

## Material Safety Data Sheet

### 1. Information on Chemical Substances, etc. and Company

Name of Chemical Substances, etc.	HYPER CLEAN 3310
Reference No.	PW9037U5E002
Name of Company	Olympus Corporation
Address	2-3-1 Nishi-Shinjuku, Shinjuku-ku, Tokyo Shinjuku-Monolith
Department in Charge	Industrial Business Division. Industrial Marketing & Planning Department. Optical Measuring Instrument Sales
Telephone No.	03-6901-9140
FAX No.	03-6901-4913
E-Mail Address	opto-m@ot.olympus.co.jp
Recommended Applications and Usage Limitations	Hand-wiping cleaning liquid for optical lenses, optical prisms, processed metal parts, and thermoplastic and thermosetting resins.

### 2. Summary of Hazards

#### GHS Classification

Physical and Chemical Hazards	Inflammable and Ignitable Gases: Not classified	
	Aerosol Classification 1 for Combustibility / Inflammability	
	Combustion assisting gas and oxidizer gas: Not classified	
	High Pressure Gas Liquefied Gas	
	Inflammable Liquid Classification 2	
	Not Classified as Spontaneous Ignition Liquid	
	Self-ignitable chemical: Not classified	
	Oxidizing Liquid: Not classified	
	Not Classified as Metal Corrosive Substance	
	Health Hazards	Acute Toxicity (Oral): Not classified
		Acute Toxicity (Percutaneous): Not classified
		Not Classified as Acute Toxicity (Inhalation: Gas)
		Acute Toxicity (Inhalation: Vapor): Not classified
Serious Damage to the Eyes / Eye Irritation Class 2A		
Mutagenicity for Reproductive Cells Class 1B		
Effects on Reproduction Class 1A		
Specified Target Organ Toxicity (Single Exposure) Class 3 (Airway Irritation)		
Specified Target Organ Toxicity (Single Exposure) Class 3 (Anesthetic Action)		

	Specified Target Organ Toxicity (Multiple Exposure) Class 1 (Liver)
	Specified Target Organ Toxicity (Multiple Exposure) Class 2 (Nervous System)
Environmental Hazards	Acute Hazards for the Aquatic Environment Class 1
	Hazards not shown above are either not targeted or not classifiable. Based on explanation (3.1.3.5.7) of GHS Rev 2 (Purple Book Rev 2), the propellant gas & non-gas components (components other than propellant gas) were divided in this sheet and replaced with the component content in each mixture. This sheet shows the Class Results that were conducted separately.
GHS Label Element Symbol	
Alert word	Danger
Danger and Hazard Information	Extremely highly combustible and inflammable aerosol Pressurized Gas: Danger of Explosion When Heated Highly Inflammable Liquid and Vapor Strong Eye Irritant Danger of Genetic Disease Danger of Harm to Reproductive Function and Fetuses Danger of Respiratory Irritation Danger of Drowsiness and Dizziness Liver Damage with Long-term or Repeated Exposure Danger of Damage to Nervous System with Long Term or Repeated Exposure Very toxic to aquatic life
Precautions	Always obtain the Instruction Manual before use.
Safety Measures	Read all safety precautions and fully understand them before handling the product. Do not puncture or incinerate the pressurized container after use. Do not spray at open flame or other ignition sources. Keep away from ignition sources such as heat, sparks, or open flame. Do not smoke when using the product. Use explosion-proof electrical equipment, ventilators, lighting, etc.

	Use tools that do not generate sparks.
	Take safety measures to discharge static electricity.
	Ground the container. Use a grounding wire.
	Keep in a cool place.
	Keep the container tightly sealed.
	Use the product outdoors or in a well-ventilated area.
	Wear protective gloves, protective eyeglasses and a protective mask.
	Use designated individual protective equipment.
	Wash your hands thoroughly after handling the product.
	Do not eat, drink, or smoke when using the product.
	Avoid discharging the product into the environment.
Emergency Medical Measures	In case of fire, use the proper fire extinguisher.
	If the spray is inhaled, remove the victim to fresh air and keep them in a rest position comfortable for breathing.
	If the product adheres to the skin or hair, immediately remove any contaminated clothes and wash the skin or hair with running water or a shower.
	If the product comes on contact with the eyes, wash thoroughly for several minutes. When contact lenses are used and are easily removable, remove them, and continue washing the eyes.
	If irritation of the eyes persists, see a physician for diagnosis and treatment.
	In case of exposure or fear of exposure, see a physician for diagnosis and treatment.
	If you feel unwell after using the product, see a physician for diagnosis and treatment.
Storage	Keep the product away from sunlight and do not expose it to temperatures of 50 deg C or higher.
	Store the product away from sunlight, in a well ventilated area.
	Store in a cool, well-ventilated area.
	Store the product in a locked area.
	Keep the container tightly sealed and store it in a well ventilated area.
Disposal	Use an authorized industrial waste disposal agent for disposal of the product.
Important Dangers and Hazards	The product is an easily ignitable liquid and forms an explosive mixture with air. There is a danger of genetic disease, carcinogenicity, harmful effects on reproductive organs or a fetus, and liver and nervous system problems with long-term or repeated exposure.

3. Information on Composition and Components

Classification of Substance or Mixture		Mixture		CAS No.
Chemical Name or General Name	Concentration or Range of Concentration	Public announcement Reference No. in the Official Gazette		
		Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances	Industrial Safety and Health Act	
Methyl Siloxane	60 - 70%	(2)-2956		107-46-0
Ethanol	30 - 40%	(2)-202		64-17-5
Carbon Dioxide	<4%	(1)-169		124-38-9

Impurities and Stabilizer Additives that Contribute to the Classification      No Information

Industrial Safety and Health Act	Dangerous and Harmful Substances Whose Names Should be Notified (Article 57-2 of the Law, Appended Table 9 of the Article 18-2 of the Order for Enforcement)	Ethanol (Government Ordinance No.: 61) (30 - 40%)
----------------------------------	--	---

4. Emergency Measures

If the product is inhaled	Remove the victim to fresh air and keep them in a rest position comfortable for breathing. Receive a diagnosis and treatment from a physician.
If the product adheres to the skin	If skin irritation occurs, see a physician for diagnosis and treatment. Receive a diagnosis and treatment from a physician.
If the product comes in contact with the eyes	Wash thoroughly with water for a few minutes. If contact lenses are worn and are easy to remove, remove them, and continue to wash the eyes. If irritation of the eyes persists, see a physician for diagnosis and treatment. Receive a diagnosis and treatment from a physician.
If the product is swallowed	Rinse the mouth. Receive a diagnosis and treatment from a physician.
Expected acute symptoms and delayed symptoms	[Acute Symptoms] If the product comes in contact with the eyes, the eyes may become bloodshot and painful. If vapor is inhaled, it may irritate the respiratory tract and may cause drowsiness or dizziness.
Protection of the person conducting first-aid	Because the product is highly flammable, be careful of flame when treating at the site.

5. Measures to be taken in case of fire

Fire Extinguishing Agents	Dry powder chemicals, Carbon Dioxide, Water Spray
Fire extinguishers that should not be used	Flooding with water
Specific Dangers and Hazards	<p>There is a danger of generating gases that are irritating, corrosive and/or toxic.</p> <p>There is danger of explosion if the container is heated.</p> <p>There is danger of pieces scattering if the container explodes.</p> <p>Extremely flammable. Easily ignited by heat, sparks, or flame.</p> <p>There is danger of vapor explosion indoors, outdoors, or in waste water ditches.</p>
Special fire extinguishing method	<p>Use the proper fire extinguishing agent in accordance with the type of fire.</p> <p>If not dangerous, move the containers away from the</p> <p>Conduct firefighting activities from the farthest effective distance, and use automated hose holders or nozzles with monitors for firefighting.</p> <p>Do not spray water directly onto the leakage source or safety devices, as they may freeze.</p> <p>Only experts should handle damaged cylinders.</p> <p>Use plenty of water to thoroughly cool the containers, even after the fire is extinguished.</p> <p>The ignition point is extremely low. For a large fire where fire extinguishing means other than spraying water are not effective, use water spraying.</p> <p>For a large fire, conduct fire fighting with automated hose holders and nozzles with monitors. If this is impossible, seek refuge in a safe place, and allow the containers to burn.</p> <p>Evacuate to and conduct firefighting from safe distance. When exposed to heat, the containers may rupture and discharge highly toxic vapor or decomposition products.</p>
Protection for person(s) conducting the firefighting	When firefighting, wear protective clothes (heat resistant), including a respirator.

6. Measures taken for leakage

Precautions for the body, protective equipment, and emergency measures	<p>Do not touch or walk in any spillage.</p> <p>Immediately isolate the spillage area a suitable distance in all directions.</p> <p>Limit access to only authorized personnel.</p>
--	--

	Workers shall wear suitable protective equipment (Refer to 8. Exposure Prevention Measures and Protective Measures), avoid contact with the eyes and skin, and avoid inhalation.
	Remain upwind of the site.
	Keep away from low ground.
	Ventilate a closed space before entering it.
	Ventilate the spillage area.
Precautions related to the environment	Be careful not to discharge the spillage into rivers, which will cause environmental problems.
	Do not discharge the spillage into the environment.
Recovery and Neutralization	If spillage is small, absorb or cover the spillage with dry soil, sand, or an incombustible absorbent material, and recover the material into tightly sealable containers.
	If the spillage is large, surround the area with a bank to prevent out-flow, and pump out the spillage.
	If the spillage is small, collect the absorbent material using clean, anti-static tools.
	If the spillage is large, water spray will lower the vapor concentration. However, in a tightly enclosed area there is a risk of not effectively suppressing the flammability of the product.
Containerization and Clarification Methods and Equipment	If the situation does not present any danger, stop the leakage.
	If possible, overturn the leaking container to discharge gas instead of liquid.
	Cool the container to suppress evaporation and spray water to disperse the vapor cloud.
	Ground all equipment used for handling the spillage.
	Use vapor suppressing foam to lower the vapor
Measures to Prevent Secondary Disasters	Remove all ignition sources promptly. (Prohibit smoking and use of sparks and flame in the vicinity.)
	Do not let water come in contact with the spillage.
	Prevent flow into waste water ditches, sewage ditches, basements and enclosed areas.
	Do not spray water directly onto the spillage or leakage source.

7. Precautions for Handling and Storage

Handling	Technical Countermeasures	Conduct the facility measures described in 8. Exposure Prevention Measures and Protective Measures and wear protective equipment.
	Local Exhaust and General Ventilation	Use local exhaust and general ventilation measures described in 8. Exposure Prevention Measures and Protective Measures.

Precautionary Items Related to Safety Handling		Obtain the Instruction Manual prior to use.
		Read all safety precautions and fully understand them before handling the product.
		Prohibit use of high temperature material, sparks and flame near the product.
		Do not spray the product in open flame or a high temperature incandescent body.
		Do not puncture or incinerate the pressurized container after use.
		Handle containers carefully. Do not bump the containers or let them fall violently.
		When attaching or removing the containers, make sure that spilling does not occur.
		After use, close the valve completely, attach the mouthpiece cap, and then attach the protective cap.
		Containers should not be tumbled, dropped, bumped or dragged.
		Do not touch, inhale or swallow the product.
		Use exhaust ventilation to keep the concentration in the air below the exposure limit.
		There is a danger of suffocation if a large amount is inhaled.
		Handle the product in a well-ventilated area.
		Wash your hands thoroughly after handling the product.
		Use the product outdoors or in a well-ventilated area.
	Do not eat, drink, or smoke when using the product.	
	Avoid contact	Refer to 10. Stability and Reactivity.
Storage	Technical Countermeasures	Steel cans may sometimes rust and then rupture. Do not store the product in high moisture areas.
		Do not forget about or leave the product unused for long periods of time.
		Promptly return unused high pressure containers to the sales agent.
		Make sure the storage area for the product has a fire resistant structure for the walls, pillars, and floors. Beams shall be made of incombustible material.
		The roof of the storage area for the product shall be made of incombustible material and covered with light-weight incombustibles, such as metal sheet. There should be no ceiling.
		The floor of the storage area for the product shall have a structure that will not allow water to enter or penetrate the floor surface.

The floor of the storage area for the product shall have a structure that will not allow dangerous substances to penetrate, and shall have a suitable slope and gutter for retaining spillage.

The storage area for the product shall be equipped with suitable lighting, illumination, and ventilation for storing and handling dangerous substances.

Hazardous substance when mixed	Refer to 10. Stability and Reactivity.
Storage Conditions	Store by keeping away from ignition sources such as heat, sparks, and open flame. No smoking is allowed near the product.
	Keep the product out of sunlight, and do not expose to temperatures exceeding 50 deg. C.
	Keep the container away from sunlight and flame Store at a temperature below 40 deg C.
	Store the container away from oxidants.
	Keep the containers away from sunlight and flame
	Keep the containers tightly sealed, and store in a cool, well-ventilated area.
	Store the product in a locked area.
Container packaging materials	Use containers that are air-tight and pressure resistant.
	Use containers specified in the Fire Service Act and United Nations Transportation Laws and Regulations.

8. Exposure Prevention Measures and Protective Measures

	Control Concentration	Permissible concentration (Exposure Limit Value Biological Exposure Index)	
		Japan Society for Occupational Health 2009 Edition	ACGIH 2009 Edition
Methyl Siloxane	Undetermined	Undetermined	Undetermined
Ethanol	Undetermined	Undetermined	TWA 1000 ppm
Carbon Dioxide	Undetermined	5000 ppm (9000 mg / m3)	TWA 5000 ppm STEL 30000 ppm

Facility Countermeasures		Install explosion-proof local exhaust equipment.
		Use explosion-proof electrical, ventilating and illuminating equipment.
		Take steps to prevent static electricity discharge.
		Install eye washing equipment and safety showers in the work area where the product is stored or handled.
Protective Equipment	Protective breathing apparatus	Use individual protective breathing apparatuses, as required.
	Hand protection	Wear warm gloves.

Eye Protection	Wear protective equipment for the eyes. Protective eyeglasses (ordinary eyeglasses, ordinary eyeglasses with side plates, goggle-type eyeglasses).
Skin and body protection	Wear protective equipment for the face.
	Use individual protective clothes and protective masks, as required.
	The only necessary preventive measure is to wear clothes that cover the entire body.
Sanitary Measures	Wash your hands thoroughly after handling the product.

### 9. Physical and Chemical Properties

Physical Conditions	Form	Aerosols
	Color	Colorless and transparent
	Odor	Alcohol Odor
	pH	No Data
Melting Point and Freezing Point		≤-86 deg C (Melting Point)
Boiling Point, Initial Boiling Point, and Boiling Range		72 deg C (101 kPa) (Boiling Point)
Flash Point		0 deg C (Tightly Closed Tag Type)
Flammability or Explosion Range	Lower Limit	1.8 vol%
	Upper Limit	24.5 vol%
Vapor Pressure		9.1 kPa (20 deg C)
Vapor Density (Air = 1)		2.9
Specific Gravity (Density)		0.77 (25 deg C)
Solubility		Insoluble in water
Octanol (Water Distribution Coefficient)		No Data
Spontaneous Ignition Temperature		≥ 350 deg C
Decomposition Temperature		No Data
Evaporation Speed (Butyl Acetate = 1)		No Data No Data
Combustibility (Solid and Gas)		Not applicable
Viscosity		0.62 mPa / s (25 deg C)
Coefficient of Kinematic Viscosity		0.80 mm <sup>2</sup> / s (25 deg C)
Lower Limit Concentration for Dust Explosion		No Data
Minimum Ignition Energy		No Data
Volume Resistivity (Conductance)		No Data
Others		No Data

**10. Stability and Reactivity**

Stability	Stable under normal handling conditions
Possibility of Hazardous and Harmful Reactions	No dangerous reaction if handled and stored as specified.
Conditions to avoid	Ignition sources, such as heat, sparks, and open flame.
Hazardous substance when mixed	Oxidants
Hazardous and harmful decomposition materials	Gases generated by combustion, such as carbon monoxide, carbon dioxide, etc.

**11. Toxicity Information**

Acute Toxicity	Oral	Estimated values for the acute toxicity of components are 6112 mg / kg for Methyl Siloxane and 6200 mg /kg for Ethanol. The estimated acute toxicity value for the mixture is 6141.97 mg / kg, so this corresponds to GHS: Not classified.
	Percutaneous	The estimated value of acute toxicity for the component is 12200 mg / kg for Methyl Siloxane and because the estimated value of acute toxicity for the mixture is 12200 mg / kg, it corresponds to GHS: Not classified. (34.38% of the mixture consists of components with unknown toxicity.)
	Inhalation (Gas)	Because the estimated value of acute toxicity for the component is 166170 ppm for Carbon Dioxide and the acute toxicity for the mixture is 166170, this corresponds to GHS: Not classified.
	Inhalation (Vapor)	Because the estimated values of acute toxicity for the components are 15956 ppm for Methyl Siloxane and 52320 ppm for Ethanol, and the estimated value of the acute toxicity for the mixture is 20965.15 ppm, this corresponds to GHS: Not classified.
	Inhalation (Mist)	This cannot be classified due to lack of data.
Skin Corrosiveness / Irritation		Although all non-gas components are not classified, because the components of the propellant gas cannot be classified, this corresponds to Cannot be Classified.
Serious damage and irritation to the eyes		Because Ethanol is Class 2A, and the total Component Concentration of Class 2A exceeds the Concentration Limits (10%), this corresponds to GHS: Class 2A Strong Eye Irritation.
Sensitization of Respiratory Organs		Cannot be classified due to lack of data.
Sensitization of Skin		Cannot be classified due to lack of data.
Mutagenicity for Reproductive Cells		Because Ethanol is Class 1B, and exceeds the Concentration Limit (0.1%), it corresponds to Class 1B Danger of Genetic Disease of GHS.
Carcinogenicity		This cannot be classified due to lack of data.

Reproductive Toxicity	Because the Classification of Ethanol is 1A, and it exceeds the Concentration Limit (0.3%), this corresponds to Danger of Harmful Effects on Reproductive Function and Fetuses.
Specific Target Organ Toxicity (Single Exposure)	Because Ethanol is Class 3 (Airway Irritation), and the total Component Concentration exceeds the Concentration Limits (20%), this corresponds to GHS: Class 3 (Airway Irritation) "Danger of Respiratory Irritation." (Expert opinions were not sought when judging Class 3 (Airway Irritation).)
	Because Ethanol is Class 3 (Anesthetic Action), and the total Component Concentration exceeds the Concentration Limits (20%), this corresponds to GHS: Class 3 (Anesthetic Action) "Danger of causing drowsiness and dizziness." (Expert opinions were not sought when judging Class 3 (Anesthetic Action).)
Specific Target Organ Toxicity (Repeated Exposure)	Because the Class 1 Component in which the Component Concentration is higher than the Concentration Limits (10.0%) is Ethanol (Liver), this corresponds to GHS: Class 1 (Liver) Danger of harmful effects to these organs by long term or repeated exposure.
	Because the Class 2 Component in which the Component Concentration exceeds the Concentration Limits (10.0%) is Ethanol (Nervous System), this corresponds to GHS: Class 2 (Nervous System) Danger of harmful effects to these organs by long term or repeated exposure.
Toxicity to Respiratory Organs	Cannot be classified due to lack of data.

12. Information on Environmental Effects

Acute toxicity to the aquatic environment	Methyl Siloxane	LC50 Japanese medaka : 1.27mg/L 48hr
---	-----------------	--------------------------------------

13. Precautions at the time of disposal

Residual Waste

When disposing of high pressure gas, follow the provisions of the High Pressure Gas Safety Law and the General High Pressure Gas Safety Regulations.

Prior to disposal, perform as much detoxification, safety and neutralization treatment as possible, and lower the level of hazard and toxicity.

At the time of disposal, follow the related Laws and Regulations, as well as local government standards.

Use authorized agents for industrial waste disposal, or local public organizations if they are engaged in such work.

When ordering waste treatment to a waste disposal agent, sufficiently notify the agent of the danger and toxicity of the waste before ordering the disposal.

For specially controlled industrial waste, in particular, follow the Specially Controlled Industrial Waste Disposal Standards specified in the Waste Disposal and Public Cleansing Law at the time of waste disposal.

Contaminated containers and packaging

When disposing of spray cans, because the disposal method varies with each self-governing community, follow the provisions of the governing body concerned.

When disposing of high pressure gas containers, request special experts, such as the manufacturer, to dispose of the containers.

Either clean the containers and recycle them, or dispose of them in accordance with the relevant laws and regulations or standards of the self-governing community.

When disposing of empty containers, make certain that they are completely empty.

14. Precautions in Transportation.

International Rules	Information on	Follow the provisions of the IMO.
	UN No.	1950
	Proper Shipping Name	AEROSOLS
	Class	2.1
	Packing Group	-
	Marine Pollutant	Not Applicable
	Information on aircraft regulations	Follow the provisions of the ICAO / IATA
	UN No.	1950
	Proper Shipping Name	AEROSOLS
	Class	2.1
Packing Group	-	
Domestic Control	Land-based	Follow the provisions of the Fire Services Act
	Information on Marine Controls	Follow the provisions of the Ship Safety Act
	United Nations No.	1950
	Item Name	Aerosols
	Class	2.1
	Container Grade	-
	Marine Pollutants	Not Applicable
	Information on aircraft regulations	Follow the provisions of the Civil Aeronautics Act
	United Nations No.	1950
	Item Name	Aerosols (Flammable) (Does not contain poisonous substances, corrosive substances, or toxic gases)
Class	2.1	
Grade	-	

Special Safety Measures	Prior to transportation, verify that the container is not damaged, corroded, or is leaking.
	Dangerous goods shall be loaded so that they do not fall, or that the transport containers containing the dangerous goods do not fall, topple, or become damaged.
	Ensure that toppling, bumping, friction, crushing, leakage etc. do not occur during transport.
	Keep away from fire, heat, and direct sunlight.
	Ensure that the container does not come into direct contact with steel members.
	Do not place heavy objects on top of the container.
	In case of disaster because of an accident during transport, report to the nearest firefighting agency and other related agencies.

---

 Carry yellow cards during transport.
 

---

 Emergency guidance number to be contacted in case of emergency 126
 

---

### 15. Applicable Laws and Ordinances

Industrial Safety and Health Act	Dangerous and Harmful Substances Whose Names Should be Notified (Article 57-2 of the Law, Appended Table 9 of the Article 18-2 of the Order for Enforcement) (Ethanol)
	Dangerous Substances and Inflammable Substances (Appended Table 1-4 of the Order for Enforcement)
Waste Management Law	Specially Controlled Industrial Waste (Article 2-5 of the Law, Article 2-4 of the Order for Enforcement) (Waste oil having a flash point of 70 deg C or lower.)
Fire Service Act	Class IV Inflammable Liquid, No. 1 Petroleum type nonaqueous liquid (Article 2-7 of the Law, Appended Table 1-4-2)
Ship Safety Act	High Pressure Gas (Article 3 of the Hazard Regulation, Appended Table 1 of the Public Notice on Dangerous Substances)
Civil Aeronautics Act	High Pressure Gas (Article 194 of the Order for Enforcement, Appended Table 1 of the Public Notice of Dangerous Substances)

### 16. Other Information

Contact information	Olympus Corporation
References	Olympus Corporation Product MSDS HYPER CLEAN 3310 Reference No. PW9037U5J005) (2010/01/25 Revision).
	The described contents are based on generally available information and in-house information. This does not mean that all chemical and technical information at the present time are included. Thus, no guarantees are made. Furthermore, the precautionary items provided are only for normal handling. Keep in mind that these precautions may not necessarily be applicable for special handling.