SECTION 1: IDENTIFICATION

PRODUCT IDENTIFIER

Product Name Bonding Enhancer

Product Code A-321

Intended Use(s) : For professional use only

CONTACT INFORMATION FOR SUPPLIER OF SAFETY DATA SHEET

Factor II, Incorporated
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EMERGENCY TELEPHONE NUMBERS

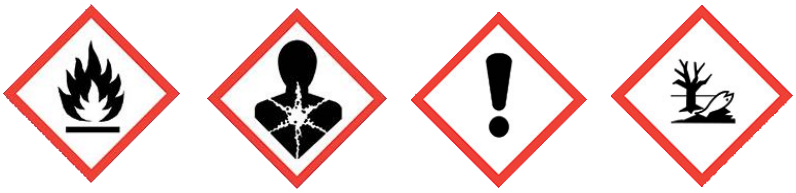
928- 368-7502

SECTION 2: HAZARD(S) IDENTIFICATION

GHS Classification

Hazard class		
	Flammable liquid	Category 2
	Skin irritation	Category 2
	Eye irritation	Category 2A
	Reproductive toxicity	Category 2
	STOT-single exposure	Category 3
	Aspiration hazard	Category 1
	Acute aquatic toxicity	Category 1

Hazard Pictogram



Signal Word Danger

Hazard statement(s)

H225 Highly flammable liquid and vapor
H304 May be fatal if swallowed and enters airways
H315 Causes skin irritation
H319 Causes serious eye irritation
H335 May cause respiratory irritation
H336 May cause drowsiness or dizziness
H361 Suspected of damaging fertility or the unborn child
H371 May cause damage to organs (vasculature)
H400 Very toxic to aquatic life

Precautionary statements

Prevention

P201 Obtain special instructions before use
P202 Do not handle until all safety precautions have been read and understood
P210 Keep away from heat/sparks/open flame/hot surfaces. No smoking.
P233 Keep container tightly closed
P240 Ground/bond container and receiving equipment
P241 Use explosion-proof electrical/ventilating/lighting equipment
P242 Use only non-sparking tools
P243 Take precautionary measures against static discharge
P260 Do not breathe dust/fumes/gas/mist/vapor/spray
P264 Wash skin thoroughly after handling
P270 Do not eat, drink or smoke when using this product
P271 Use only outdoors or in a well-ventilated area
P273 Avoid release to the environment
P281 Use personal protective equipment as required

Response

P301+P310 + P331 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. DO NOT induce vomiting.
P303 + P361 + P364 + P353 + P314 IF ON SKIN (or hair): Immediately remove all contaminated clothing and wash before reuse. Rise skin with water/shower. Seek medical attention if you feel unwell.
P304 + P340 + P314 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Seek medical attention if you feel unwell.
P305 + P351 + P338 + P314 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention if you feel unwell.

Storage

P403+P405 + P233 + P235 Store locked up in a well-ventilated place. Keep container cool and tightly closed.

Disposal

P501 Dispose of contents/container to an approved waste disposal plant

SECTION 3: HAZARDOUS INGREDIENTS

Ingredient	CAS Number	Concentration
Cyclohexane	110-82-7	<95% by weight
Silicone dioxide amorphous	112945-52-5	>2% by weight
Proprietary ingredient		>2% by weight

The specific chemical identities have been withheld as a trade secret.

SECTION 4: FIRST-AID MEASURES

In the case of accident or if you feel unwell, see medical attention immediately. When symptoms persist, or in all cases of doubt, seek medical attention.

First-aid instructions by relevant routes of exposure include:

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Seek medical attention if symptoms persist or after a significant exposure.

Skin contact Immediately wash thoroughly with soap and water while removing contaminated clothing and shoes. Seek medical attention. Wash clothing and thoroughly clean shoes before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. If worn and easy to do, remove contact lenses.

Ingestion Keep respiratory tract clear. DO NOT induce vomiting. Do not give anything to drink. Never give anything by mouth to an unconscious person. Seek medical attention immediately.

Most important symptoms and effects, both acute and delayed

Symptoms of poisoning may appear several hours later. Do not leave victim unattended.

First aid responders

First aid responders should pay attention to self-protection and use the recommended personal protective equipment when the potential for exposure exists.

Note to physician Treat symptomatically and supportively.

SECTION 5: FIRE-FIGHTING MEASURES

Suitable extinguishing media Alcohol-resistant foam, carbon dioxide (CO2), dry chemical

Unsuitable extinguishing media High volume water jet

Specific hazards during fire

Collect contaminated fire extinguishing water separately; do not allow run-off from firefighting to enter drains or water courses. Fire residues and contaminated water must be disposed of in accordance with local regulations. Take precautions to avoid static electricity discharge (which may cause ignition of organic vapors).

Hazardous decomposition products Carbon dioxide, carbon oxides

Specific extinguishing methods

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Evacuate area and eliminate sources of ignition. Use water spray to cool unopened containers. Remove undamaged containers from fire area if safe to do so.

Special protective equipment for firefighters

In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Firefighting equipment should be thoroughly decontaminated after use.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions and emergency procedures

Remove all sources of ignition, ventilate the area and keep upwind. Follow safe handling advice and personal protective equipment recommendations.

Environmental precautions

Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area by containment or oil barriers. Retain and dispose of contaminated wash water. Spills on porous surfaces can contaminate groundwater. Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleanup procedures

Non-sparking tools should be used. Soak up with inert absorbent material. Suppress (knock down) gases/vapors/mist with a water spray jet. For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent.

Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. See Sections 13and 15 of this SDS for information regarding certain local or national requirements.

SECTION 7: HANDLING AND STORAGE

Technical measures

Ensure all equipment is electrically grounded before beginning transfer operations. This material can accumulate static charge due to its inherent physical properties and can therefore cause an electrical ignition source to vapors. In order to prevent a fire hazard, as bonding and grounding may be insufficient to remove static electricity, it is necessary to provide an inert gas purge before beginning transfer operations. Restrict flow velocity in order to reduce the accumulation of static electricity.

Local/total ventilation

Use with local exhaust ventilation. Use only in an area equipped with explosion proof exhaust ventilation.

Precautions for safe handling

Do not get on skin or clothing. Do not breathe vapors or spray mist. Do not swallow. Do not get in eyes. Handle in accordance with good industrial hygiene and safety practice. Non-sparking tools should be used. Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Keep container tightly closed. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment.

Conditions for safe storage

Keep away from food, drink and animal feeding stuffs. Keep container tightly closed and in a cool, well-ventilated place away from heat, sparks and flame. For safety reasons in case of fire, cans should be stored separately in closed containments. Store in accordance with the particular national regulations. Protect containers from physical damage.

Materials to avoid

May react with oxygen and strong oxidizing agents such as chlorates, nitrates, peroxides, etc

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

OSHA HAZARDOUS COMPONENTS

		EXPOSURE LIMITS			
		OSHA PEL		ACGIH TLV	
Component Name, CAS Number		ppm	mg/m3	ppm	mg/m3
Cyclohexane, 110-82-7	TWA	300	1050	100	
	STEL				

Engineering Controls Minimize workplace exposure concentrations. Use only in an area equipped with explosion proof exhaust ventilation. Use with local exhaust ventilation.

Personal Protective Equipment Pictograms

Respiratory General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Eye/Face Use safety goggles as a minimum when working with chemicals.

Hands Choose gloves to protect hands against chemicals depending on the concentration specific to place of work. For special applications, clarify the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands thoroughly before breaks and at the end of workday.

Skin/Body Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential. Wear the following personal protective equipment: flame retardant antistatic

protective clothing. Avoid skin contact by using protective clothing (gloves, aprons, boots, etc.).

Hygiene measures Ensure that eye flushing systems and safety showers are located close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use. These precautions are for room temperature handling. Use at elevated temperature or aerosol/spray applications may require added precautions. For further information regarding the use of silicones / organic oils in consumer aerosol applications, please refer to the guidance document regarding the use of these type of materials in consumer aerosol applications that has been developed by the silicone industry (www.SEHSC.com).

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear liquid
Upper/lower flammability or explosive limits	Undetermined
Odor	Ether-like
Vapor pressure	77mm Hg at 20°C
Odor threshold	No data available
Vapor density (air = 1.0)	2.9
pH	Not applicable
Relative density	Undetermined
Melting point/freezing point	44°F (7°C) / Undetermined
Solubility(ies)	Very slight in water
Initial boiling point and boiling range	177°F (81°C)
Flash point	1°F (-18°C) (closed cup)
Evaporation rate	No data available
Flammability (solid, gas)	No data available
Partition coefficient n-octanol/water	No data available
Auto-ignition temperature	500°F (260°C)
Decomposition temperature	No data available
Viscosity	No data available

SECTION 10: STABILITY AND REACTIVITY

Reactivity	Non-reactive
Chemical stability	Stable
Conditions to avoid	Heat, sparks and flames

Incompatible materials	May react with oxygen and strong oxidizing agents such as chlorates, nitrates, peroxides, etc.
Other	Hazardous polymerization will not occur

SECTION 11: TOXICOLOGICAL INFORMATION

INFORMATION ON LIKELY ROUTES OF EXPOSURE
Inhalation, skin contact, ingestion, eye contact

ACUTE TOXICITY Not classified based on available information

Ingredients

Cyclohexane

Acute oral toxicity	LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	LC50 (Rat): > 32,880 mg/m3 Exposure time: 4 h Test atmosphere: vapor Method: OECD Test Guideline 403
Acute dermal toxicity	May cause skin irritation in susceptible persons

SKIN CORROSION/IRRITATION May cause skin irritation in susceptible persons

SERIOUS EYE DAMAGE/EYE IRRITATION
No adverse effects expected. Vapors may cause eye irritation.

RESPIRATORY AND SKIN SENSITIZATION
Did not cause sensitization on laboratory animals. Vapors may cause respiratory system irritation.

GERM CELL MUTAGENICITY Animal testing did not show any mutagenic effects

CARCINOGENICITY Not classified based on available information

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

REPRODUCTIVE TOXICITY

No evidence of adverse effects on sexual function and fertility, based on animal experiments.

STOT-SINGLE EXPOSURE	No adverse effects expected
STOT-REPEATED EXPOSURE	Not classified based on available information
REPEATED DOSE TOXICITY	Not classified based on available information
ASPIRATION TOXICITY	May be fatal if swallowed and enters airways.

FURTHER INFORMATION

Ingredients

Cyclohexane

Remarks	Symptoms of overexposure may include headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TVL value may cause narcotic effects. Solvents may degrease the skin.

SECTION 12: ECOLOGICAL INFORMATION

Cyclohexane

Toxicity to fish LC50	Pimephales promelas (fathead minnow) 4.53 mg/l
Exposure time	96 h
Method	OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

EC50	Daphnia magna (water flea) 0.9 mg/l
Exposure time	48 h
Method	OECD Test Guideline 202

Toxicity to algae

EbC50	Selenastrum capricornutum (algae) 3.4 mg/l
Exposure time	72 h
NOEC	0.925 mg/l
Exposure time	72 h
Species	Pseudokirchneriella subcapitata (green algae)
Method	OECD Test Guideline 201

PERSISTENCE AND DEGRADABILITY

Ingredients

Cyclohexane

Biodegradability Result	Expected to be readily biodegradable
Biodegradation	77%

Exposure time	28 d
Method	OECD Test Guideline 301F

BIOACCUMULATIVE POTENTIAL This material is not expected to bioaccumulate

Bioconcentration factor (BCF)	33 – 275

MOBILITY IN SOIL No data available

OTHER ADVERSE EFFECTS

The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Product This product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container.

Resource Conservation And Recovery Act (RCRA)

When a decision is made to discard this material as supplied, it is classified as a RCRA hazardous waste.

Waste Code U056

Waste from residues Dispose of in accordance with local regulations.

Contaminated packaging

Dispose of as unused product. Do not re-use empty containers. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: TRANSPORT INFORMATION

US DOT

Proper shipping name	Cyclohexane
UN number	UN1145
Hazard class(es)	3
Packing group	II
Labels	Flammable liquids
ERG Code	128

IATA and ICAO

Proper shipping name	Cyclohexane
UN number	UN1145
Hazard class(es)	3
Packing group	II
Labels	Flammable liquids
Packing instructions	Passenger / Cargo aircraft – 353

SECTION 15: REGULATORY INFORMATION

EPCRA - EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW

CERCLA Reportable Quantity

Ingredients	CAS Number	Component RQ (lbs)
Cyclohexane	110-82-7	5,000

SARA 311/312 Hazards Fire hazard
Acute health hazard

SARA 302 No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 The following components are subject to reporting levels established by SARA Title III, Section 313:

Cyclohexane	110-82-7	95%

US STATE REGULATIONS

Massachusetts Right to Know	Cyclohexane	110-82-7	95%
New Jersey Right to Know	Cyclohexane	110-82-7	95%
Pennsylvania Right to Know	Cyclohexane	110-82-7	95%
Rhode Island Right to Know	Cyclohexane	110-82-7	95%

California Prop 65 This product contains no chemical(s) known in the State of California to cause birth defects or other reproductive harm.

The ingredients of this product are reported in the following inventories:

NZIoC	All ingredients listed or exempt
REACH	All ingredients (pre-) registered or exempt

TSCA	All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances
AICS	All ingredients listed or exempt IECSC All ingredients listed or exempt
ENCS/ISHL	All components are listed on ENCS/ISHL or exempted from inventory listing
KECI	All ingredients listed, exempt or notified
PICCS	All ingredients listed or exempt
DSL	All chemical substances in this product comply with the CEPA 1999 and NSNR and are on or exempt from listing on the Canadian Domestic Substances List (DSL)

Inventories: AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

SECTION 16: OTHER INFORMATION

NFPA:

Health	1 – Slight
Flammability	3 – High
Instability	0 – not significant
Special Hazard	

HMIS III

Health	1 – Slight
Flammability	3 – High
Physical Hazard	0 – not significant

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