MATERIALS SAFETY DATA SHEET

SECTION 1 – PRODUCT IDENTIFICATION AND USE

PRODUCT IDENTIFIER: TECHNOVIT 2000 LC Varnish 11 09 01
PRODUCT USE: Resin for metallographic testing

DISTRIBUTOR'S NAME: MICRO STAR 2000 INC.
DISTRIBUTOR'S ADDRESS: 225 Bradwick Drive, Unit 21
Concord, Ontario
L4K 1K7

EMERGENCY PHONE NUMBER: 905-660-1754

SECTION 2 – COMPOSITION / DATA ON COMPONENTS

Chemical Characterization Description: Product based on methacrylates

DANGEROUS COMPONENTS:			
CAS: 80-62-6 EINECS: 201-297-1	Methyl methacrylate	Xi, F; R 11-37/38-43	50–75%
CAS: 3290-92-4 EINECS: 221-950-4	propylidynetrimethyl trimethacrylate	N; R 51/53	5–10%
	N,N-bis(2-hydroxyethyl)-p-toluidine	Xn; R 22-41	0-5%
	Diphenyl(2,4,6-trimethylbenzoyl)phosphinoxid	Xn; R 62-52/53	0-5%

Additional Information: For the wording of the listed risk phrases refer to section 16.

SECTION 3 – HAZARD IDENTIFICATION

Hazard Designation: Xi Irritant
F Highly Flammable

Information pertaining to particular dangers for man and environment:
The product has to be labeled due to the calculation procedure of the "General Classification guideline for preparation of the EU" in the latest valid version.
R 11 Highly flammable.
R 37/38 Irritating to respiratory system and skin.
R 43 May cause sensitization by skin contact.
R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Classification System:
The classification is in line with current EC lists. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

SECTION 4 – FIRST AID MEASURES

After Inhalation: Supply fresh air; consult doctor in case of symptoms.

After Skin Contact: Instantly wash with water and soap and rinse thoroughly.

After Eye Contact: Rinse opened eye for several minutes under running water. If symptoms persist, consult doctor.

After Swallowing: Do not induce vomiting; instantly call for medical help.

SECTION 5 – FIRE FIGHTING MEASURES

Suitable Extinguishing Agents: CO_2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
CO_2, sand, extinguishing powder. Do not use water.

For Safety Reasons Unsuitable Extinguishing Agents: Water.
Water with a full water jet.

Special hazards caused by the material, its products of combustion or flue gases:
Formation of toxic gases is possible during heating or in case of fire.

Protective Equipment: No special measures required.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Person-related safety precautions: Wear protective equipment. Keep unprotected persons away.

Measures for environmental protection: Prevent material from reaching sewage system, holes and cellars.
Inform respective authorities in case product reaches water or sewage systems.

Measures for cleaning/collecting: Absorb with liquid-binding material (diatomite, universal binders, for small amounts tissues).
Do not flush with water or aqueous cleansing agents.

Additional Information: No dangerous materials are released.

SECTION 7 – HANDLING AND STORAGE

HANDLING:

Information for safe handling: Keep containers tightly sealed.

Information about protection against explosions and fires: Keep ignition sources away – Do not smoke.
Protect against electrostatic charges.

STORAGE:

Requirements to be met by storerooms and containers: Store in cool location.

Information about storage in one common storage facility: Not required.

Further information about storage conditions: Store cool (not above 25°C).
Store in cool, dry conditions in well sealed containers.

SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

Additional information about design of technical systems: No further data; see item 7.

Components with critical values that require monitoring at the workplace:	
80-62-6 methyl methacrylate	
OES()	Short-term value: 416 mg/m^3, 100 ppm Long-term value: 208 mg/m^3, 50 ppm

Additional Information: The lists that were valid during the compilation were used as basis.

PERSONAL PROTECTIVE EQUIPMENT:

General protective and hygienic measures:
Keep away from foodstuffs, beverages and food.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.
Avoid contact with the skin.
Avoid contact with the eyes and skin.

Breathing equipment:
Not necessary with efficient local exhaust. If exposure to vapors is possible, use breathing protective mask (filter A).

Protection of hands:
If skin contact cannot be avoided, protective gloves are recommended to avoid possible sensitization.
Solvent resistant gloves.
The glove material has to be impermeable and resistant to the product / the substance / the preparation.
Selection of glove material on consideration of the penetration times, rates of diffusion and the degradation.

Material of gloves:
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material:
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

For the permanent contact in work areas without heightened risk of injury (e.g. Laboratory) gloves made of the following material are suitable.
PVA gloves.

For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:
Butyl rubber, BR
Fluorocarbon rubber (Viton)
Nitrile rubber, NBR
Chloroprene rubber, CR

Eye protection: Not absolutely necessary
Body protection: Light weight protective clothing.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

General Information:

Form:	Fluid
Colour:	Colourless
Smell:	Characteristic

Change in Condition:

Melting point/Melting range:	Not determined
Boiling point/Boiling range:	100℃

Flash Point:	10℃
Ignition Temperature:	430.0℃
Self-inflammability:	Product is not selfigniting
Danger of Explosion:	Product is not explosive. However, formation of explosive air/vapor mixtures is possible.

SECTION 9 – PHYSCIAL AND CHEMICAL PROPERTIES - CONTINUED

Critical Values for Explosion:
- **Lower:** 2.1 Vol. %
- **Upper:** 12.5 Vol. %

Steam Pressure at 20°C: 47 hPa
Density at 20°C: 0 g/cm^3
Solubility in / Miscibility with Water: Not miscible or difficult to mix

Solvent Content:
- **Organic Solvent:** 69.0%
- **VOC EU:** 689.9 g/l
- **VOC EU:** 68.99%

Solids Content: 23.8%

SECTION 10 – STABILITY AND REACTIVITY

Conditions to be avoided: No decomposition if used and stored according to specifications.

Dangerous reactions: No dangerous reaction known.

Dangerous products of composition: None.

Additional Information: If stored longer than recommended and/or above recommended temperature, product may polymerize generating heat.

SECTION 11 – TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

Primary Irritant Effect:
- **On the skin:** Irritant for skin and mucous membranes.
- **On the eye:** No irritant effect.

Sensitization: Sensitization possible by skin contact.

Additional toxicological information: The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version: Irritant

SECTION 12 – ECOLOGICAL INFORMATION

General Notes:
Water hazard class 1 (calculated according to VwVwS): Slightly hazardous for water.
Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.

SECTION 13 – DISPOSAL CONSIDERATIONS

PRODUCT:

Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system. Small quantities can be polymerized with the matching system component(s) and the cured solid material can be disposed of with the regular garbage. Larger quantities must be disposed of following the regulations of the local authorities.

European Waste Catalogue: 11 01 98 other wastes containing dangerous substances.

UNCLEANED PACKAGINGS:

Recommendation: Disposal must be made according to official regulations.

SECTION 14 – TRANPORT INFORMATION

Land Transport ADR/RID and GGVS/GGVE (cross-border/domestic):

ADR/RID-GGVS/E Class:	3 (F1) Flammable liquids
Kemler Number:	33
UN Number:	1263
Packaging Group:	II
Label:	3
Designation of goods:	1263 PAINT, special provision 640D

Maritime Transport IMDG/GGVSea:

IMDG/GGVSea Class:	3
UN Number:	1263
Label:	3
Packaging Group:	II
EMS Number:	F-E, S-E
Marine Pollutant:	No
Correct Technical Name:	PAINT

Air Transport ICAO-TI and IATA-DGR:

ICAO/IATA Class:	3
UN/ID Number:	1263
Label:	3
Packaging Group:	II
Correct Technical Name:	PAINT

SECTION 15 – REGULATORY INFORMATION

Designation according to EC guidelines:

The product has been classified and labeled in accordance with EC Directives / Ordinance on Hazardous Materials (GefStoffV)

Code letter and hazard designation of product: Xi Irritant
F Highly flammable

Hazard-determining components of labeling: Methyl methacrylate

Risk Phrases:

11	Highly flammable.
37/38	Irritating to respiratory system and skin.
43	May cause sensitization by skin contact.
52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

SECTION 15 – REGULATORY INFORMATION - CONTINUED

Safety Phrases:
9 Keep container in well-ventilated place.
16 Keep away from sources of ignition – No smoking.
24 Avoid contact with skin.
33 Take precautionary measures against static discharges.
37 Wear suitable gloves.
61 Avoid release to the environment. Refer to special instructions / safety data sheets.

National Regulations:

Technical Instructions (air):

Class	Share in %
NK	50-75

Water Hazard Class: Water hazard class 1 (calculated according to VwVwS): Slightly hazardous for water.

SECTION 16 – OTHER INFORMATION

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant R-phrases:
11 Highly flammable.
22 Harmful if swallowed.
37/38 Irritating to respiratory system and skin.
41 Risk of serious damage to eyes.
43 May cause sensitization by skin contact.
51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
62 Possible risk of impaired fertility.

SECTION 17 – PREPARATION OF MATERIAL SAFETY DATA SHEET

PREPARED BY: R. Dickertmann PHONE NUMBER: 905-660-1754 DATE: February 15, 2008