

Safety Data Sheet

Internal Thermal Control System (ITCS) Fluid

Date: 9-17-2014

1. Product and Company Identification

Product Name: Internal Thermal Control System (ITCS) Fluid, Revision F
Product use: Heat transfer fluid
Manufacturer: Jacobs Space Operations Group (JSOG)
Kennedy Space Center, FL 32899
Information: JSOG Safety and Health (321-861-4929)
Emergency Telephone: 800-424-9300 (Chemtrec)

2. Hazards Identification

2.1 Emergency overview

This material should not present a toxic hazard under normal conditions of use or during accidental releases. It does not present any unusual fire hazards.

2.2 Regulatory status

This material is not classified as hazardous under OSHA regulations.

2.3 Potential health effects

Route of entry: Skin contact, eye contact, inhalation of mist

Effects of acute exposure: No acute effects are anticipated.

Effects of chronic exposure: No chronic effects are anticipated.

Irritant hazards: Moderate irritation in the case of eye exposure.

Sensitization hazards: One of the components (OPA) may rarely cause allergic reactions. Carcinogenicity, reproductive toxicity, teratogenicity and mutagenicity are not expected.

2.4 Ecological Information

Significant environmental damage is not expected from minor spills. Minor impact on microbial flora in the ecosystem may result from disinfectant properties.

2.5 Label Elements

Signal word: WARNING

Pictogram: Health Hazard

Hazards: May cause allergy or asthma if inhaled
Causes eye irritation

Precautions: Avoid breathing mist or spray
Wear eye protection

HMIS: Health: 1 Flammability: 0 Reactivity: 0

3. Composition/Information on Ingredients

Hazardous Ingredients

ortho-phthalaldehyde (OPA)

Also known as: Phthaldialdehyde and as: 1,2 –benzenedicarboxaldehyde

CAS number: 643-79-8 RTECS number: TH6950000

Concentration in this product: <500 ppm (w/v), equivalent to .05%.

Exposure limits (industry internal standards):

8-hour TWA: 19 µg/m³

STEL: 148 µg/m³

Ortho-phthalaldehyde is commonly used as an antiseptic for cleaning medical equipment. At concentrations above .25% (2500 PPM) it can occasionally cause irritation, significant allergic reactions, or sensitization. However no detectable irritant or allergic effects have been reported at the concentrations used in this product (<.05%), and none are expected.

Non-hazardous ingredients:

Component	CAS Number	Percent by weight
Sodium Borate	13840-56-7	<0.16
Sodium Carbonate	497-19-8	<0.27
Sodium Bicarbonate	144-55-8	<0.64
Water	7732-18-5	>98.0

4. First Aid Measures

Eyes: Irritant hazard. Rinse the eyes using eyewash and proceed to medical evaluation if any pain, difficulty with vision, or other problems are noticed.

Inhalation of mist or vapor: Remove the exposed individual from the contaminated area. If there is any difficulty breathing or other significant symptoms proceed to medical evaluation or call 911 for assistance.

Skin: Acute toxicity is unlikely. Treat as appropriate for any other exposures.

Ingestion: Acute toxicity is unlikely. Treat as appropriate for any other exposures.

5. Fire Fighting Measures

5.1 Flammable properties:

Conditions of flammability: Non-flammable

Explosion data: Non-reactive

5.2 Extinguishing media: No specific requirements

5.3 Protection of Firefighters: No specific hazards are expected from this product in a fire.

6. Accidental Release Measures

This material is not considered hazardous, however if it is mixed or combined with other chemicals, the procedures required for that material should be followed. The following applies to spills of ITCS alone.

6.1 Personal precautions: Chemical protective gloves, splash apron and similar skin protection are recommended as for all chemical spills.

6.2 Environmental precautions: Contact your company Environmental Department for specific spill measures

6.3 Methods for containment: Contain spill with absorbent material.

7. Handling and Storage

7.1 Handling: No special precautions are required.

7.2 Storage: Standard containers suitable for water/salt solutions are appropriate.

8. Exposure Controls/Personal Protection

8.1 Exposure Guidelines

Industry exposure guidelines are for the OPA component only. These concentrations are not expected under normal conditions of use:

8-hour TWA: 19 µg/m³

STEL: 148 µg/m³

8.2 Engineering Controls

Not required under normal conditions of use.

8.3 Personal protective equipment (PPE)

Eye protection: Wear chemical safety goggles to protect against splashing in eyes

Skin protection: Chemical protective gloves (nitrile or equivalent) are recommended if significant exposure is anticipated.

Respiratory protection: Not usually required. If high concentrations of mist or vapor are expected a respirator suitable for chemical mist should be used.

9. Physical and Chemical Properties

Physical state	Liquid
Odor and appearance	Clear liquid, no odor
Specific gravity	1.00
Vapor pressure	17 mm Hg @ 20C
Vapor density	N/A
Evaporation rate (water=1)	1
Boiling point	100C
Freezing point	0C
pH	9.2±0.2
Chemical Specifications:	
Carbonates	<1500 ppm
Bicarbonates	<4600 ppm
Borate (as B ₄ O ₇)	<1250 ppm

ortho-Phthaldehyde (OPA)

<500 ppm

10. Stability and Reactivity

10.1 Chemical stability: Stable

10.2 Conditions to avoid: None significant

10.3 Incompatible materials: The product contains a bicarbonate buffer and will react mildly with strong acids and bases, however no significant incompatibilities are expected in normal use.

10.4 Hazardous decomposition products: None significant

10.5 Possibility of hazardous reactions: None significant

11. Toxicological Information

LD50 (species and route): The only likely toxin in ITCS fluid is OPA. For 100% OPA, the lowest published lethal dose is 7mg/kg in mouse. This would correspond to 14 gm/kg for ITCS. No foreseeable incident would result in this level of personnel exposure.

Effects of acute exposure: OPA can stain unprotected skin however no other significant effects are expected.

Effects of chronic exposure: None expected

Irritancy of product: Mild eye irritant

Sensitization to product: Unlikely, however in rare cases some individuals become allergic to OPA. If allergic symptoms occur while working with the product, i.e. skin rash, facial swelling, verify effectiveness and fit of PPE and/or seek medical evaluation

Carcinogenicity, reproductive toxicity, teratogenicity, and mutagenicity have not been reported.

12. Disposal Considerations

Dispose of in accordance with federal, state and local regulations.

13. Transport Information

13.1 US DOT: Not Regulated

13.2 IATA: Not Regulated

14. Regulatory Information

SARA 312 Hazard Classes: None

TSCA Status: OPA is listed in TSCA inventory with ID 6550

CERCLA/SARA RQ: No ingredients listed

Toxic Release Inventory: No ingredients listed

WHMIS: Not regulated

Canada: All ingredients are on the DSL/NDSL list

EINECS: Listed in inventory