



FW-BUH N&A Butterscotch Flavor

Flavor West Manufacturing, LLC.

Version No: 2.2

Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Chemwatch Hazard Alert Code: 2

Issue Date: 07/09/2019

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Initial Date: 07/09/2019

L.GHS.U.S.A.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

| | |
|-------------------------------|--------------------------------|
| Product name | FW-BUH N&A Butterscotch Flavor |
| Synonyms | Not Available |
| Proper shipping name | Extracts, flavoring, liquid |
| Other means of identification | Not Available |

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

| | |
|--------------------------|---|
| Relevant identified uses | Use according to manufacturer's directions. |
|--------------------------|---|

Details of the manufacturer/importer

| | |
|-------------------------|---|
| Registered company name | Flavor West Manufacturing, LLC. |
| Address | 29400 Hunco Way, Lake Elsinore CA 92530 United States |
| Telephone | (951) 893-5120 |
| Fax | (714) 276-1621 |
| Website | www.FlavorWest.com |
| Email | Flavor@FlavorWest.com |

Emergency telephone number

| | |
|-----------------------------------|-----------|
| Association / Organisation | Chemwatch |
| Emergency telephone numbers | see below |
| Other emergency telephone numbers | see below |

CHEMWATCH EMERGENCY RESPONSE

| Primary Number | Alternative Number 1 | Alternative Number 2 |
|----------------|----------------------|----------------------|
| 877 715 9305 | +612 9186 1132 | Not Available |

Once connected and if the message is not in your preferred language then please dial 01

Una vez conectado y si el mensaje no está en su idioma preferido, por favor marque 02

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

Continued...

FW-BUH N&A Butterscotch Flavor



| | |
|---------------------------|---|
| GHS Classification | Skin Sensitizer Category 1, Eye Irritation Category 2A, Flammable Liquid Category 3 |
|---------------------------|---|

Label elements

| | |
|---------------------------|--|
| GHS label elements | |
|---------------------------|--|

| | |
|--------------------|----------------|
| SIGNAL WORD | WARNING |
|--------------------|----------------|

Hazard statement(s)

| | |
|-------------|-------------------------------------|
| H317 | May cause an allergic skin reaction |
| H319 | Causes serious eye irritation |
| H226 | Flammable liquid and vapour |

Precautionary statement(s) Prevention

| | |
|-------------|--|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P233 | Keep container tightly closed. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P240 | Ground/bond container and receiving equipment. |
| P241 | Use explosion-proof electrical/ventilating/lighting/intrinsically safe equipment. |
| P242 | Use only non-sparking tools. |
| P243 | Take precautionary measures against static discharge. |
| P261 | Avoid breathing dust/fume/gas/mist/vapours/spray. |
| P272 | Contaminated work clothing should not be allowed out of the workplace. |

Precautionary statement(s) Response

| | |
|-----------------------|--|
| P363 | Wash contaminated clothing before reuse. |
| P370+P378 | In case of fire: Use alcohol resistant foam or normal protein foam for extinction. |
| P302+P352 | IF ON SKIN: Wash with plenty of water and soap |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P333+P313 | If skin irritation or rash occurs: Get medical advice/attention. |
| P337+P313 | If eye irritation persists: Get medical advice/attention. |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. |

Precautionary statement(s) Storage

| | |
|------------------|--|
| P403+P235 | Store in a well-ventilated place. Keep cool. |
|------------------|--|

Precautionary statement(s) Disposal

| | |
|-------------|--|
| P501 | Dispose of contents/container to authorised chemical landfill or if organic to high temperature incineration |
|-------------|--|

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS**Substances**

See section below for composition of Mixtures

Mixtures

Continued...

FW-BUH N&A Butterscotch Flavor

| CAS No | %[weight] | Name |
|-----------|-----------|---------------------------------------|
| 57-55-6 | 60-70 | <u>propylene glycol</u> |
| 121-33-5 | 10-20 | <u>vanillin</u> |
| 105-54-4 | 1.405 | <u>ethyl butyrate</u> |
| 765-70-8 | 1.323 | <u>3-methyl-1,2-cyclopentanedione</u> |
| 7732-18-5 | 1.287 | <u>water</u> |
| 513-86-0 | 1.074 | <u>acetoin</u> |
| 107-92-6 | 1.003 | <u>butyric acid</u> |

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4 FIRST AID MEASURES

Description of first aid measures

| | |
|---------------------|--|
| Eye Contact | <p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> ▶ Wash out immediately with fresh running water. ▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. ▶ Seek medical attention without delay; if pain persists or recurs seek medical attention. ▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. |
| Skin Contact | <p>If skin contact occurs:</p> <ul style="list-style-type: none"> ▶ Immediately remove all contaminated clothing, including footwear. ▶ Flush skin and hair with running water (and soap if available). ▶ Seek medical attention in event of irritation. |
| Inhalation | <ul style="list-style-type: none"> ▶ If fumes or combustion products are inhaled remove from contaminated area. ▶ Lay patient down. Keep warm and rested. ▶ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. ▶ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. ▶ Transport to hospital, or doctor. |
| Ingestion | <ul style="list-style-type: none"> ▶ If swallowed do NOT induce vomiting. ▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▶ Observe the patient carefully. ▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▶ Seek medical advice. |

Indication of any immediate medical attention and special treatment needed

- ▶ Polyethylene glycols are generally poorly absorbed orally and are mostly unchanged by the kidney.
- ▶ Dermal absorption can occur across damaged skin (e.g. through burns) leading to increased osmolality, anion gap metabolic acidosis, elevated calcium, low ionised calcium, CNS depression and renal failure.
- ▶ Treatment consists of supportive care.

[Ellenhorn and Barceloux: Medical Toxicology]

Propylene glycol is primarily a CNS depressant in large doses and may cause hypoglycaemia, lactic acidosis and seizures.

- ▶ The usual measures are supportive care and decontamination (Ipecac/ lavage/ activated charcoal/ cathartics), within 2 hours of exposure should suffice.
- ▶ Check the anion gap, arterial pH, renal function and glucose levels.

Ellenhorn and Barceloux: Medical Toxicology

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

| | |
|--|--|
| | <ul style="list-style-type: none"> ▶ Alcohol stable foam. ▶ Dry chemical powder. ▶ BCF (where regulations permit). ▶ Carbon dioxide. |
|--|--|

FW-BUH N&A Butterscotch Flavor

Special hazards arising from the substrate or mixture

| | |
|-----------------------------|--|
| Fire Incompatibility | <ul style="list-style-type: none"> ▶ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result |
|-----------------------------|--|

Advice for firefighters

| | |
|------------------------------|---|
| Fire Fighting | <ul style="list-style-type: none"> ▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ May be violently or explosively reactive. ▶ Wear breathing apparatus plus protective gloves. ▶ Prevent, by any means available, spillage from entering drains or water course. |
| Fire/Explosion Hazard | <ul style="list-style-type: none"> ▶ Liquid and vapour are flammable. ▶ Moderate fire hazard when exposed to heat or flame. ▶ Vapour forms an explosive mixture with air. ▶ Moderate explosion hazard when exposed to heat or flame. |

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

| Minor Spills | <ul style="list-style-type: none"> ▶ Remove all ignition sources. ▶ Clean up all spills immediately. ▶ Avoid breathing vapours and contact with skin and eyes. ▶ Control personal contact with the substance, by using protective equipment. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------------|--|--------------|------------|-----------------|------------|-------------|--------------------|--|--|--|--|------------------------------------|---|--------|--------|----------|-------------------------------|---|-------|-----------|------------|----------------------------|---|--------|--------|---------|---------------------|---|-------|-----------|---------------|-----------------------------|---|-------|-----------|---------|-----------------------|---|-------|----------|---------------|---------------------|--|--|--|--|------------------------------------|---|--------|------------|---------|-----------------------------|---|--------|------------|------------|----------------------------|---|--------|------------|-----------------|---------------------|---|-------|------------|---------|--------------------------------|---|--------|------------|-----------------|--------------------|---|-------|------------|---------|
| Major Spills | <p>Chemical Class: alcohols and glycols For release onto land: recommended sorbents listed in order of priority.</p> <table border="1"> <thead> <tr> <th>SORBENT TYPE</th> <th>RANK</th> <th>APPLICATION</th> <th>COLLECTION</th> <th>LIMITATIONS</th> </tr> </thead> <tbody> <tr> <td colspan="5">LAND SPILL - SMALL</td> </tr> <tr> <td>cross-linked polymer - particulate</td> <td>1</td> <td>shovel</td> <td>shovel</td> <td>R, W, SS</td> </tr> <tr> <td>cross-linked polymer - pillow</td> <td>1</td> <td>throw</td> <td>pitchfork</td> <td>R, DGC, RT</td> </tr> <tr> <td>sorbent clay - particulate</td> <td>2</td> <td>shovel</td> <td>shovel</td> <td>R, I, P</td> </tr> <tr> <td>wood fiber - pillow</td> <td>3</td> <td>throw</td> <td>pitchfork</td> <td>R, P, DGC, RT</td> </tr> <tr> <td>treated wood fiber - pillow</td> <td>3</td> <td>throw</td> <td>pitchfork</td> <td>DGC, RT</td> </tr> <tr> <td>foamed glass - pillow</td> <td>4</td> <td>throw</td> <td>pichfork</td> <td>R, P, DGC, RT</td> </tr> <tr> <td colspan="5">LAND SPILL - MEDIUM</td> </tr> <tr> <td>cross-linked polymer - particulate</td> <td>1</td> <td>blower</td> <td>skiploader</td> <td>R,W, SS</td> </tr> <tr> <td>polypropylene - particulate</td> <td>2</td> <td>blower</td> <td>skiploader</td> <td>W, SS, DGC</td> </tr> <tr> <td>sorbent clay - particulate</td> <td>2</td> <td>blower</td> <td>skiploader</td> <td>R, I, W, P, DGC</td> </tr> <tr> <td>polypropylene - mat</td> <td>3</td> <td>throw</td> <td>skiploader</td> <td>DGC, RT</td> </tr> <tr> <td>expanded mineral - particulate</td> <td>3</td> <td>blower</td> <td>skiploader</td> <td>R, I, W, P, DGC</td> </tr> <tr> <td>polyurethane - mat</td> <td>4</td> <td>throw</td> <td>skiploader</td> <td>DGC, RT</td> </tr> </tbody> </table> <p>Legend DGC: Not effective where ground cover is dense R; Not reusable I: Not incinerable P: Effectiveness reduced when rainy RT: Not effective where terrain is rugged SS: Not for use within environmentally sensitive sites W: Effectiveness reduced when windy Reference: Sorbents for Liquid Hazardous Substance Cleanup and Control; R.W Melvold et al: Pollution Technology Review No. 150: Noyes Data Corporation 1988</p> <ul style="list-style-type: none"> ▶ Clear area of personnel and move upwind. ▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ May be violently or explosively reactive. | SORBENT TYPE | RANK | APPLICATION | COLLECTION | LIMITATIONS | LAND SPILL - SMALL | | | | | cross-linked polymer - particulate | 1 | shovel | shovel | R, W, SS | cross-linked polymer - pillow | 1 | throw | pitchfork | R, DGC, RT | sorbent clay - particulate | 2 | shovel | shovel | R, I, P | wood fiber - pillow | 3 | throw | pitchfork | R, P, DGC, RT | treated wood fiber - pillow | 3 | throw | pitchfork | DGC, RT | foamed glass - pillow | 4 | throw | pichfork | R, P, DGC, RT | LAND SPILL - MEDIUM | | | | | cross-linked polymer - particulate | 1 | blower | skiploader | R,W, SS | polypropylene - particulate | 2 | blower | skiploader | W, SS, DGC | sorbent clay - particulate | 2 | blower | skiploader | R, I, W, P, DGC | polypropylene - mat | 3 | throw | skiploader | DGC, RT | expanded mineral - particulate | 3 | blower | skiploader | R, I, W, P, DGC | polyurethane - mat | 4 | throw | skiploader | DGC, RT |
| SORBENT TYPE | RANK | APPLICATION | COLLECTION | LIMITATIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LAND SPILL - SMALL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| cross-linked polymer - particulate | 1 | shovel | shovel | R, W, SS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| cross-linked polymer - pillow | 1 | throw | pitchfork | R, DGC, RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| sorbent clay - particulate | 2 | shovel | shovel | R, I, P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| wood fiber - pillow | 3 | throw | pitchfork | R, P, DGC, RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| treated wood fiber - pillow | 3 | throw | pitchfork | DGC, RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| foamed glass - pillow | 4 | throw | pichfork | R, P, DGC, RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LAND SPILL - MEDIUM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| cross-linked polymer - particulate | 1 | blower | skiploader | R,W, SS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| polypropylene - particulate | 2 | blower | skiploader | W, SS, DGC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| sorbent clay - particulate | 2 | blower | skiploader | R, I, W, P, DGC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| polypropylene - mat | 3 | throw | skiploader | DGC, RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| expanded mineral - particulate | 3 | blower | skiploader | R, I, W, P, DGC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| polyurethane - mat | 4 | throw | skiploader | DGC, RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Personal Protective Equipment advice is contained in Section 8 of the MSDS. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

SECTION 7 HANDLING AND STORAGE

FW-BUH N&A Butterscotch Flavor

Precautions for safe handling

| | |
|--------------------------|--|
| Safe handling | <ul style="list-style-type: none"> ▶ Containers, even those that have been emptied, may contain explosive vapours. ▶ Do NOT cut, drill, grind, weld or perform similar operations on or near containers. ▶ DO NOT allow clothing wet with material to stay in contact with skin ▶ Avoid all personal contact, including inhalation. ▶ Wear protective clothing when risk of overexposure occurs. |
| Other information | <ul style="list-style-type: none"> ▶ Store in original containers in approved flammable liquid storage area. ▶ Store away from incompatible materials in a cool, dry, well-ventilated area. ▶ DO NOT store in pits, depressions, basements or areas where vapours may be trapped. ▶ No smoking, naked lights, heat or ignition sources. |

Conditions for safe storage, including any incompatibilities

| | |
|--------------------------------|--|
| Suitable container | <ul style="list-style-type: none"> ▶ Packing as supplied by manufacturer. ▶ Plastic containers may only be used if approved for flammable liquid. ▶ Check that containers are clearly labelled and free from leaks. ▶ For low viscosity materials (i) : Drums and jerry cans must be of the non-removable head type. |
| Storage incompatibility | <ul style="list-style-type: none"> ▶ Glycols and their ethers undergo violent decomposition in contact with 70% perchloric acid. This seems likely to involve formation of the glycol perchlorate esters (after scission of ethers) which are explosive, those of ethylene glycol and 3-chloro-1,2-propanediol being more powerful than glyceryl nitrate, and the former so sensitive that it explodes on addition of water. <p>Alcohols</p> <ul style="list-style-type: none"> ▶ are incompatible with strong acids, acid chlorides, acid anhydrides, oxidising and reducing agents. ▶ reacts, possibly violently, with alkaline metals and alkaline earth metals to produce hydrogen ▶ react with strong acids, strong caustics, aliphatic amines, isocyanates, acetaldehyde, benzoyl peroxide, chromic acid, chromium oxide, dialkylzincs, dichlorine oxide, ethylene oxide, hypochlorous acid, isopropyl chlorocarbonate, lithium tetrahydroaluminate, nitrogen dioxide, pentafluoroguanidine, phosphorus halides, phosphorus pentasulfide, tangerine oil, triethylaluminium, triisobutylaluminium ▶ should not be heated above 49 deg. |

PACKAGE MATERIAL INCOMPATIBILITIES

Not Available

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Not Available

EMERGENCY LIMITS

| Ingredient | Material name | TEEL-1 | TEEL-2 | TEEL-3 |
|------------------|-------------------------------------|----------|------------|------------|
| propylene glycol | Propylene glycol; (1,2-Propanediol) | 30 mg/m3 | 1300 mg/m3 | 7900 mg/m3 |
| vanillin | Vanilin | 10 mg/m3 | 10 mg/m3 | 310 mg/m3 |
| butyric acid | Butyric acid; (n-Butyric acid) | 0.26 ppm | 2.8 ppm | 110 ppm |

| Ingredient | Original IDLH | Revised IDLH |
|--------------------------------|---------------|---------------|
| propylene glycol | Not Available | Not Available |
| vanillin | Not Available | Not Available |
| ethyl butyrate | Not Available | Not Available |
| 3-methyl-1,2-cyclopentanedione | Not Available | Not Available |
| water | Not Available | Not Available |
| acetoin | Not Available | Not Available |
| butyric acid | Not Available | Not Available |

MATERIAL DATA

FW-BUH N&A Butterscotch Flavor


for propylene glycol:

Saturated vapour concentration @ 20 deg C.= 65.8 ppm, 204.6 mg/m³; i.e higher concentrations can only occur as aerosols or at higher temperatures.

Odour Threshold: Practically odourless.

A small number of individuals show skin irritation or sensitisation from repeated or prolonged exposure to propylene glycol. A workplace environmental exposure limit (WEEL) has been established by AIHA and is thought to be protective against systemic effects.

Exposure controls

| | |
|---|--|
| Appropriate engineering controls | <p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.</p> <p>The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.</p> |
| Personal protection |  |
| Eye and face protection | <ul style="list-style-type: none"> ▶ Safety glasses with side shields. ▶ Chemical goggles. ▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. |
| Skin protection | See Hand protection below |
| Hands/feet protection | <ul style="list-style-type: none"> ▶ Wear chemical protective gloves, e.g. PVC. ▶ Wear safety footwear or safety gumboots, e.g. Rubber <p>NOTE:</p> <ul style="list-style-type: none"> ▶ The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact. ▶ Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed. |
| Body protection | See Other protection below |
| Other protection | <ul style="list-style-type: none"> ▶ Overalls. ▶ PVC Apron. ▶ PVC protective suit may be required if exposure severe. ▶ Eyewash unit. |
| Thermal hazards | Not Available |

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

FW-BUH N&A Butterscotch Flavor

| Material | CPI |
|----------------|-----|
| BUTYL | C |
| NATURAL RUBBER | C |
| NEOPRENE | C |
| PE/EVAL/PE | C |
| PVA | C |
| VITON | C |

* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

Respiratory protection

Type AB-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.

Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

| Required Minimum Protection Factor | Half-Face Respirator | Full-Face Respirator | Powered Air Respirator |
|------------------------------------|----------------------|----------------------|--------------------------|
| up to 10 x ES | AB-AUS P2 | - | AB-PAPR-AUS / Class 1 P2 |
| up to 50 x ES | - | AB-AUS / Class 1 P2 | - |
| up to 100 x ES | - | AB-2 P2 | AB-PAPR-2 P2 ^ |

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO₂), G = Agricultural chemicals, K = Ammonia(NH₃), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

FW-BUH N&A Butterscotch Flavor

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

| | | | |
|---|----------------|--|---------------|
| Appearance | Clear amber | | |
| Physical state | Liquid | Relative density (Water = 1) | 1.04 |
| Odour | Characteristic | Partition coefficient n-octanol / water | Not Available |
| Odour threshold | Not Available | Auto-ignition temperature (°C) | Not Available |
| pH (as supplied) | Not Available | Decomposition temperature | Not Available |
| Melting point / freezing point (°C) | Not Available | Viscosity (cSt) | Not Available |
| Initial boiling point and boiling range (°C) | Not Available | Molecular weight (g/mol) | Not Available |
| Flash point (°C) | 50.39 | Taste | Butterscotch |
| Evaporation rate | Not Available | Explosive properties | Not Available |
| Flammability | Flammable. | Oxidising properties | Not Available |
| Upper Explosive Limit (%) | Not Available | Surface Tension (dyn/cm or mN/m) | Not Available |
| Lower Explosive Limit (%) | Not Available | Volatile Component (%vol) | Not Available |
| Vapour pressure (kPa) | Not Available | Gas group | Not Available |
| Solubility in water (g/L) | Miscible | pH as a solution (1%) | Not Available |
| Vapour density (Air = 1) | Not Available | VOC g/L | Not Available |

SECTION 10 STABILITY AND REACTIVITY

| | |
|---|--|
| Reactivity | See section 7 |
| Chemical stability | <ul style="list-style-type: none"> ▶ Unstable in the presence of incompatible materials. ▶ Product is considered stable. ▶ Hazardous polymerisation will not occur. |
| Possibility of hazardous reactions | See section 7 |
| Conditions to avoid | See section 7 |
| Incompatible materials | See section 7 |
| Hazardous decomposition products | See section 5 |

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

| | |
|------------------|--|
| Inhaled | <p>The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of vapours, fumes or aerosols, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.</p> <p>Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.</p> |
| Ingestion | <p>Accidental ingestion of the material may be damaging to the health of the individual.</p> <p>Ingestion of propylene glycol produced reversible central nervous system depression in humans following ingestion of 60 ml. Symptoms included increased heart-rate (tachycardia), excessive sweating (diaphoresis) and grand mal seizures in a 15 month child who ingested large doses (7.5 ml/day for 8 days) as an ingredient of vitamin preparation.</p> <p>Excessive repeated ingestions may cause hypoglycaemia (low levels of glucose in the blood stream) among susceptible individuals; this may result in muscular weakness, incoordination and mental confusion.</p> |

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| | |
|---------------------|--|
| Skin Contact | <p>Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.</p> <p>The material may produce moderate skin irritation; limited evidence or practical experience suggests, that the material either:</p> <ul style="list-style-type: none"> ▶ produces moderate inflammation of the skin in a substantial number of individuals following direct contact and/or ▶ produces significant, but moderate, inflammation when applied to the healthy intact skin of animals (for up to four hours), such inflammation being present twenty-four hours or more after the end of the exposure period. <p>Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis.</p> |
| Eye | <p>Irritation of the eyes may produce a heavy secretion of tears (lachrymation).</p> <p>Limited evidence or practical experience suggests, that the material may cause eye irritation in a substantial number of individuals. Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.</p> |
| Chronic | <p>Practical experience shows that skin contact with the material is capable either of inducing a sensitisation reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals.</p> <p>Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.</p> <p>Propylene glycol is though, by some, to be a sensitising principal following the regular use of topical creams by eczema patients. A study of 866 persons using a formulation containing propylene glycol in a patch test indicated that propylene glycol caused primary irritation in 16% of exposed individuals probably caused by dehydration.</p> |

| | | |
|---|--|------------------------------------|
| FW-BUH N&A Butterscotch Flavor | TOXICITY | IRRITATION |
| | Not Available | Not Available |
| propylene glycol | TOXICITY | IRRITATION |
| | Dermal (rabbit) LD50: >2000 mg/kg ^[1] | Eye (rabbit): 100 mg - mild |
| | Oral (rat) LD50: 20000 mg/kgd ^[2] | Eye (rabbit): 500 mg/24h - mild |
| | | Skin(human):104 mg/3d Intermit Mod |
| | | Skin(human):500 mg/7days mild |
| vanillin | TOXICITY | IRRITATION |
| | dermal (rat) LD50: >2000 mg/kg ^[1] | Not Available |
| | Oral (rat) LD50: 1400 mg/kg ^[1] | |
| ethyl butyrate | TOXICITY | IRRITATION |
| | Dermal (rabbit) LD50: >2000 mg/kg ^[2] | Nil reported |
| | Oral (rat) LD50: 13000 mg/kgd ^[2] | |
| 3-methyl- 1,2-cyclopentanedione | TOXICITY | IRRITATION |
| | Oral (guinea pig) LD50: 1400 mg/kg ^[2] | Not Available |
| water | TOXICITY | IRRITATION |
| | Oral (rat) LD50: >90000 mg/kg ^[2] | Not Available |
| acetoin | TOXICITY | IRRITATION |
| | Dermal (rabbit) LD50: >5000 mg/kg ^[2] | Skin (rabbit): 500 mg/24h-mod |
| | Oral (rat) LD50: >5000 mg/kgd ^[2] | |
| butyric acid | TOXICITY | IRRITATION |
| | dermal (rat) LD50: 530 mg/kgE ^[2] | Eye (rabbit):0.250 mg(open)-SEVERE |
| | Oral (rat) LD50: 1500 mg/kg ^[2] | Skin (rabbit): 20mg/24h - moderate |
| Legend: | 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. * Value obtained from manufacturer's msds. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances | |

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| | |
|--|---|
| PROPYLENE GLYCOL | <p>The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.</p> <p>The acute oral toxicity of propylene glycol is very low, and large quantities are required to cause perceptible health damage in humans.</p> |
| VANILLIN | <p>For certain benzyl derivatives: All members of this group (benzyl, benzoate and 2-hydroxybenzoate (salicylate) esters) contain a benzene ring bonded directly to an oxygenated functional group (aldehyde or ester) that is hydrolysed and/or oxidised to a benzoic acid derivative. As a stable animal metabolite, benzoic acid derivatives are efficiently excreted primarily in the urine. These reaction pathways have been reported in both aquatic and terrestrial species. The similarity of their toxicologic properties is a reflection their participation in these common metabolic pathways.</p> <p>Miosis, somnolence, muscle weakness, coma, respiratory stimulation, maternal effects involving ovaries, fallopian tubes, uterus, cervix and vagina recorded.</p> |
| ETHYL BUTYRATE | <p>Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS.</p> |
| WATER | No significant acute toxicological data identified in literature search. |
| ACETOIN | <p>The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.</p> <p>For diacetyl (and its metabolic products): Artificial butter flavoring normally contains two important constituents, diacetyl and acetoin.</p> |
| BUTYRIC ACID | <p>The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.</p> <p>The material may produce severe skin irritation after prolonged or repeated exposure, and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) thickening of the epidermis.</p> <p>The substance has been investigated as a mutagen.</p> |
| FW-BUH N&A Butterscotch Flavor & 3-METHYL-1,2-CYCLOPENTANEDIONE | <p>The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions.</p> |

| | | | |
|--|---|---------------------------------|---|
| Acute Toxicity | ☹ | Carcinogenicity | ☹ |
| Skin Irritation/Corrosion | ☹ | Reproductivity | ☹ |
| Serious Eye Damage/Irritation | ✔ | STOT - Single Exposure | ☹ |
| Respiratory or Skin sensitisation | ✔ | STOT - Repeated Exposure | ☹ |
| Mutagenicity | ☹ | Aspiration Hazard | ☹ |

Legend: ✔ – Data required to make classification available
 ✘ – Data available but does not fill the criteria for classification
 ☹ – Data Not Available to make classification

CMR STATUS

Not Applicable

SECTION 12 ECOLOGICAL INFORMATION

Continued...

FW-BUH N&A Butterscotch Flavor

Toxicity

NOT AVAILABLE

| Ingredient | Endpoint | Test Duration | Effect | Value | Species | BCF |
|--------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| propylene glycol | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available |
| vanillin | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available |
| ethyl butyrate | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available |
| 3-methyl-1,2-cyclopentanedione | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available |
| water | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available |
| acetoin | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available |
| butyric acid | Not Available | Not Available | Not Available | Not Available | Not Available | Not Available |

Propylene glycol is known to exert high levels of biochemical oxygen demand (BOD) during degradation in surface waters. This process can adversely affect aquatic life by consuming oxygen needed by aquatic organisms for survival. Large quantities of dissolved oxygen (DO) in the water column are consumed when microbial populations decompose propylene glycol.

Sufficient dissolved oxygen levels in surface waters are critical for the survival of fish, macro-invertebrates, and other aquatic organisms.

Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|--------------------------------|-------------------------|------------------|
| propylene glycol | LOW | LOW |
| vanillin | LOW | LOW |
| ethyl butyrate | LOW | LOW |
| 3-methyl-1,2-cyclopentanedione | LOW | LOW |
| water | LOW | LOW |
| acetoin | LOW | LOW |
| butyric acid | LOW | LOW |

Bioaccumulative potential

| Ingredient | Bioaccumulation |
|--------------------------------|------------------------|
| propylene glycol | LOW (BCF = 1) |
| vanillin | LOW (LogKOW = 1.21) |
| ethyl butyrate | LOW (LogKOW = 1.8464) |
| 3-methyl-1,2-cyclopentanedione | LOW (LogKOW = 1.288) |
| water | LOW (LogKOW = -1.38) |
| acetoin | LOW (LogKOW = -0.3644) |
| butyric acid | LOW (LogKOW = 0.79) |

Mobility in soil

| Ingredient | Mobility |
|--------------------------------|----------------------|
| propylene glycol | HIGH (KOC = 1) |
| vanillin | LOW (KOC = 38.45) |
| ethyl butyrate | LOW (KOC = 21.85) |
| 3-methyl-1,2-cyclopentanedione | HIGH (KOC = 1) |
| water | LOW (KOC = 14.3) |
| acetoin | HIGH (KOC = 1) |
| butyric acid | MEDIUM (KOC = 2.214) |

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging

▸ Containers may still present a chemical hazard/ danger when empty.


Continued...

FW-BUH N&A Butterscotch Flavor

| | |
|-----------------|--|
| disposal | <ul style="list-style-type: none"> ▶ Return to supplier for reuse/ recycling if possible. <p>Otherwise:</p> <ul style="list-style-type: none"> ▶ If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill. ▶ Where possible retain label warnings and MSDS and observe all notices pertaining to the product. |
|-----------------|--|

SECTION 14 TRANSPORT INFORMATION

Labels Required

| | |
|-------------------------|---|
| |  |
| Marine Pollutant | NO |

Land transport (DOT)

| | |
|-------------------------------------|---|
| UN number | 1197 |
| Packing group | III |
| UN proper shipping name | Extracts, flavoring, liquid |
| Environmental hazard | No relevant data |
| Transport hazard class(es) | Class 3 |
| Special precautions for user | Special provisions 149, IB2, T4, TP1, TP8 |

Air transport (ICAO-IATA / DGR)

| | | | | | | | | | | | | | | | |
|---|---|--------------------|----|---------------------------------|----------------|-------------------------------|-------|--|-----|--|------|---|------|--|------|
| UN number | 1197 | | | | | | | | | | | | | | |
| Packing group | III | | | | | | | | | | | | | | |
| UN proper shipping name | Extracts, flavouring, liquid | | | | | | | | | | | | | | |
| Environmental hazard | No relevant data | | | | | | | | | | | | | | |
| Transport hazard class(es) | <table border="1" style="width: 100%;"> <tr> <td>ICAO/IATA Class</td> <td>3</td> </tr> <tr> <td>ICAO / IATA Subrisk</td> <td>Not Applicable</td> </tr> <tr> <td>ERG Code</td> <td>3L</td> </tr> </table> | ICAO/IATA Class | 3 | ICAO / IATA Subrisk | Not Applicable | ERG Code | 3L | | | | | | | | |
| ICAO/IATA Class | 3 | | | | | | | | | | | | | | |
| ICAO / IATA Subrisk | Not Applicable | | | | | | | | | | | | | | |
| ERG Code | 3L | | | | | | | | | | | | | | |
| Special precautions for user | <table border="1" style="width: 100%;"> <tr> <td>Special provisions</td> <td>A3</td> </tr> <tr> <td>Cargo Only Packing Instructions</td> <td>366</td> </tr> <tr> <td>Cargo Only Maximum Qty / Pack</td> <td>220 L</td> </tr> <tr> <td>Passenger and Cargo Packing Instructions</td> <td>355</td> </tr> <tr> <td>Passenger and Cargo Maximum Qty / Pack</td> <td>60 L</td> </tr> <tr> <td>Passenger and Cargo Limited Quantity Packing Instructions</td> <td>Y344</td> </tr> <tr> <td>Passenger and Cargo Limited Maximum Qty / Pack</td> <td>10 L</td> </tr> </table> | Special provisions | A3 | Cargo Only Packing Instructions | 366 | Cargo Only Maximum Qty / Pack | 220 L | Passenger and Cargo Packing Instructions | 355 | Passenger and Cargo Maximum Qty / Pack | 60 L | Passenger and Cargo Limited Quantity Packing Instructions | Y344 | Passenger and Cargo Limited Maximum Qty / Pack | 10 L |
| Special provisions | A3 | | | | | | | | | | | | | | |
| Cargo Only Packing Instructions | 366 | | | | | | | | | | | | | | |
| Cargo Only Maximum Qty / Pack | 220 L | | | | | | | | | | | | | | |
| Passenger and Cargo Packing Instructions | 355 | | | | | | | | | | | | | | |
| Passenger and Cargo Maximum Qty / Pack | 60 L | | | | | | | | | | | | | | |
| Passenger and Cargo Limited Quantity Packing Instructions | Y344 | | | | | | | | | | | | | | |
| Passenger and Cargo Limited Maximum Qty / Pack | 10 L | | | | | | | | | | | | | | |

Sea transport (IMDG-Code / GGVSee)

| | | | | | |
|-----------------------------------|---|------------|---|--------------|----------------|
| UN number | 1197 | | | | |
| Packing group | III | | | | |
| UN proper shipping name | EXTRACTS, FLAVOURING, LIQUID | | | | |
| Environmental hazard | Not Applicable | | | | |
| Transport hazard class(es) | <table border="1" style="width: 100%;"> <tr> <td>IMDG Class</td> <td>3</td> </tr> <tr> <td>IMDG Subrisk</td> <td>Not Applicable</td> </tr> </table> | IMDG Class | 3 | IMDG Subrisk | Not Applicable |
| IMDG Class | 3 | | | | |
| IMDG Subrisk | Not Applicable | | | | |

FW-BUH N&A Butterscotch Flavor

Transport in bulk according to Annex II of MARPOL 73 / 78 and the IBC code

| Source | Ingredient | Pollution Category |
|---|----------------|--------------------|
| IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk | ethyl butyrate | Y |
| IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk | butyric acid | Y |

SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations / legislation specific for the substance or mixture

| | |
|---|--|
| propylene glycol(57-55-6) is found on the following regulatory lists | "US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)", "US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values", "US AIHA Workplace Environmental Exposure Levels (WEELs)", "US Spacecraft Maximum Allowable Concentrations (SMACs) for Airborne Contaminants", "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory" |
| vanillin(121-33-5) is found on the following regulatory lists | "US AIHA Workplace Environmental Exposure Levels (WEELs)", "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory" |
| ethyl butyrate(105-54-4) is found on the following regulatory lists | "US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants", "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory" |
| 3-methyl-1,2-cyclopentanedione(765-70-8) is found on the following regulatory lists | "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory" |
| water(7732-18-5) is found on the following regulatory lists | "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory" |
| acetoin(513-86-0) is found on the following regulatory lists | "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory" |
| butyric acid(107-92-6) is found on the following regulatory lists | "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory" |

| National Inventory | Status |
|-------------------------------|---|
| Australia - AICS | Y |
| Canada - DSL | Y |
| China - IECSC | Y |
| Europe - EINEC / ELINCS / NLP | Y |
| Japan - ENCS | N (water) |
| Korea - KECI | Y |
| New Zealand - NZIoC | Y |
| Philippines - PICCS | Y |
| USA - TSCA | Y |
| Legend: | Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets) |

SECTION 16 OTHER INFORMATION

Other information

Ingredients with multiple cas numbers

| Name | CAS No |
|--------------------------------|-------------------|
| 3-methyl-1,2-cyclopentanedione | 765-70-8, 80-71-7 |

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Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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