SAFETY DATA SHEET
PW2 - LEAD-FREE FLUX REMOVER - POWERCLEAN, AEROSOL

According to Appendix D, OSHA Hazard Communication Standard 29 CFR §1910.1200

1. Identification

Product identifier

Product name PW2 - LEAD-FREE FLUX REMOVER - POWERCLEAN, AEROSOL

Product number MCC-PW210Y, MCC-PW210A, MCC-PW2101, MCC-PW2105, MCC-PW2106

Recommended use of the chemical and restrictions on use

Application Cleaning agent.

Details of the supplier of the safety data sheet

Supplier MICROCARE CORPORATION

Manufacturer MICROCARE CORPORATION
595 John Downey Drive
New Britain, CT 06051
United States of America
CAGE: OATV9
Tel: + 1 800 638 0125, +1 860-827-0626
Fax: +1 860-827-8105
techsupport@microcare.com

Emergency telephone number

Emergency telephone CHEMTREC 1-800-424-9300 (within the U.S.)
+1 703-741-5970 (from anywhere in the world)

2. Hazard(s) identification

Classification of the substance or mixture

Physical hazards Not Classified

Health hazards Acute Tox. 4 - H332

Environmental hazards Aquatic Chronic 3 - H412

Human health Prolonged or repeated contact with skin may cause irritation, redness and dermatitis. Mild dermatitis, allergic skin rash.

Environmental The product contains a substance which is harmful to aquatic organisms and which may cause long-term adverse effects in the aquatic environment.

Physicochemical Vapors are heavier than air and may travel along the floor and accumulate in the bottom of containers. Not considered to be a significant hazard due to the small quantities used. Gas or vapor displaces oxygen available for breathing (asphyxiant).

Label elements

PW2 - LEAD-FREE FLUX REMOVER - POWERCLEAN, AEROSOL

Pictogram

Signal word	Warning
Hazard statements	H332 Harmful if inhaled. H412 Harmful to aquatic life with long lasting effects.
Precautionary statements	P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking. P211 Do not spray on an open flame or other ignition source. P251 Pressurized container: Do not pierce or burn, even after use P261 Avoid breathing spray. P410+P412 Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. P501 Dispose of contents/ container in accordance with local regulations.
Supplemental label information	Safety data sheet available on request. For use in industrial installations only.
Contains	trans-DICHLOROETHYLENE

3. Composition/information on ingredients

Mixtures

trans-DICHLOROETHYLENE **30-60%**

CAS number: 156-60-5

Classification
Flam. Liq. 2 - H225
Acute Tox. 4 - H332
Aquatic Chronic 3 - H412

HFC-134a Tetrafluoroethane **10-30%**

CAS number: 811-97-2

Classification
Press. Gas, Liquefied - H280

1,1,1,2,2,3,4,5,5,5-decafluoropentane **10-30%**

CAS number: 138495-42-8

Classification
Aquatic Chronic 3 - H412

The full text for all hazard statements is displayed in Section 16.

Composition comments	The exact percentage (concentration) of composition has been withheld as a trade secret in accordance with paragraph (i) of CFR 1900.1200 TSCA: The ingredients of this product are on the TSCA Inventory.
Ingredient notes	A MIXTURE OF: (R,R)-1,1,1,2,2,3,4,5,5,5-DECAFLUOROPENTANE, (S,S)-1,1,1,2,2,3,4,5,5,5-DECAFLUOROPENTANE has been revised to 1,1,1,2,2,3,4,5,5,5-decafluoropentane. No change in chemistry. 20JUL17

Composition

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4. First-aid measures

Description of first aid measures

General information Never give anything by mouth to an unconscious person. Do not induce vomiting. Place unconscious person on the side in the recovery position and ensure breathing can take place. If breathing stops, provide artificial respiration.

Inhalation Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen.

Ingestion Do not induce vomiting. Rinse mouth thoroughly with water. Give plenty of water to drink. Consult a physician for specific advice.

Skin Contact Remove contaminated clothing and rinse skin thoroughly with water.

Eye contact Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Consult a physician for specific advice.

Most important symptoms and effects, both acute and delayed

General information The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation Vapors may cause headache, fatigue, dizziness and nausea. Difficulty in breathing. Upper respiratory irritation. Severe irritation of nose and throat.

Ingestion May cause stomach pain or vomiting. Drowsiness, dizziness, disorientation, vertigo.

Skin contact Prolonged or repeated contact with skin may cause irritation, redness and dermatitis.

Eye contact Irritation of eyes and mucous membranes. Irritating to eyes. Symptoms following overexposure may include the following: Redness. Pain.

Indication of immediate medical attention and special treatment needed

Notes for the doctor No specific recommendations. If in doubt, get medical attention promptly.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media The product is not flammable. Use fire-extinguishing media suitable for the surrounding fire.

Special hazards arising from the substance or mixture

Flammability Class The product is not flammable.

Specific hazards Keep away from heat, sparks and open flame. Thermal decomposition or combustion products may include the following substances: Toxic and corrosive gases or vapors. Aerosol containers can explode when heated, due to excessive pressure build-up.

Hazardous combustion products Heating may generate the following products: Toxic and corrosive gases or vapors. Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors. Oxides of carbon. Oxides of nitrogen.

Advice for firefighters

Protective actions during firefighting Move containers from fire area if it can be done without risk. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Bursting aerosol containers may be propelled from a fire at high speed.

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

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6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Warn everybody of potential hazards and evacuate if necessary. Provide adequate ventilation. Avoid inhalation of vapors. Use approved respirator if air contamination is above an acceptable level.

Environmental precautions

Environmental precautions Contain spillage with sand, earth or other suitable non-combustible material. Avoid release to the environment.

Methods and material for containment and cleaning up

Methods for cleaning up Wear suitable protective equipment, including gloves, goggles/face shield, respirator, boots, clothing or apron, as appropriate. Eliminate all sources of ignition. No smoking, sparks, flames or other sources of ignition near spillage. Provide adequate ventilation.

Reference to other sections See Section 11 for additional information on health hazards.

7. Handling and storage

Precautions for safe handling

Usage precautions Provide adequate ventilation. Avoid inhalation of vapors/spray and contact with skin and eyes. Keep away from heat, sparks and open flame. Thermal decomposition or combustion products may include the following substances: Toxic and corrosive gases or vapors.

Conditions for safe storage, including any incompatibilities

Storage precautions Aerosol cans: Must not be exposed to direct sunlight or temperatures above 50°C.

Specific end uses(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.

Reference to other sections. Store away from incompatible materials (see Section 10).

8. Exposure Controls/personal protection

Control parameters

Occupational exposure limits

trans-DICHLOROETHYLENE

Long-term exposure limit (8-hour TWA): ACGIH 200 ppm 793 mg/m³

HFC-134a Tetrafluoroethane

Long-term exposure limit (8-hour TWA): OES 4240 mg/m³

1,1,1,2,2,3,4,5,5,5-decafluoropentane

No information available that would effect occupational exposure limit values.
ACGIH = American Conference of Governmental Industrial Hygienists.

Additional Occupational Exposure Limits

Ingredient comments ACGIH = US Standard.

Exposure controls

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Protective equipment

Appropriate engineering controls	No specific ventilation requirements. This product must not be handled in a confined space without adequate ventilation.
Eye/face protection	Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Tight-fitting safety glasses.
Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible.
Other skin and body protection	Wear suitable protective clothing as protection against splashing or contamination. Wear apron or protective clothing in case of contact.
Hygiene measures	No specific hygiene procedures recommended but good personal hygiene practices should always be observed when working with chemical products. When using do not eat, drink or smoke.
Respiratory protection	Vapors are heavier than air and may travel along the floor and accumulate in the bottom of containers. In confined or poorly-ventilated spaces, a supplied-air respirator must be worn. Wear self-contained breathing apparatus with full facepiece.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Appearance	Clear liquid. Aerosol.
Color	Colorless.
Odor	Slight. Ether.
Odor threshold	No information available.
pH	No information available.
Melting point	No information available.
Initial boiling point and range	39°C/102°F @ 101.3 kPa
Flash point	The product is not flammable.
Evaporation rate	No information available.
Evaporation factor	No information available.
Upper/lower flammability or explosive limits	Upper flammable/explosive limit: 13 %(V) Lower flammable/explosive limit: 5.5 %(V)
Other flammability	The product is not flammable. Aerosol ignition distance: none at 0.0 cm
Vapor pressure	55.3 kPa @ 25°C
Vapor density	3.7
Relative density	1.27
Bulk density	No information available.
Solubility(ies)	0.3 g/100 g water @ 20°C Slightly soluble in water.
Partition coefficient	No information available.

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Auto-ignition temperature	No information available.
Decomposition Temperature	No information available.
Viscosity	No information available.
Explosive properties	No information available.
Oxidizing properties	Not known.
Comments	Aerosol.
Refractive index	No information available.
Particle size	No information available.
Molecular weight	No information available.
Volatility	100%
Saturation concentration	No information available.
Critical temperature	No information available.
Volatile organic compound	This product contains a maximum VOC content of 1080 g/l.
Flammability	The product is not flammable.

10. Stability and reactivity

Reactivity	The following materials may react with the product: Strong alkalis.
Stability	Stable at normal ambient temperatures and when used as recommended.
Possibility of hazardous reactions	Will not polymerize.
Conditions to avoid	Keep away from heat, sparks and open flame. Thermal decomposition or combustion products may include the following substances: Toxic and corrosive gases or vapors.
Materials to avoid	Alkali metals. Alkaline earth metals. Powdered metal.
Hazardous decomposition products	Heating may generate the following products: Toxic and corrosive gases or vapors. Halogenated hydrocarbons. Hydrogen fluoride (HF). Carbon dioxide (CO2). Carbon monoxide (CO).

11. Toxicological information

Information on toxicological effects

Acute toxicity - inhalation

ATE inhalation (vapours mg/l) 19.05

Inhalation	Vapors may irritate throat/respiratory system. A single exposure may cause the following adverse effects: Coughing. Difficulty in breathing.
Ingestion	May cause stomach pain or vomiting. May cause nausea, headache, dizziness and intoxication.
Skin Contact	Product has a defatting effect on skin. May cause allergic contact eczema.
Eye contact	May cause temporary eye irritation.

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Medical Symptoms Gas or vapor in high concentrations may irritate the respiratory system. Symptoms following overexposure may include the following: Headache. Fatigue. Nausea, vomiting.

Toxicological information on ingredients.

trans-DICHLOROETHYLENE

Other health effects	There is no evidence that the product can cause cancer.

HFC-134a Tetrafluoroethane

Other health effects	There is no evidence that the product can cause cancer.
Acute toxicity - inhalation	
Acute toxicity inhalation (LC_{50} gases ppmV)	567,000.0
Species	Rat
ATE inhalation (gases ppm)	567,000.0
Inhalation	Vapors irritate the respiratory system. May cause coughing and difficulties in breathing.
Ingestion	May cause stomach pain or vomiting. May cause nausea, headache, dizziness and intoxication.
Skin Contact	May cause allergic contact eczema. Contact with liquid form may cause frostbite.
Eye contact	May cause temporary eye irritation.

1,1,1,2,2,3,4,5,5,5-decafluoropentane

Acute toxicity - oral	
Acute toxicity oral (LD_{50} mg/kg)	5,000.0
Species	Rat
ATE oral (mg/kg)	5,000.0
Acute toxicity - dermal	
Acute toxicity dermal (LD_{50} mg/kg)	5,000.0
Species	Rat
ATE dermal (mg/kg)	5,000.0
Acute toxicity - inhalation	
Acute toxicity inhalation (LC_{50} vapours mg/l)	114.0
Species	Rat
ATE inhalation (vapours mg/l)	114.0
Skin corrosion/irritation	

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Animal data	Not irritating. Rabbit
Human skin model test	Data lacking.
Extreme pH	Not applicable. Not corrosive to skin.

Serious eye damage/irritation

Serious eye damage/irritation	Not irritating. Rabbit

Respiratory sensitization

Respiratory sensitization	Data lacking.

Skin sensitization

Skin sensitization	Not sensitizing. - Guinea pig: Not sensitizing.

Germ cell mutagenicity

Genotoxicity - in vitro	This substance has no evidence of mutagenic properties.
Genotoxicity - in vivo	This substance has no evidence of mutagenic properties.

Carcinogenicity

Carcinogenicity	Does not contain any substances known to be carcinogenic.
IARC carcinogenicity	Not listed.
NTP carcinogenicity	Not listed.
OSHA Carcinogenicity	Not listed.

Reproductive toxicity

Reproductive toxicity - fertility	No evidence of reproductive toxicity in animal studies.

Skin Contact	Skin irritation should not occur when used as recommended. May cause defatting of the skin but is not an irritant.
Eye contact	May cause eye irritation.
Acute and chronic health hazards	There is no evidence that the product can cause cancer.

12. Ecological Information

Ecological information on ingredients.

trans-DICHLOROETHYLENE

Ecotoxicity	Low acute toxicity to aquatic organisms.

1,1,1,2,2,3,4,5,5,5-decafluoropentane

Ecotoxicity	It is unlikely that the substance will dissolve in water in amounts big enough to have a toxic effect on fish and daphnies.

Ecological information on ingredients.

trans-DICHLOROETHYLENE

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Acute toxicity - fish	LC_{50}, 96 hours: 1350 mg/l, Fish
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: 220 mg/l, Daphnia magna

HFC-134a Tetrafluoroethane

Acute toxicity - fish	LC_{50}, 96 hours: 450 mg/l, Fish
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: 980 mg/l, Daphnia magna

1,1,1,2,2,3,4,5,5,5-decafluoropentane

Acute toxicity - fish	LC_{50}, 96 hours: 13.9 mg/l, Onchorhynchus mykiss (Rainbow trout)
Acute toxicity - aquatic invertebrates	LC_{50}, 48 hours: 11.7 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{50}, 72 hours: >120 mg/l, Algae

Bioaccumulative potential

Bio-Accumulative Potential No data available on bioaccumulation.

Partition coefficient No information available.

Ecological information on ingredients.

trans-DICHLOROETHYLENE

Bio-Accumulative Potential Bioaccumulation is unlikely to be significant because of the low water-solubility of this product.

HFC-134a Tetrafluoroethane

Partition coefficient Pow: 1.06

1,1,1,2,2,3,4,5,5,5-decafluoropentane

Bio-Accumulative Potential Bioaccumulation is unlikely to be significant because of the low water-solubility of this product.

Partition coefficient Pow: 2.7

Mobility in soil

Mobility The product contains volatile substances which may spread in the atmosphere.

Ecological information on ingredients.

trans-DICHLOROETHYLENE

Mobility The product has poor water-solubility.

Other adverse effects

Other adverse effects The product contains a substance or substances that will contribute to global warming (greenhouse effect).

13. Disposal considerations

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Waste treatment methods

General information Waste should be treated as controlled waste. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

14. Transport information

UN Number

UN No. (IMDG) 1950

UN No. (ICAO) 1950

UN proper shipping name

Proper shipping name (TDG) LIMITED QUANTITY

Proper shipping name (IMDG) UN1950 AEROSOLS, NON-FLAMMABLE, 2.2, LIMITED QUANTITY

Proper shipping name (ICAO) UN1950 AEROSOLS, NON-FLAMMABLE, 2.2, LIMITED QUANTITY

Proper shipping name (DOT) LIMITED QUANTITY

Transport hazard class(es)

IMDG Class 2.2 LIMITED QUANTITY

ICAO class/division 2.2 LIMITED QUANTITY

ICAO subsidiary risk N/A

Packing group

IMDG packing group N/A

ICAO packing group N/A

Special precautions for user

EmS F-C, S-V

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable. No information required.

15. Regulatory information

US Federal Regulations

SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities
Not listed.

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)

trans-DICHLOROETHYLENE
Final CERCLA RQ: 1000(454) pounds (Kilograms)

SARA Extremely Hazardous Substances EPCRA Reportable Quantities
Not listed.

SARA 313 Emission Reporting
Not listed.

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CAA Accidental Release Prevention
Not listed.

SARA (311/312) Hazard Categories
Acute
Pressure

OSHA Highly Hazardous Chemicals
Not listed.

US State Regulations

California Proposition 65 Carcinogens and Reproductive Toxins
Not listed.

California Air Toxics "Hot Spots" (A-I)
Not listed.

California Air Toxics "Hot Spots" (A-II)
Not listed.

California Directors List of Hazardous Substances

trans-DICHLOROETHYLENE
Present.

Massachusetts "Right To Know" List

trans-DICHLOROETHYLENE
Present.

Rhode Island "Right To Know" List
Not listed.

Minnesota "Right To Know" List

HFC-134a Tetrafluoroethane
Present.

New Jersey "Right To Know" List
Not listed.

Pennsylvania "Right To Know" List

trans-DICHLOROETHYLENE
Present.

Inventories

Canada - DSL/NDSL
Present.

US - TSCA
Yes

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1,1,1,2,2,3,4,5,5,5-decafluoropentane

Present.
1,1,1,2,2,3,4,5,5,5-DECAFLUOROPENTANE (CAS# 138495-42-8) is controlled by TSCA Section 5, Significant New Use Rule
(SNUR; 40 CFR 721.5645) The approved uses are: precision and general cleaning, carrier fluid, displacement drying, printed circuit board cleaning, particulate removal and film cleaning, process medium, heat transfer fluid (dielectric and non-dielectric), and test fluid. Processors and users of this substance must also comply with the applicable general SNUR requirements set forth in 40 CFR 721 subpart A, including export notification requirements if applicable (40 CFR 721.20), and the applicable record keeping requirements set forth at 40 CFR 721.125.
1,1,1,2,2,3,4,5,5,5-Decafluoropentane 138495-42-8
The United States Environmental Protection Agency (USEPA) has established a Significant New Use Rule (SNUR) for one of the components in this product. This material contains one or more substances which requires export notification under TSCA Section 12(b) and 40 CFR Part 707 Subpart D:

HFC-134a Tetrafluoroethane

Present.

trans-DICHLOROETHYLENE

Present.

16. Other information

Revision comments	NOTE: Lines within the margin indicate significant changes from the previous revision.
Revision date	11/21/2017
Revision	58
Supersedes date	9/5/2017
SDS No.	AEROSOL - PW2
SDS status	Approved.
Hazard statements in full	H225 Highly flammable liquid and vapor. H280 Contains gas under pressure; may explode if heated. H332 Harmful if inhaled. H412 Harmful to aquatic life with long lasting effects.