

Risk Phrases

Chemical data sheets available in many countries now contain codes for certain "risk phrases", shown as R23, R45 etc. These risk phrase codes have the following meanings:

- **R1** Explosive when dry.
- **R2** Risk of explosion by shock, friction, fire or other source 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.
- **R13** Extremely flammable liquefied gas
- **R14** Reacts violently with water.
- **R15** Contact with water liberates extremely flammable gases.
- **R16** Explosive when mixed with oxidizing substances.
- **R17** Spontaneously flammable in air.
- **R18** In use, may form inflammable/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 acid 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 the eyes.
- **R42** May cause sensitization by inhalation.
- **R43** May cause sensitization by skin contact.
- **R44** Risk of explosion if heated under confinement.
- **R45** May cause cancer.
- **R46** May cause heritable genetic damage.
- **R47** May cause birth defects
- **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 to the ozone layer.
- **R60** May impair fertility.
- **R61** May cause harm to the unborn child.

- **R62** Risk of impaired fertility.
- **R63** Possible risk of harm to the unborn child.
- **R64** May cause harm to breastfed 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.