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HMIS Label

1*	Health
2	Flammability
1	Reactivity

MATERIAL SAFETY DATA SHEET

Kowa American Corporation

CHEMTREC 24-HOUR EMERGENCY NUMBER (800) 424-9300

Section 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:

Oxso 100

para-Chlorobenzotrifluoride
[PCBTF]

Importer's/Distributor's Name and Address
in United States:

Kowa American Corporation
55 East 59th Street, 19th Floor
New York, NY 10022
Telephone: (800) 337-8377
Telephone: (212) 223-0020
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CHEMTREC 24-Hour Emergency Number:

(800) 424-9300

Date Prepared:

July 26, 2001
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Section 2 COMPOSITION AND INFORMATION ON INGREDIENTS

Ingredient	CAS Registry No.	Weight %	Exposure Limits
Benzene, 1-chloro-4-(trifluoromethyl)-	98-56-6	99.0 - 100.0%	20 ppm ¹ (8-hour TWA)
Benzene, 1-chloro-2-(trifluoromethyl)-	88-16-4	< 0.5%	NE
Benzene, 1-chloro-3-(trifluoromethyl)-	98-15-7	< 0.5%	NE
Benzene, 1,2-chloro-4-(trifluoromethyl)-	328-84-7	< 0.1%	NE

NE = Not established

Notes on Composition and Information on Ingredients

¹ The 20 ppm exposure level is Kowa American Corp.'s recommended 8-hour TWA occupational exposure level. No exposure levels have been established by OSHA, ACGIH, or NIOSH.

OTHER PRODUCT INFORMATION

Chemical Name: Benzene, 1-chloro-4-(trifluoromethyl)- (9Cl)

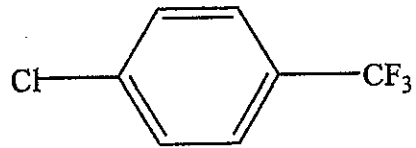
Synonyms/Common Names:

- PCBTF
- p-Chlorotrifluoromethylbenzene
- 4-Chlorobenzotrifluoride
- Toluene, p-chloro- -trifluoro-
- (p-Chlorophenyl)trifluoromethane
- Oxsol[®] 100

(Oxsol is a registered trademark of Occidental Chemical Corp.)

Chemical Category: Chlorobenzotrifluorides

Chemical Structure:



Molecular Formula: C₇H₄ClF₃

Molecular Weight: 180.56

EINECS No.: 202-681-1

**SECTION 3
HAZARD IDENTIFICATION**

*****Emergency Overview*****

Clear colorless liquid with aromatic odor. Combustible. Irritating to skin, eyes, and possibly upper respiratory tract. Wear skin and eye protection. Wear respiratory protection if potential for inhalation exposure. Do not release to the environment.

POTENTIAL HEALTH EFFECTS

INHALATION: Vapors may be irritating to the upper respiratory tract (including the nasal area) and eyes. Prolonged or exposure to high concentrations may be harmful and cause adverse effects including labored breathing and drowsiness. Excessive exposure can cause injury and symptoms of central nervous system effects and depression.

SKIN: Exposure may cause skin irritation. Exposure may also cause dermatitis due to defatting of the skin resulting in irritation, dryness, and cracking of the skin.

EYE: Material (including vapors) may cause eye irritation. Excessive exposure may cause eye injury.

INGESTION: Substance is expected to be only slightly toxic by ingestion. Excessive exposure may cause liver, kidney, and/or thyroid damage.

CHRONIC EFFECTS/CARCINOGENICITY: This substance is not regulated as a carcinogen. No long-term chronic effects or carcinogenicity data are known or available on this product.

NTP: *Not listed*
IARC: *Not listed*
OSHA: *Not listed*

MUTAGENICITY: Generally, the substance has been found to be negative in *in vitro* and *in vivo* mutagenicity studies.

TERATOGENICITY (birth defects): No such data are known to exist.

REPRODUCTIVE TOXICITY: This substance is not expected to cause adverse reproductive effects.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Chronic or overexposure may cause adverse effects in individuals with liver, kidney, or thyroid disorders.

INCOMPATIBILITY: None known.

SIGNS AND SYMPTOMS OF EXPOSURE: Inhalation exposure may cause labored breathing, dizziness, and drowsiness. May cause irritation to the upper respiratory tract, skin, and eyes. May cause defatting of the skin.

See Section 11 – Toxicological Information for more information.

**SECTION 4
FIRST AID MEASURES**

FIRST AID MEASURES

SKIN: Wash with plenty of water, then with soap and water for 15 minutes. Discard contaminated clothing and shoes. Call physician immediately if exposed to large quantities and/or if contact is prolonged.

EYES: Immediately flush with a continuous water stream for at least 20 minutes. Washing immediately after exposure is expected to be very effective in preventing eye damage. Get immediate medical attention.

INHALATION: Remove to fresh air. If not breathing give artificial respiration. If there is breathing difficulty, give oxygen. Get immediate medical attention.

INGESTION/SWALLOWED: Do not induce vomiting. Dilute by giving 1 or 2 glasses of milk or water. Nothing by mouth if unconscious. Get immediate medical attention.

**SECTION 5
FIRE FIGHTING MEASURES**

FLASH POINT: 109 °F [43 °C] (closed cup)

EXPLOSION/FLAMMABLE LIMITS: Upper: 10.5%
Lower: 0.9%

AUTOFLAMMABILITY TEMPERATURE: >900 °F

EXTINGUISHING MEDIA: Use dry chemical, foam, carbon dioxide, and water spray/fog as needed. For large fires alcohol resistant foams are preferred. Synthetic or protein foams can be used, but may not be as effective. Water may not be as effective for large fires.

SPECIAL FIRE FIGHTING PROCEDURES: As in any fire, wear a self-contained breathing apparatus pressure demand (MSHA/NIOSH approved or equivalent) and full protective gear. Toxic vapors may evolve. Fight fires from a safe distance or protected areas. Fire hoses with fog nozzles may be used for controlling fires but care must be exercised not to spread flaming. Use of large volumes of water may produce run-off that could be toxic to wildlife and/or pose a hazardous waste disposal issue. Water may not be effective for large fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This substance is combustible. Sealed containers can explode in the heat of fire. Vapors may travel to ignition source because they are heavier than air. Run off may create an explosion, fire, and environmental hazard.

SECTION 6 ACCIDENTAL RELEASE MEASURES

SPILL/RELEASE AND CLEANUP PROCEDURES: In case of spill, evacuate the area and remove all ignition sources. Dike and contain spill with vermiculite, clay-based absorbents, or other absorbent materials such as polyethylene fiber and polypropylene fiber products. This material may be harmful to aquatic organisms. Do not discharge the washings and other effluents into ponds, streams, or lakes. Wear appropriate respiratory and protective clothing as described in Section 8 during any cleanup and response activities. In the event of an uncontrolled release of this material, the user should determine if the release is reportable under applicable laws and regulations.

SECTION 7 HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Do not drop. Keep away from fire, heat, open flames, lights, and other ignition sources. Wear goggles and gloves when handling. Harmful or fatal if inhaled, absorbed through the skin, or swallowed. Avoid breathing vapors. Eyewash stations and emergency showers must be present in areas where this product is handled, especially areas where loading/unloading operations occur. Wash hands thoroughly after handling and before eating, drinking, or smoking. Ground all containers when transferring the material.

Do not contaminate water, food, or feed by storage or disposal. Keep the product in original containers. Store in cool, dry, well ventilated, low fire risk area away from sunlight. Keep containers closed. Store only in approved containers, under approved conditions. An automatic water spray device should be immediately available. A spill control and containment plan should be provided. Storage area should be indoors and not subject to rapid temperature changes as such changes may cause increased internal pressure. Isolate from toxic materials or substances that may release corrosive, toxic, or flammable fumes on reaction.

SECTION 8 EXPOSURE CONTROLS AND PERSONNEL PROTECTION

RESPIRATORY PROTECTION: Respirators equipped with organic vapor cartridges are anticipated to provide adequate respiratory protection during short-term exposures to low vapor concentrations of the material. Workers should wear a supplied-air respirator or self-contained breathing apparatus any time exposure is above low levels or during extended exposure periods. Use MSHA/NIOSH-approved respiratory equipment. Respirators should be selected based on the form and concentration of the contaminant in the air and in accordance with OSHA (29 CFR 1910.134). Handle only in the presence of adequate ventilation.

PROTECTIVE GLOVES: Wear chemical resistant gloves appropriate to the conditions to prevent skin exposure. Glove material comparisons indicate that (supported) **polyvinyl alcohol** gloves generally afford adequate hand protection. (Note: polyvinyl alcohol gloves are not appropriate in the presence of water.) Under conditions of limited exposure and abrasion, nitrile gloves were found to be satisfactory. Gloves made of butyl rubber, PVC, and neoprene were found **NOT** to provide adequate hand protection. Rinse and remove gloves immediately after use, and wash hand thoroughly with soap and water. Gloves should be removed and replaced immediately if there are any signs of degradation or breakthrough.

PROTECTIVE CLOTHING: Wear protective clothing and boots impervious to the product for the duration of the anticipated exposure if there is a potential for skin contact. An emergency shower should be readily accessible. Discard any contaminated clothing.

EYE PROTECTION: Chemical safety goggles meeting the specifications of ANSI Standard Z87.1 should be worn whenever there is the possibility of contact with the eyes. Spectacle type safety glasses do not provide satisfactory protection. An eyewash fountain should be readily accessible. Wear plastic face shield in addition to safety goggles where there is a danger of splashing.

AIR MONITORING: No information is available.

EXPOSURE GUIDELINES: No official exposure guidelines have been established for this substance. Kowa American recommends that an 8-hour time-weighted average of 20 ppm be observed.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless clear liquid
Odor:	Aromatic odor
Boiling Point:	139 °C (760 mm Hg)
Specific Gravity:	1.34 (25 °C)
Vapor Pressure:	5.3 mm Hg (20 °C); 7.6 mm Hg (25 °C)
Sat'd Vapor Concentration:	~7,000 ppm (20 °C)
Vapor Density (air = 1):	6.24
Viscosity:	0.67 cps (38 °C); 0.32 cps (99 °C)
Refractive Index (n_D):	1.4431 (30 °C)
Freezing Point:	< -33 °C
Solubility in Water:	Nearly insoluble
Odor Threshold:	0.11 ppm
Weight per Gallon:	11.28 lbs. (15.5 °C)
Volatile (%):	100%*

* See Section 15 concerning this compound's exclusion from the definition of VOC under the federal Clean Air Act.

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions.

CONDITIONS TO AVOID: Avoid heat, fire, open flames, direct light, ignition sources, and UV radiation.

INCOMPATIBILITY/MATERIALS TO AVOID: Incompatible with oxidizing agents such as permanganates and dichromates. Reaction with sodium dimethylsulfinate is expected to be strongly exothermic.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Hydrogen fluoride, hydrogen chloride, and organic halides.

HAZARDOUS POLYMERIZATION: Not expected to occur.

**Section III
TOXICOLOGICAL INFORMATION**

ACUTE TOXICOLOGICAL DATA:

Test	Result
Oral Rat LD ₅₀	> 6,700 mg/kg
Inhalation Rat LC ₅₀ [4-hr]	4,470 ppm (33.0 mg/l)
Dermal Rabbit LD ₅₀	> 2,700 mg/kg

EYE IRRITATION DATA: In eye irritation studies, the compound was found to be slightly to moderately irritating.

SKIN IRRITATION DATA: In skin irritation studies, the compound was found to be slightly to moderately irritating.

SKIN SENSITIZATION DATA: No such data are known to exist.

SUBCHRONIC DATA: A 13-week inhalation study was conducted in rats exposed for 6 hours per day, 5 days a week at concentrations of 0, 10, 51, or 252 ppm. An increase in liver weights was seen in the high dose group. No macroscopic effects were noted. No adverse central nervous system effects were observed as measured by motor activity, functional observation battery, or neuropathology. In a separate study, rats were dosed daily via oral gavage for three months at 0, 10, 40, 150, or 500 mg/kg. Effects noted included initial decrease in body weight gain, decreased food consumption, and changes in biochemical parameters. Increases were noted in liver, kidney, and thyroid weights in both sexes in most treatment groups. Microscopic effects were also observed in these same organs. No overt physical signs of toxicity were observed during treatment. Effects similar to those described in the above two studies have also been observed in shorter inhalation and oral gavage testing.

REPRODUCTIVE TOXICITY: In a two-generation reproduction study rats were exposed daily via oral gavage at doses of 0, 5, 15, and 45 mg/kg. Only limited reproductive effects were noted. Contact Kowa American for more information on the results of this study

TERATOGENICITY (birth defects): No such data are known to exist.

MUTAGENICITY: PCBTF was found to be negative in the following mutagenicity studies: chromosomal aberration studies, the cell transformation assay, DNA repair deficiency assay, and the mouse lymphoma forward mutation assay. The substance was found to produce positive results in the sister chromatid exchange test. In Ames testing, the compound was generally found to be negative at concentrations of 0.01, 0.1, 1.0, 5.0, and 10 μ /plate in the presence or absence of activation. However, in two strains at the high dose, positive results were observed.

CHRONIC EFFECTS/CARCINOGENICITY: There are no chronic effects or carcinogenicity data.

**SECTION 12
ECOLOGICAL INFORMATION**

SUMMARY OF ECOLOGICAL DATA: The potential for accumulation in aquatic organisms may be high based on an estimated bioconcentration factor (BCF) of 320. The substance is expected to volatilize from water and have only slight soil mobility.

ECOTOXICOLOGICAL DATA:

Test	Result
Fish – <i>Lepomis macrochirus</i>	
[24-hr LC ₅₀]	15.9 - 22.9 mg/l
[48-hr LC ₅₀]	11.5 - 15.8 mg/l
[72-hr LC ₅₀]	11.4 - 14.1 mg/l
[96-hr NOEC]	5.6 mg/l
Fish – <i>Salmo gairdneri</i>	
[24-hr LC ₅₀]	13.5 mg/l
Aq. Invertebrates – <i>Daphnia magna</i>	
[24-hr EC ₅₀]	~ 4 - 15 mg/l
[48-hr EC ₅₀]	~ 4 - 14 mg/l
[4-day EC ₅₀]	0.12 - 0.22 mg/l
[21-day EC ₅₀]	0.047 - 0.107 mg/l

OTHER ECOTOXICOLOGICAL DATA: In a chronic fish study in *Pimephales promelas*, the NOEC and LOEC values were found to be 0.54 mg/l and 1.4 mg/l, respectively.

ENVIRONMENTAL FATE DATA: In an anaerobic screening study, the substance was found to degrade 64% after 59 days.

PHYSICAL/CHEMICAL PROPERTIES: The measured Log K_{ow} was determined to be 3.7 (25 °C). Based on this value, the K_{oc} was calculated ~2,200. Due to the high K_{oc}, soil absorption is anticipated. The Henry's Law constant was calculated to be 3.5 x 10⁻² atm · m³/mol.

SECTION 13
DISPOSAL CONSIDERATIONS

RCRA CLASSIFICATION: If discarded in its manufactured form, this product is expected to be a characteristic hazardous waste under RCRA. However, it is the responsibility of the user to determine at the time of disposal whether a material containing the product or derived from the product that should be classified as a hazardous waste.

SPECIAL INSTRUCTIONS: This material is toxic to aquatic organisms. Do not discharge effluent containing this product into municipal sewers or open bodies of water. This substance is expected to be a characteristic hazardous waste under RCRA. All recovered material should be packaged, labeled, transported, and disposed of in conformance with applicable laws and regulations. Incinerate the wastes in an approved facility which complies with local, state, and federal regulations. For disposing of the container, completely empty the container. Rinse empty container with water and dispose of the container in a sanitary landfill or by incineration.

SECTION 14
TRANSPORT INFORMATION

U.S./INTERNATIONAL SHIPPING INFORMATION UNDER DOT/IMO/IATA REGULATIONS:

Label/Placard:	Flammable liquid
Proper Shipping Name:	Chlorobenzotrifluorides
Hazard Class:	Class 3, packaging group III
UN or ID No.:	UN 2234

U.S. COMBUSTIBLE LIQUID EXEMPTION: Under international shipping regulations, this material is classified as a flammable liquid. However, pursuant to the regulations at 49 CFR 173.150 this material may be reclassified as a combustible liquid for U.S. transport only. This reclassification allows the material to be transported without labels, placards, or proper shipping names. This provision only applies to transport via highway and does not apply to transport by vessel or aircraft. Under this provision, this material may only be transported in non-bulk packaging (*i.e.*, drums or smaller).

SECTION 15
REGULATORY INFORMATION

REGULATORY STATUS OF PCBTF: This substance is listed on the Toxic Substances Control Act (TSCA) Chemical Substance Inventory. This product contains no chemicals subject to export notification under TSCA Section 12(b). Benzene, 1,2-chloro-4-(trifluoromethyl)- [CAS RN 328-84-7] was previously subject to such export notification under a Section 4 testing consent agreement. However, pursuant to a June 19, 1995 Federal Register, this chemical is no longer subject to Section 12(b) export notification. [60 Fed. Reg. 31917]. This product, as well as its impurities, may trigger other specific reporting, recordkeeping, and testing requirements under: EPCRA/SARA III, RCRA, CERCLA, CAA, SDWA, and CWA.

CLEAN AIR ACT: PCBTF has been determined to have negligible photochemical reactivity for purposes of attaining the ozone national ambient air quality standard. As such, the substance has been excluded from the definition of volatile organic compounds (VOCs) under 40 CFR 51.100(s)(1), subject to certain conditions at part 51.100(s)(2)-(4). Note: states are not necessarily obligated to exclude from control as a VOC a compound, such as PCBTF, that EPA has found to be negligibly reactive. Customers should verify that a particular state, in which this compound is being used, has maintained the exclusion for this substance as a VOC under the applicable State Implementation Plan (SIP).

This product contains no chemicals that are identified as Hazardous Air Pollutants (HAPs) under Section 112 of the Clean Air Act.

CALIFORNIA PROPOSITION 65: This product contains no chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

OTHER STATE CHEMICAL LISTS: PCBTF and the two impurities given in Section 2 are identified on several state chemical lists.

Section 16
OTHER INFORMATION

DISCLAIMER: The information presented herein is believed to be factual. However, none of this information is to be taken as a warranty or representation for which the Kowa American Corporation, Kowa Company, Ltd., or the preparer bears legal responsibility. The user should review any recommendation in the specific context of the intended use to determine whether it is appropriate.