

1. Identification

Product identifier

Trade name: 636K9 - Fast Curing Putty-Akemi

Relevant identified uses of the substance or mixture and uses advised against

General use: Filling compound for orthopedic procedures.
For commercial user only.

Details of the supplier of the safety data sheet

Company name: Otto Bock Health Care
Street/POB-No.: 3820 W. Great Lakes Drive
Zip code, city: Salt Lake City, UT 84120
USA

WWW: www.ottobockus.com

Telephone: +1 (801) 956-2400

Telefax: +1 (801) 956-2401

Department responsible for information:

Quality Department,
Telephone: +1 (801) 954-2304 (7 AM – 3 PM, Mountain Time),
Email: USRegulatory@ottobock.com

Additional information:

Corporate headquarters:
Ottobock SE & Co. KGaA
Max-Näder-Straße 15
Duderstadt
Germany

Emergency telephone number

CHEMTREC, Telephone: +1 (800) 424-9300

Transport:

CONSULTANK Lutz Harder GmbH (Contract QUALI003)

Telephone: +49 (0)178-4337434 (from USA: 01149 178 4337434)

2. Hazard identification

Classification of the substance or mixture

Flammable Liquid - Category 3

Skin Irritation - Category 2

Eye Irritation - Category 2

Reproductive toxicant - Category 2

Specific Target Organ Toxicity (Repeated Exposure)

- Category 1

Aquatic toxicity - chronic - Category 3

Flammable liquid and vapor.

Causes skin irritation.

Causes serious eye irritation.

Suspected of damaging the unborn child.

Causes damage to organs through prolonged or repeated exposure.

Harmful to aquatic life with long lasting effects.

Label elements

Symbols:



Signal word:

Danger

Hazard statements:

Flammable liquid and vapor.
Causes skin irritation.
Causes serious eye irritation.
Suspected of damaging the unborn child.
Causes damage to organs through prolonged or repeated exposure.
Harmful to aquatic life with long lasting effects.

Precautionary statements:

Obtain special instructions before use.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.

Store in a well-ventilated place. Keep container tightly closed.

Other hazards

Potentially explosive mixtures may form if adequate ventilation is not provided.
Inhaling can lead to irritations of the respiratory tract and mucous membrane.
Higher doses may have a narcotic effect.

3. Composition/information on ingredients

Mixtures

Chemical characterization: Filling compound based on unsaturated polyester resins dissolved in styrene.
Without hardener component.

Relevant ingredients:

CAS No.	Designation	Concentration	Classification
CAS 100-42-5	Styrene	12.5 - 25 %	Flammable Liquid - Category 3. Acute Toxicity - inhalative - Category 4. Skin Irritation - Category 2. Eye Irritation - Category 2A. Reproductive toxicant - Category 2. Specific Target Organ Toxicity (Single Exposure) - Category 3. Specific Target Organ Toxicity (Repeated Exposure) - Category 1. Aspiration Toxicity - Category 1. Aquatic toxicity - chronic - Category 3.
CAS 7779-90-0	Zinc phosphate	1 - 5 %	Aquatic toxicity - acute - Category 1 (M-factor = 1). Aquatic toxicity - chronic - Category 1 (M-factor = 1).

The actual concentration or concentration range is withheld as a trade secret.

4. First aid measures

General information:	Take off immediately all contaminated clothing. If victim is at risk of losing consciousness, position and transport on their side.
In case of inhalation:	Move victim to fresh air, provide oxygen as needed. In case of irregular breathing or respiratory arrest provide artificial respiration. Do not allow victim to become chilled. Keep victim warm. Keep airway open. Consult physician.
Following skin contact:	Immediately clean with water and soap and, if available, apply a generous amount of polyethylene glycol 400. Seek medical treatment in case of troubles.
After eye contact:	Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. Subsequently consult physician.
After swallowing:	Do not induce vomiting. Rinse mouth with water. Immediately get medical attention. Never give anything by mouth to an unconscious person.

Most important symptoms/effects, acute and delayed

Irritant. Causes damage to organs through prolonged or repeated exposure.
Suspected of damaging the unborn child.
In case of inhalation/After resorption: depression of central nervous system.
Symptoms: shortage of breath, drowsiness, headache, dizziness, fatigue, unconsciousness.
Reaction time and coordination may be impaired.
If higher concentrations occur: Pulmonary edema is possible.
Other symptoms: nausea, Sweating, Mucous membrane irritation, cough, vomiting.
Symptoms may occur with delay.
Inhaling can lead to irritations of the respiratory tract and mucous membrane.
Higher doses may have a narcotic effect.

Information to physician

In case of swallowing, gastric irrigation with activated carbon as an additive.
Symptoms of poisoning can only emerge after several hours; medical supervision is therefore essential for at least 48 hours.
Treat symptomatically.

5. Fire-fighting measures

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media:

Water spray jet, alcohol resistant foam, dry chemical powder, carbon dioxide.

Extinguishing media which must not be used for safety reasons:

Full water jet

Specific hazards arising from the chemical

Flammable liquid and vapor. The vapors are heavier than air and can accumulate in high concentrations on the ground, in cavities, channels and cellars. Potentially explosive vapor/air mixtures may form. Toxic gases may form.
In case of fire may be liberated: hydrogen cyanide, phosphorus compounds, Carbon monoxide and carbon dioxide.

Protective equipment and precautions for firefighters

Wear self-contained positive pressure breathing apparatus and full firefighting protective clothing.

Additional information: Heating will lead to pressure increase: danger of bursting and explosion. Use fine water spray to cool endangered containers.

Move undamaged containers from immediate hazard area if it can be done safely.

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Do not allow fire water to penetrate into surface or ground water.

Fire residuals and contaminated extinguishing water must be disposed of in accordance with the regulations of the local authorities.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Eliminate all ignition sources if safe to do so. Provide adequate ventilation. Do not breathe vapors. Use a breathing protection against vapors/aerosol. Avoid contact with the substance. Wear appropriate protective equipment. Keep unprotected people away. Use a breathing protection against vapors/aerosol.

Environmental precautions:

Do not allow to enter drains, surface waters, basements or pits. Danger of explosion! Prevent environmental discharge consistent with regulatory requirements.

Methods and material for containment and cleaning up

Methods for clean-up: Isolate leaked material using non-flammable absorption agent (e.g. sand, earth, vermiculit, diatomaceous earth) and collect it for disposal in appropriate containers in accordance with the local regulations (see section 13).

Beware of reignition. Thoroughly clean surrounding area.

In case of greater quantities: Collect mechanically (use only explosion-proof equipment when pumping out).

Additional information: Take precautionary measures against static discharges. Use only non-sparking tools.

Large amounts: Explosion protection required.

Concentrated vapors are heavier than air.

7. Handling and storage

Precautions for safe handling

Advices on safe handling: Provide good ventilation and/or an exhaust system in the work area. Do not breathe vapors. Avoid contact with skin and eyes.

Wear appropriate protective equipment. When using do not eat, drink or smoke.

Guarantee sufficient ventilation during and after use, in order to prevent vapor accumulation.

Precautions against fire and explosion:

Keep away from sources of ignition - No smoking.

Take precautionary measures against static discharges.

The vapors are heavier than air and can accumulate in high concentrations on the ground, in cavities, channels and cellars.

Use only non-sparking tools.

In partially filled containers explosive mixtures may form.

Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers:

Keep only in the original container. Keep in a cool, well-ventilated place. Keep container tightly closed and dry.

Do not drop, drag or bang the container. Store containers in upright position. Do not allow the product to enter the ground.

Protect from heat and direct sunlight. Protect from frost.

Hints on joint storage:

Do not store together with combustible or self-igniting materials or any highly flammable solids.

Do not store together with alkalis or acids.

keep away from oxidizing agents.

Do not store together with organic peroxides.

Avoid contact with radical former.

Keep away from food and drinks.

8. Exposure controls/personal protection

Control parameters

Occupational exposure limit values:

CAS No.	Designation	Type	Limit value
100-42-5	Styrene	USA: ACGIH: STEL	20 ppm
		USA: ACGIH: TWA	10 ppm
		USA: IDLH: TWA	700 ppm
		USA: NIOSH: STEL	425 mg/m ³ ; 100 ppm
		USA: NIOSH: TWA	215 mg/m ³ ; 50 ppm
		USA: OSHA: Ceiling	200 ppm
		USA: OSHA: TWA	100 ppm

Biological limit values:

CAS No.	Designation	Type	Limit value	Parameter	Sampling
100-42-5	Styrene	USA: ACGIH-BEI, urine	150 mg/g creatinine	Mandelic acid + Phenylglyoxylic acid	end of exposure or end of shift
		USA: ACGIH-BEI, urine	20 µg/L	Styrene in urine	end of exposure or end of shift

Appropriate engineering controls

Provide good ventilation and/or an exhaust system in the work area.

Keep away from sources of ignition - No smoking.

Take precautionary measures against static discharges.

Large amounts: Explosion protection required.

Personal protection equipment (PPE)

Respiratory protection:	Respiratory protection must be worn whenever the TLV (WEL) levels have been exceeded. The filter class must be suitable for the maximum contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used. Recommended respiratory protection articles: A/P2
Hand protection:	Protective gloves according to OSHA Standard - 29 CFR: 1910.138. Glove material: Fluororubber (Viton) Breakthrough time: >480 min. Unsuitable materials: nitrile rubber, neoprene. Observe glove manufacturer's instructions concerning penetrability and breakthrough time.
Eye protection:	Tightly sealed goggles according to OSHA Standard - 29 CFR: 1910.133 or ANSI Z87.1-2010 according to.
Body protection:	Flame retardant, antistatic and chemical resistant protective clothing.
General hygiene considerations:	Use only non-sparking tools. Keep away from sources of heat (e.g. hot surfaces), sparks and open flames. Do not breathe vapors. Avoid contact with skin, eyes, and clothing. When using do not eat, drink or smoke. Take off immediately all contaminated clothing. Wash hands before breaks and after work. Safety shower and eye wash station should be easily accessible to the work area. Keep away from food, drink and animal feedingstuffs. When using do not eat, drink or smoke.

Environmental exposure controls

Refer to 6.: Section "Environmental precautions".

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state at 68 °F and 101.3 kPa	liquid
	Form: viscous
Color:	yellow
	light
Odor:	characteristic
Odor threshold:	No data available
Melting point/freezing point:	not determined
Initial boiling point and boiling range:	293 °F
Flammability:	Flammable liquid and vapor.
Explosion limits:	LEL (Lower Explosion Limit): 1.20 Vol-% UEL (Upper Explosive Limit): 8.90 Vol-%
Flash point/flash point range:	89.6 °F
Evaporation rate:	No data available
Auto-ignition temperature:	not self-igniting
Decomposition temperature:	Decomposition temperature: not determined
pH:	not determined
Dynamic viscosity:	not determined
Viscosity, kinematic:	not determined
Water solubility:	insoluble/slightly miscible
Partition coefficient: n-octanol/water:	not determined

Vapor pressure: at 68 °F: 6 hPa
Density: at 68 °F: 1.84 g/mL
Vapor density: No data available
Particle characteristics: Not applicable

Additional information

Explosive properties: Product is not explosive.
Potentially explosive vapor/air mixtures may form.
Ignition temperature: 896 °F
Solvent content: 14 %
Solid content: 85.5 %
Additional information: Vapor density: not determined

10. Stability and reactivity

Reactivity: Flammable liquid and vapor.
Vapors may form explosive mixtures with air.
Chemical stability: Stable under recommended storage conditions.
Possibility of hazardous reactions:
Heating will lead to pressure increase: danger of bursting and explosion.
Potentially explosive vapor/air mixtures may form.
Polymerization along with heat production.
Conditions to avoid: Keep away from heat sources, sparks and open flames.
Protect from direct sunlight.
Incompatible materials: Reacts with peroxides and radical formers.
Reacts with acids, alkalis, oxidizing agents.
Hazardous decomposition products:
In case of fire may be liberated: phosphorus compounds, hydrogen cyanide, Carbon monoxide and carbon dioxide. Toxic gases may form.

11. Toxicological information

Information on toxicological effects

Acute toxicity: LD50 Rat, oral (Styrene): > 5,000 mg/kg
LD50 Rat, dermal (Styrene): > 2,000 mg/kg
LC50 Rat, inhalative (Styrene): 11.8 mg/L/ 4h
LC50 Mouse, inhalative (Styrene): 9.5 mg/m³/4 h
LD50 Rat, oral (Trizinkbis(orthophosphat): > 5,000 mg/kg

Toxicological effects:

The statements are derived from the properties of the single components. No toxicological data is available for the product as such.

Acute toxicity (oral): Based on available data, the classification criteria are not met.

Acute toxicity (dermal): Based on available data, the classification criteria are not met.

Acute toxicity (inhalative): Based on available data, the classification criteria are not met.

Skin corrosion/irritation: Skin Irritation - Category 2 = Causes skin irritation.

Serious eye damage/irritation: Eye Irritation - Category 2 = Causes serious eye irritation.

Sensitisation to the respiratory tract: Lack of data.

Skin sensitisation: Lack of data.

Germ cell mutagenicity/Genotoxicity: Lack of data.

Carcinogenicity: Lack of data.

Reproductive toxicity: Reproductive toxicant -
Category 2 = Suspected of damaging the unborn child.

Effects on or via lactation: Lack of data.

Specific target organ toxicity (single exposure): Lack of data.

Specific target organ toxicity (repeated exposure): Specific Target Organ Toxicity
(Repeated Exposure) -

Category 1 = Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard: Lack of data.

Other information:

The product has not been tested. The statement is derived from the properties of the single components.

Styrene:

Affects the central nervous system, possible disturbances from: 50 mL/m³.

DFG 2010 (Germany): Substance with a carcinogenic and genotoxic effect from which there is not to be expected an important contribution to the risk of cancer for persons as far as the AGW-value (German WEL) is observed. Classified according to IARC: 2B (possible for humans).

Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Chronic uptake results in damage of: nervous system, lung.

Symptoms

In case of inhalation: depression of central nervous system.

Symptoms: shortage of breath, drowsiness, headache, dizziness, fatigue, unconsciousness.

Reaction time and coordination may be impaired.

If higher concentrations occur: Pulmonary edema is possible.

Other symptoms: nausea, Sweating, Mucous membrane irritation, cough, vomiting.

Symptoms may occur with delay.

In case of ingestion: If swallowed or in the event of vomiting, risk of entering the lungs.

General remarks

Polyester resin: May produce an allergic reaction.

12. Ecological information

Ecotoxicity

Aquatic toxicity: Harmful to aquatic life with long lasting effects.
 Information about Zinc phosphate:
 Algae toxicity:
 EC50 Desmodesmus subspicatus (green algae): 0.14 mg/L/72h.
 Daphnia toxicity:
 EC50 Daphnia magna (Big water flea): 0.04-0.86 mg/L/48h.
 Fish toxicity:
 LC50 Oncorhynchus mykiss: 0.14 - 2.6 mg/L/48h.
 Information about Styrene:
 Does not dissolve in water. Floats on water surface.

Persistence and degradability

Analytical method: BSD
 Degree of elimination: Styrene >= 60%
 Evaluation text: Product is highly biodegradable.
 Further details: Information about Styrene:
 Biodegradation: 71 %/ 28 d. Product is readily biodegradable.
 Does not dissolve in water. Floats on water surface.

Bioaccumulative potential

Partition coefficient: n-octanol/water:
 not determined

Mobility in soil

No data available

Other adverse effects

General information: Do not allow to penetrate into soil, waterbodies or drains.

13. Disposal considerations

Waste treatment methods

Product

Recommendation: Incinerate as hazardous waste according to applicable local, state, and federal regulations.
 Do not dispose of with household waste.

Package

Recommendation: Handle empty containers with care. Incineration may cause explosion. Dispose of waste according to applicable legislation.
 Non-contaminated packages may be recycled.

14. Transport information

UN number

DOT: UN1866
IMDG, IATA-DGR: UN 1866

UN proper shipping name

DOT, IMDG, IATA-DGR: UN 1866, RESIN SOLUTION

Transport hazard class(es)

DOT: 3
IMDG: Class 3, Subrisk -
IATA-DGR: Class 3



Packing group

DOT, IMDG, IATA-DGR: III

Environmental hazards

Marine pollutant: no

Transport in bulk according to IMO instruments

No data available

Special precautions for user

USA: Department of Transportation (DOT)

Labels: 3
Special Provisions: B1, B52, IB3, T2, TP1
Packaging – Exceptions: 150
Packaging – Non-bulk: 173
Packaging – Bulk: 242
Quantity limitations – Passenger aircraft / rail: 60 L
Quantity limitations – Cargo only: 220 L
Vessel stowage – Location: A

Sea transport (IMDG)

EmS: F-E, S-E
Special Provisions: 223 955
Limited quantities: 5 L
Excepted quantities: E1
Package - Instructions: P001, LP01
Package - Provisions: PP1
IBC - Instructions: IBC03
IBC - Provisions: -
Tank instructions - IMO: -
Tank instructions - UN: T2
Tank instructions - Provisions: TP1
Stowage and handling: Category A.
Properties and observations: Miscibility with water depends upon the composition.
Marine pollutant: no
Segregation group: none

Air transport (IATA)

Proper shipping name:	UN 1866, RESIN SOLUTION
Hazard label:	Flamm. liquid
Excepted Quantity Code:	E1
Passenger and Cargo Aircraft: Ltd.Qty.:	Pack.Instr. Y344 - Max. Net Qty/Pkg. 10 L
Passenger and Cargo Aircraft:	Pack.Instr. 355 - Max. Net Qty/Pkg. 60 L
Cargo Aircraft only:	Pack.Instr. 366 - Max. Net Qty/Pkg. 220 L
Special Provisions:	A3
Emergency Response Guide-Code (ERG):	3L

15. Regulatory information

National regulations - U.S. Federal Regulations

Product:	All ingredients of this product are listed on the TSCA inventory.
Styrene:	Carcinogen Status: IARC Rating: Group 2A OSHA Carcinogen: not listed NTP Rating: listed Clean Air Act: CAA Hazardous Air Pollutants: yes CAA SOCM Chemical: yes Clean Water Act: CWA Hazardous Substances: Category C; RQ 1000.0 lbs Other Environmental Laws: CERCLA: RQ 1000 lbs. RCRA Groundwater Monitoring: listed SARA Title III, Section 313, Toxic Release: NPFAS; De Minimis <=0.1 %; Thresholds 25000/10000 lbs NIOSH Recommendations: Occupational Health Guideline: 0571

National regulations - U.S. State Regulations

Styrene:	California Proposition 65: cancer New York Right-To-Know: listed
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Further regulations, limitations and legal requirements

No data available

16. Other information

Text for labeling:	Contains 12.5 - 25 % Styrene, 1 - 5 % Zinc phosphate. Contains Styrene.
Revision date:	12/17/2025
Date of first version:	10/26/1994
Reason of change:	General revision: Safety Data Sheet according to Hazardous Products Regulations (HPR) 2022 General revision: Safety Data Sheet according to HCS 2024 (29 CFR 1910.1200)

Hazard rating systems:



NFPA Hazard Rating:

Health: 2 (Moderate)

Fire: 2 (Moderate)

Reactivity: 0 (Minimal)

HMIS Version III Rating:

Health: 2 (Moderate) - Chronic effects

Flammability: 2 (Moderate)

Physical Hazard: 0 (Minimal)

Personal Protection: X = Consult your supervisor

HEALTH	*	2
FLAMMABILITY		2
PHYSICAL HAZARD		0
		X

Abbreviations and acronyms:

Acute Toxicity: Acute toxicity
 Aquatic toxicity - acute: Hazardous to the aquatic environment - acute
 Aquatic toxicity - chronic: Hazardous to the aquatic environment - chronic
 AS/NZS: Australian Standards/New Zealand Standards
 Aspiration Toxicity: Aspiration toxicity
 CAS: Chemical Abstracts Service
 CFR: Code of Federal Regulations
 CLP: Classification, Labelling and Packaging
 DMEL: Derived minimal effect level
 DNEL: Derived no-effect level
 DOT: Department of Transportation's Safety Regulations (USA)
 EC: European Community
 EC50: Effective Concentration 50%
 EmS: Emergency Response Procedures for Ships Carrying Dangerous Goods
 EN: European Standard
 EQ: Excepted quantities
 Eye Irritation: Eye irritation
 Flammable Liquid: Flammable liquid
 IARC: International Agency for Research on Cancer
 IATA: International Air Transport Association
 IATA-DGR: International Air Transport Association – Dangerous Goods Regulations
 IBC Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
 IMDG Code: International Maritime Dangerous Goods Code
 IMO: International Maritime Organization
 LC50: Median lethal concentration
 LD50: Lethal dose 50%
 LEL: Lower Explosion Limit
 MARPOL: Maritime Pollution: The International Convention for the Prevention of Pollution from Ships
 M-factor: Multiplication factor
 OEL: Occupational Exposure Limit Value
 OSHA: Occupational Safety and Health Administration
 PBT: Persistent, bioaccumulative and toxic
 PNEC: Predicted no-effect concentration
 Reproductive toxicant: Reproductive toxicity
 Skin Irritation: Skin irritation
 STOT RE: Specific target organ toxicity - repeated exposure
 STOT SE: Specific target organ toxicity - single exposure
 TLV: Threshold Limit Value
 TRGS: Technical Rules for Hazardous Substances
 TSCA: Toxic Substance Control Act
 UN: United Nations
 vPvB: Very persistent and very bioaccumulative
 WEL: Workplace Exposure Limit

Department issuing data sheet

Contact person: see section 1: Department responsible for information

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.