51/53](#): Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

- **R52/53**: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment
- **R68/20**: Harmful: possible risk of irreversible effects through inhalation
- **R68/21**: Harmful: possible risk of irreversible effects in contact with skin
- **R68/22**: Harmful: possible risk of irreversible effects if swallowed
- **R68/20/21**: Harmful: possible risk of irreversible effects through inhalation and in contact with skin
- **R68/20/22**: Harmful: possible risk of irreversible effects through inhalation and if swallowed
- **R68/21/22**: Harmful: possible risk of irreversible effects in contact with skin and if swallowed
- **R68/20/21/22**: Harmful: possible risk of irreversible effects through inhalation, in contact with skin and if swallowed

R-Phrases no longer in use

- **R13**: Extremely flammable liquified gas.
- **R47**: May cause birth defects.