

Nama produk: Product name: Formcel®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published 02/02/2006
date:

RISALAH DATA KESELAMATAN BAHAN MATERIAL SAFETY DATA SHEET

1. Pengenalan Produk dan Syarikat *1. Product and Company Identification*

Produk: Product: **Formcel®, 53% n-Butanol/40% Formaldehid, larutan** Formcel®, 53% n-Butanol/40% Formaldehyde, solution

Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048

Celanese Pte Ltd
501 Orchard Road
Wheelock Place #11-01
Singapore 238880
Tel No: (65) 67331767

Nombor telefon kecemasan pengangkutan:
+ (65) 66639259 (Operations Room direct dial)
+ (65) 62656917 (Operations Room direct dial)
+ (65) 62650177(Switchboard, ask for Operations Room)

or fax request to
+(65) 62644190 (Facsimile to Operations Room)
+(65) 62664696 (Facsimile to Operations Room)

or email to
opsroom@semco.psa.com.sg

or Call CHEMTREC 703 527 3887 (USA), collect calls accepted
"+" = International Dialing Access Code

Nama produk:	Product name:	Formcel [®] , 53% n-Butanol/ 40% Formaldehide, solution
Nombor MSDS:	MSDS number:	48
Nombor bahan:	Material number:	80048
Tarikh diterbitkan:	Published date:	02/02/2006

Kegunaan produk:
Product Use:

Digunakan sebagai perantara bagi menghasilkan resin fenol-, urea-, furfural alkohol-, resorsinol-, dan melamina-formaldehid yang digunakan dalam salutan industri, produk kayu, tekstil, dan resin foundri.

Used as an intermediate to produce phenol-, urea-, furfural alcohol-, resorcinol-, and melamine- formaldehyde resins that are used in industrial coatings, wood products, textiles, and foundry resins.

2. Komposisi/ Maklumat tentang Ramuan

2. Composition / Information on Ingredients

Komponen Component	No. CAS CAS Number	% Berat Percent %	Status kawalselia OSHA: OSHA hazard category:
1-Butanol N-BUTANOL	71-36-3	53	Berbahaya Hazardous
Formaldehid FORMALDEHYDE	50-00-0	40	Berbahaya Hazardous

Water (CAS 7732-18-5), wt. %: 7

Formcel[®], larutan 53% n-Butanol/40% Formaldehid adalah campuran keseimbangan butanol, formaldehid dan air dengan komposisi nominal yang disenaraikan diatas.

Formcel[®], 53% n-Butanol/40% Formaldehyde solution is an equilibrium mixture of butanol, formaldehyde and water with the nominal composition listed above.

3. Pengenalan Bahaya

3. Hazards Identification

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Gambaran Menyeluruh Kecemasan:

Emergency Overview:

BAHAYA!
DANGER!

- **Menyebabkan luka terbakar pada kulit dan dan trek pencernaan.**
Causes skin and digestive tract burns.
- **Cecair dan wap mudah menyala.**
Flammable liquid and vapor.
- **Menyebabkan kerengsaan trek pernafasan dan mata.**
Causes respiratory tract and eye irritation.
- **Memudaratkan jika dihidu, diserap melalui kulit atau ditelan.**
Harmful if inhaled, absorbed through skin or swallowed.
- **Boleh menyebabkan tindak balas alergi pernafasan dan kulit.**
May cause allergic respiratory and skin reaction.
- **Boleh memudaratkan jika ditelan.**
May be harmful if swallowed.
- **Bahaya kanser. Mengandungi bahan yang boleh menyebabkan kanser. Risiko kanser bergantung pada jangka masa dan aras pendedahan.**
Cancer hazard. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.

Perihalan produk

Product Description

Rupa:

Appearance:

Cecair jernih, tak berwarna.

Clear, colorless liquid.

Bau:

Odor:

Strong, pungent, characteristic odor.

Kesan kesihatan yang berpotensi berlaku

Potential health effects

Laluan pendedahan:

Routes of exposure:

Kulit, mata, dihidu, ditelan.

Skin, eyes, inhalation, ingestion.

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

***Kesan serta merta
Immediate effects:***

Kulit:
Skin:

Menyebabkan luka terbakar pada kulit.
Causes skin burns.

Boleh menyebabkan tindak balas alergi kulit.
May cause allergic skin reaction.

Memudaratkan jika terserap melalui kulit.
Harmful if absorbed through skin.

Gejala pendedahan mungkin termasuk: Symptoms of exposure may include:

depresi sistem saraf pusat berserta sakit kepala, stupor, perilaku tak selaras atau ganjil atau tidak sedar.
Central nervous system depression with headache, stupor, uncoordinated or strange behavior or unconsciousness.

kulit menjadi merah atau lebam, bengkak, gatal, terbakar atau repuh.
Redness or discoloration, swelling, itching, burning or blistering of skin.

Mata:
Eyes:

Pendedahan kepada wap dan cecair: Exposure to vapors and liquid

menyebabkan kerengsaan mata.
Causes eye irritation.

Gejala pendedahan mungkin termasuk: Symptoms of exposure may include:

kerengsaan mata, rasa terbakar atau bisa mata, mata berair, dan/atau perubahan penglihatan
Eye irritation, burning sensation, pain, watering, and/or change of vision.

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Dihidu: **Menyebabkan menyebabkan kerengsaan trek pernafasan.**
Inhalation: Causes respiratory tract irritation.

Memudaratkan jika dihidu.
Harmful if inhaled.

Boleh menyebabkan tindak balas alergi pernafasan.
May cause allergic respiratory reaction.

Gejala pendedahan mungkin termasuk: Symptoms of exposure may include:

depresi sistem saraf pusat berserta mual, pening, sakit kepala, stupor, perilaku tak selaras atau ganjil atau tidak sedar.

Central nervous system depression with nausea, dizziness, headache, stupor, uncoordinated or strange behavior or unconsciousness.

lelehan hidung, suara garau, batuk-batuk, sakit dada dan kesukaran bernafas.
Nasal discharge, hoarseness, coughing, chest pain and breathing difficulty.

penumpukan bendalir dalam paru-paru (edema pulmonari); gejala mungkin tertunda selama beberapa jam.

Accumulation of fluid in the lungs (pulmonary edema); symptoms can be delayed for several hours.

Ditelan: **Menyebabkan luka terbakar pada trek pencernaan.**
Ingestion: Causes digestive tract burns.

Memudaratkan jika ditelan.
Harmful if swallowed.

Gejala pendedahan mungkin termasuk: Symptoms of exposure may include:

depresi sistem saraf pusat berserta mual, dizziness, sakit kepala, stupor, perilaku tak selaras atau ganjil, atau tidak sedar.

Central nervous system depression with nausea, dizziness, headache, stupor, uncoordinated or strange behavior, or unconsciousness.

mual, muntah-muntah, hilang selera makan, kerengsaan gastrousus dan/atau diarea.

Nausea, vomiting, loss of appetite, gastrointestinal irritation and/or diarrhea.

radang mulut, tekak, esofagus dan/atau perut.

Inflammation of mouth, throat, esophagus and/or stomach.

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehide, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Karsinogenik:
Carcinogenic:

Pendedahan berlebihan kepada formaldehid secara penyedutan berpanjangan atau berulang kali boleh menyebabkan tumor hidung mengikut kajian rodent makmal dan data manusia yang terbatas. Kajian pendedahan manusia kepada formaldehid telah menunjukkan hasil berbeza-beza yang mengaitkan pendedahan formaldehid dengan leukemia dan dengan masalah berikut:

Prolonged or repeated inhalation overexposure to formaldehyde may cause nasal tumors based on laboratory rodent studies and limited human data. Studies of human exposure to formaldehyde have shown mixed results associating leukemia with formaldehyde exposure and the following:

Formaldehid adalah:
Formaldehyde is:

Disenaraikan sebagai karsinogen OSHA:
listed as an OSHA Carcinogen

disenaraikan oleh NTP sebagai karsinogen yang dijangka
listed as an anticipated carcinogen by NTP
listed as carcinogenic to humans, IARC Group I, based on sufficient human evidence for nasopharyngeal cancer and sufficient evidence in experimental animals

Mutagenik:
Mutagenic:

Menunjukkan hasil bercampur-campur tentang potensi mutagenik in vitro.
Shows mixed results for mutagenic potential in vitro.

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Kesan pada organ sasaran:
Target Organ Effects:

- **Pendedahan terlampau (pendadahan berpanjangan atau berulang kali) boleh menyebabkan:**
- Overexposure (prolonged or repeated exposure) may cause:

Depresi sistem saraf pusat
Central nervous system depression

Kerengsaan trek pernafasan
Irritation of the respiratory tract

Kerosakan trek pencernaan
Digestive tract damage

Tindak balas alergi dan kerengsaan setempat pada kulit
Allergic reaction and local irritation of the skin

Kerosakan kulit
Skin damage

Kerosakan sistem pembiakan

Reproductive system damage

Reaksi alergi pernafasan }par
Allergic respiratory reaction
Nasal tract

Keadaan perubatan yang umumnya diketahui bertambah buruk oleh pendedahan:

Medical Conditions which may be Aggravated by Exposure:

Pendedahan yang banyak kepada bahan kimia ini boleh memberikan kesan buruk terhadap orang yang menghidap penyakit akut atau kronik pada organ-organ berikut:

Significant exposure to this chemical may adversely affect people with acute or chronic disease of the:

Saluran pernafasan
Respiratory Tract

Kulit
Skin

Mata
Eyes

Saluran pencernaan
Digestive tract

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Bagi mendapatkan maklumat lanjut, lihat:

For further information, see:

Bahagian 4 - Langkah-Langkah Pertolongan Cemas
Bahagian 5 - Langkah-Langkah Memadam Kebakaran
Bahagian 6 - Langkah-Langkah Pembebasan Tidak Sengaja
Bahagian 8 - Kawalan Pendedahan / Perlindungan Diri
Bahagian 9 - Sifat-Sifat Fizikal dan Kimia
Bahagian 10 - Kestabilan dan Kereaktifan

Section 4 - First Aid Measures
Section 5 - Fire Fighting Measures
Section 6 - Accidental Release Measures
Section 8 - Exposure Controls/Personal Protection
Section 9 - Physical and Chemical Properties
Section 10 - Stability and Reactivity

4. Langkah-Langkah Pertolongan Cemas

4. First Aid Measures

Kulit:
Skin:

Siram kulit serta merta dengan air yang banyak selama sekurang-kurangnya 15 minit sambil menanggalkan pakaian dan kasut yang tercemar. Dapatkan rawatan perubatan dengan serta merta. Basuh pakaian sebelum menggunakannya semula. Musnahkan kasut yang tercemar.
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Destroy contaminated shoes.

Mata:
Eyes:

Serta merta siram mata dengan air yang banyak selama sekurang-kurangnya 15 minit. Jika mudah, tanggalkan kanta lekap yang dipakai. Dapatkan perhatian perubatan dengan serta merta.
Immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. Get medical attention immediately.

Dihidu:
Inhalation:

Pindahkan ke tempat berudara bersih. Jika tidak bernafas, berikan bantuan pernafasan. Jika sukar bernafas, berikan oksigen. Panggil doktor.
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ditelan:
Ingestion:

JANGAN dipaksa muntah. Dapatkan perhatian perubatan dengan serta merta. Jika mangsa sedar sepenuhnya, berikan secawan air. Jangan berikan apa-apa melalui mulut kepada orang yang tidak sedar.
DO NOT induce vomiting. Get medical attention immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Catatan untuk doktor:
Note to physician:

Perhatikan kalau-kalau terjadi edema pulmonari pendam.
Observe for latent pulmonary edema.

Pneumonitis kimia boleh terjadi setelah pendedahan pernafasan.
Chemical pneumonitis could follow respiratory exposure.

5. Langkah-Langkah Memadam Kebakaran

5. Fire Fighting Measures

NFPA: Health: 3 Flammability: 2 Reactivity: 0

Sifat-sifat mudah menyala
Flammable properties

Takat kilat (kaedah ujian): 57 C (135 F) (SETA)
Flash point (test method):

Had mudah menyala, Dalam udara, % mengikut isipadu
Flammable limits in air, % by volume:

Atas:	73 % (Formaldehyde)
Upper:	11.2 % (Butanol at 25 deg C)
	7 % (Formaldehyde)
Bawah:	1.4% (Butanol at 25 deg C)
Lower:	

Suhu swapencucuhan: 300 C (572 F) (Formaldehyde)
Autoignition temperature: 343 C (649 F) (Butanol)

Hasil Pembakaran: **Karbon Monoksida.**
Products of combustion: Carbon Monoxide.

Media pemadam: **Gunakan busa pembentuk selaput akueus jenis alkohol bagi kebakaran besar.**
Extinguishing Media: Use alcohol type aqueous film forming foam for large fires.

Gunakan CO2 atau kimia kering bagi kebakaran kecil.
Use CO₂ or dry chemical for small fires.

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk:	Product name:	Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS:	MSDS number:	48
Nombor bahan:	Material number:	80048
Tarikh diterbitkan:	Published date:	02/02/2006

Petunjuk Memadam Kebakaran

Fire Fighting Instructions

Semburan air patut digunakan bagi menyejukkan struktur dan wadah yang terdedah kepada api. Semburan air boleh digunakan bagi mengurangkan keamatan api dan mencairkan tumpahan menjadi campuran tidak mudah menyala.

Water spray should be used to cool fire-exposed structures and vessels. Water spray can be used to reduce the intensity of flames and to dilute spills to a non-flammable mixture.

Kakitangan hendaklah dipindahkan dan dipastikan berada di atas arah tiupan angin ke api. Jika ada kemungkinan pendedahan kepada wap atau produk pembakaran, pakai pakaian bomba yang lengkap serta alat pernafasan swalengkap yang diluluskan NIOSH. Bahan kimia yang mengoksida mungkin mencepatkan kadar pembakaran dalam keadaan kebakaran.

Keep personnel removed from and upwind of fire. If potential for exposure to vapors or products of combustion exists, wear full fire fighting turnout gear and NIOSH approved self-contained breathing apparatus. Oxidizing chemicals may accelerate the burning rate in a fire situation.

Persoalan Alam Sekitar Semasa**Memadam Kebakaran**

Fire Fighting Environmental Concerns

Penyaliran air dan kepulan wap boleh mengakis. Benteng dan kumpulkan air yang digunakan untuk memadam kebakaran supaya dapat dineutralkan sebelum dibebaskan.

Water run-off and vapor cloud may be corrosive. Dike and collect water used to fight fire for neutralization before release.

Wap dan gas pembakaran boleh dikawal dengan menggunakan aliran kabut air.

Vapors and combustion gases can be controlled using a water fog stream.

Kelengkapan pakaian bunker dan peralatan memadam kebakaran yang lain hendaklah dibersihkan daripada pencemaran sebelum digunakan semula.

Thoroughly decontaminate bunker gear and other fire-fighting equipment before re-use.

6. Langkah-Langkah Pembebasan Tidak Sengaja**6. Accidental Release Measures****Kecemasan pengangkutan:**

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Petunjuk Tumpahan atau Kebocoran
Spill or Leak Instructions

Hapuskan punca-punca pencucuhan.
Eliminate ignition sources.

Lihat peralatan perlindungan diri di Bahagian 8. Tumpahan hendaklah ditampung dengan benteng tanah atau bahan penyerap yang tidak mudah menyala bagi mengurangkan kawasan yang tercemar.

See Section 8 for appropriate personal protective equipment. Contain spill with dikes of soil or nonflammable absorbent to minimize contaminated area.

Aliran kabut air boleh mengurangkan wap.
Water fog stream may reduce vapors.

Jika ada potensi kebakaran, selimutkan tumpahan dengan busa pembentuk selaput akueus jenis alkohol atau gunakan aliran kabut air untuk menyebarkan wap.

If fire potential exists, blanket spill with alcohol type aqueous film-forming foam or use water fog stream to disperse vapors.

Hindarkan pengaliran ke dalam pemetung dan parit yang membawa ke saluran air. Jika dikehendaki, maklumkan pihak berkuasa negeri dan tempatan. Letakkan bekas yang bocor di kawasan yang sempurna pengudaraannya.

Avoid run-off into storm sewers and ditches leading to waterways. If required, notify state and local authorities. Place leaking containers in well-ventilated area.

Neutralkan dengan asid sulfamik atau natrium bisulfit.
Neutralize with sulfamic acid or sodium bisulfite.

Bersihkan tumpahan kecil dengan menggunakan bahan penyerap tidak mudah menyala atau dengan menyiram sedikit-sedikit dengan air. Tampung tumpahan besar dengan benteng atau bahan penyerap tidak mudah menyala. Bersihkan dengan vakum atau menyapu.

Clean up small spills by using a nonflammable absorbent or flushing sparingly with water. Contain larger spills with nonflammable dikeing or absorbent. Clean up by vacuuming or sweeping.

Di Amerika Syarikat, hubungi Pusat Gerak Balas Nasional (800-424-8802) dan pihak berkuasa negeri dan tempatan jika kuantiti yang dibebaskan selama 24 jam sama dengan atau melebihi kuantiti wajib lapor yang disenaraikan di bawah:

Within the United States, call the National Response Center (800-424-8802) and appropriate state and local authorities if the quantity released over 24 hours is equal to or greater than the reportable quantity listed below:

250 lbs. of the material as is; based on a Reportable Quantity of 100 lbs. for formaldehyde.

Orang yang tidak perlu jangan dibiarkan dekat; pencilkan kawasan bahaya dan

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

jangan benarkan masuk. Pastikan berada di atas arah tiupan angin; jauhi kawasan rendah.

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas.

Pencilkan sejauh 800 meter atau 0.5 batu di semua arah jika tangki, gerabak, atau lori tangki terbabit dalam kebakaran.

Isolate for 800 meters or 0.5 miles in all directions if tank, rail car, or tank truck is involved in fire.

Pindahkan orang dari kawasan di bawah arah tiupan angin jika wajar mengikut keadaannya bagi mencegah pendedahan dan membolehkan wap atau wasap lesap. Tumpahan boleh mendedahkan kawasan di bawah tiupan angin kepada kepekatan yang toksik atau mudah menyala pada jarak yang jauh dalam hal-hal tertentu.

Evacuate downwind areas as conditions warrant to prevent exposure and to allow vapors or fumes to dissipate. Spills may expose downwind areas to toxic or flammable concentrations over considerable distances in some cases.

7. Penanganan dan Penyimpanan

7. Handling and Storage

Penanganan:
Handling:

Gunakan dengan pengudaraan memadai. Bekas hendaklah sentiasa ditutup apabila tidak digunakan. Bekas hendaklah dibuka perlahan-lahan bagi melepaskan lebih tekanan. Jangan menghidu wapnya. Hindarkan daripada terkena mata, kulit atau pakaian. Basuh tubuh bersih-bersih dengan sabun dan air setelah menanganinya. Pakaian kotor hendaklah dibersihkan daripada pencemaran sebelum digunakan semula. Pakaian daripada kulit hendaklah dimusnahkan jika tercemar.

Use with adequate ventilation. Keep containers closed when not in use. Always open containers slowly to allow any excess pressure to vent. Avoid breathing vapor. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Decontaminate soiled clothing thoroughly before re-use. Destroy contaminated leather clothing.

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Produ ini mungkin membangkitkan cas statik. Bumikan/ikat peralatan peralatan apabila memindahkan bahan bagi mencegah penumpukan statik. Di AS, peralatan elektrik dan litar dalam semua situasi penyimpanan dan penanganan mesti mematuhi Kod Elektrik Nasion (Perkara 500 dan 501) bagi lokasi berbahaya.

This product may generate a static charge. Ground/bond equipment when transferring material to prevent static accumulation. Electrical equipment and circuits in all storage and handling must conform to requirements of National Electric Code (Article 500 and 501) for hazardous location.

Penyimpanan:
Storage:

Janga simpan bersama bahan yang tidak serasi. Lihat Bahagian 10. Kestabilan dan Kereaktifan.

Do not store with incompatible materials. See Section 10. Stability and Reactivity.

Semua bekas hendaklah sentiasa ditutup ketat apabila tidak digunakan. Simpan secara terlindung daripada sinaran matahari langsung dan di lantai yang tidak telus.

Keep all containers tightly closed when not in use. Store out of direct sunlight and on an impermeable floor.

8. Kawalan Pendedahan / Perlindungan Diri *8. Exposure Controls / Personal Protection*

Kawalan kejuruteraan
Engineering Controls:

Pengudaraan umum atau sebaran sering kali tidak mencukupi sebagai satu-satunya cara mengawal pendedahan pekerja. Biasanya pendedahan setempat lebih diutamakan.

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred.

Peralatan pelindung diri
Protective Equipment

Tempat mandi keselamatan dan tempat membasuh mata harus disediakan di tempat mudah didapatkan.

A safety shower and eyebath should be readily available.

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Perlindungan kulit:
Skin Protection:

Pakai pakaian dan sarung tangan tidak telus bagi menghindari sentuhan. Disarankan supaya menggunakan getah butil. Bahan pelindung yang lain boleh digunakan, mengikut keadaan, sekiranya ada data yang memadai tentang degradasi dan penelapan. Jika bahan kimia lain digunakan bersama bahan kimia ini, pemilihan bahan harus berdasarkan perlindungan terhadap semua bahan kimia yang hadir.

Wear impervious clothing and gloves to prevent contact. Butyl rubber is recommended. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Perlindungan mata/muka:
Eye/face protection:

Pakai gogal kimia jika ada kemungkinan munasabah akan terkena mata.
Wear chemical goggles when there is a reasonable chance of eye contact.

Selain gogal, pakai perisai muka jika ada kemungkinan munasabah akan terpercik ke muka.

In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk:	Product name:	Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS:	MSDS number:	48
Nombor bahan:	Material number:	80048
Tarikh diterbitkan:	Published date:	02/02/2006

Perlindungan pernafasan:
Respiratory Protection:

Berdasarkan aras pencemaran dan had bekerja alat pernafasan, gunakan alat pernafasan yang diluluskan oleh NIOSH. Berikut adalah peralatan minimum disarankan bagi aras pendedahan pekerjaan. Bagi menganggarkan pendedahan pekerjaan lihat Bahagian 3, Bahagian 8 dan Bahagian 11.
Based on workplace contaminant level and working limits of the respirator, use a respirator approved by NIOSH. The following is the minimum recommended equipment for an occupational exposure level. To estimate an occupational exposure level see Section 3, Section 8 and Section 11.

Bagi kadar kepekatan > 1 dan <100 kali aras pendedahan pekerjaan: Gunakan alat pernafasan bekalan udara berpelindung muka penuh Jenis C dikendalikan dalam cara permintaan tekanan atau aliran terus menerus.
For concentrations > 1 and < 100 times the occupational exposure level: Use Type C full facepiece supplied-air respirator operated in positive-pressure or continuous-flow mode.

Bagi kadar kepekatan > aras IDLH atau kepekatan tidak diketahui (misalnya dalam kecemasan): Gunakan alat pernafasan swalengkap dengan pelindung muka penuh dalam cara tekanan positif atau alat pernafasan bekalan udara tekanan positif berpelindung muka penuh Jenis C dengan sistem lolos alat pernafasan swalengkap tekanan positif bantu.
For concentrations > the IDLH level or unknown concentration (such as in emergencies): Use self-contained breathing apparatus with full facepiece in positive-pressure mode or Type C positive-pressure full facepiece supplied-air respirator with an auxiliary positive-pressure self-contained breathing apparatus escape system.

Untuk lolos: Gunakan alat pernafasan swalengkap dengan pelindung muka penuh atau mana-mana alat pernafasan yang khusus diluluskan bagi meloloskan diri.
For escape: Use self-contained breathing apparatus with full facepiece or any respirator specifically approved for escape.

Garis panduan pendedahan
Exposure guidelines

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Komponen Component	No. CAS CAS Number	% Berat Percent %	ACGIH TWA	ACGIH STEL	ACGIH CEILING	OSHA TWA	OSHA STEL	OSHA CEILING	WEL (Had Pendedah an Tempat Kerja) Celanese Celanese WEL (Workplace Exposure Limit)	Mexico TWA	Mexico STEL	Mexico CEILING
1-Butanol N-BUTANOL	71-36-3	53	20 PPM	-	-	100 ppm	-	-	-	50 ppm	-	-
Formaldehid FORMALDEHYDE	50-00-0	40	-	-	0.3 ppm	0.75 ppm	2 ppm	-	0.75 ppm (TWA); 2 ppm (STEL)	-	-	2 ppm

Komponen Component	No. CAS CAS Number	% Berat Percent %	1990 NIOSH IDLH (Recognized by OSHA)	1994 NIOSH IDLH
1-Butanol N-BUTANOL	71-36-3	53	8000 ppm	1400 ppm
Formaldehid FORMALDEHYDE	50-00-0	40	30 ppm	20 ppm

Comments:

Celanese telah mengambil keputusan tidak menerapkan nilai Had Maksimum ACGIH bagi Formaldehid, berdasarkan penilaian saintifik semua data yang tersedia.

Celanese telah menerapkan ACGIH TLV bagi butanol.

Celanese has decided not to adopt the ACGIH Ceiling value for Formaldehyde based on a scientific evaluation of all the available data.

Celanese has adopted the ACGIH TLV for butanol.

9. Sifat-Sifat Fizikal dan Kimia 9. Physical and Chemical Properties

Rupa:

Appearance:

Cecair jernih, tak berwarna.

Clear, colorless liquid.

Bau:

Odor:

Strong, pungent, characteristic odor.

pH:

6.2

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Tekanan Wap: 24 mmHg @ 30 deg C
Vapor Pressure:

Ketumpatan wap (udara = 1 pada 20° C): Formaldehyde: 1.04
Vapor Density (Air=1 @ 20 C): Water: 0.62
Butanol: 2.56

Takat didih (760 mmHgA): 104.5 C (220 F)
Boiling Point (760 mmHgA):

Freezing Point: Below 25 deg C (77 deg F), solid formaldehyde polymer gradually forms.

Keterlarutan dalam air pada 20° C: 51.6 %
Solubility in Water @ 20 C:

Graviti tentu: 0.971 @ 30 deg C
Specific Gravity:

Berat molekul: Formaldehyde: 30.0
Molecular Weight: Water: 18.0
Butanol: 74.1

10. Kestabilan dan Kereaktifan *10. Stability and Reactivity*

Kestabilan: **Stabil.**
Stability: Stable.

Keadaan yang harus dihindarkan: Produk ini higroskopik. Satu kaedah bagi mengeluarkan lembapan mesti disediakan bagi mencegah pencemaran dan kemungkinan terbentuknya polimer.
Conditions to Avoid: Avoid heat , flames, sparks, and other sources of ignition.

Nama produk:	Product name:	Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS:	MSDS number:	48
Nombor bahan:	Material number:	80048
Tarikh diterbitkan:	Published date:	02/02/2006

Bahan yang harus dihindarkan: Jauhkan dari soda kaustik, kapur dan alkali keras yang lain, natrium, kalium dan logam alkali lain, asid hidroklorik, asid sulfurik dan asid tak organik keras yang lain, oksida nitrogen, amina dan agen pengoksidaan seperti peroksida, asid nitrik, asid perklorik, kromium trioksida, fenol atau urea.
Incompatibility: Keep away from caustic soda, lime and other strong alkalis, sodium, potassium and other alkali metals, hydrochloric, sulfuric and other strong inorganic acids, nitrogen oxides, amines and oxidizing agents such as peroxides, nitric acid, perchloric acid, chromium trioxide, phenols or urea.

Hasil Pembakaran atau Penguraian Berbahaya: Hasil penguraian terma boleh termasuk oksida karbon.
 Hazardous combustion or decomposition products: Thermal decomposition products may include oxides of carbon.

Pempolimeran berbahaya: Pempolimeran berbahaya tidak akan terjadi.
 Hazardous Polymerization: Hazardous polymerization will not occur.

11. Maklumat Toksikologi

11. Toxicological Information

Component Toxicological Information

Komponen Component	1-Butanol N-BUTANOL
	<p>Acute Exposure:</p> <p>Oral LD50: 0.79-4.36 g/kg (rats); slightly toxic to animals.</p> <p>Inhalation LC50: > 8000 ppm (rats, 4 hours); practically nontoxic to animals.</p> <p>Skin: Moderately irritating to rabbit skin; slightly toxic to animals (LD50, rabbits: 3.4 - 5.3 g/kg).</p> <p>Eyes: Severely irritating to rabbit eyes.</p>

Nama produk:	Product name:	Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS:	MSDS number:	48
Nombor bahan:	Material number:	80048
Tarikh diterbitkan:	Published date:	02/02/2006

Mutagenicity: Not mutagenic in most *in vitro* assays (e.g., Ames test, SCE & micronucleus assays with Chinese hamster cells).

Carcinogenicity: No information.

Reproductive/Developmental Effects: In an inhalation developmental toxicity study, rats were exposed 7 hrs/day to 0, 3500, 6000 or 8000 ppm. Maternal toxicity and fetotoxicity were observed at 6000 and 8000 ppm. A slight increase in skeletal abnormalities was observed at 8000 ppm, a dose which caused 10% maternal mortality. The no effect concentration for developmental toxicity was 3500 ppm. In a behavioral teratology study, rats were exposed 7 hrs/day to 0, 3000 or 6000 ppm butanol. Significant effects were not observed.

Repeated Exposure: Rats were exposed orally via gavage to doses of 0, 30, 125, and 500 mg/kg/day for 13 weeks. CNS effects were observed in the high dose animals during the final 6 weeks of dosing. The no observed adverse effect level was 125 mg/kg/day. In a research study, oral exposure of rats to 6.9% butanol in drinking water for 3 months affected liver mitochondria.

Komponen Component	Formaldehid FORMALDEHYDE
-------------------------------	-------------------------------------

Acute Exposure: Toxicity information on the solution is generally not available. Information on the solution components is listed next.

Oral LD50: 800mg/kg (rats); slightly toxic to animals.

Inhalation LC50: 474ppm (rats, 4 hrs.); moderately toxic to animals.

Skin: Severely irritating/corrosive to rabbit skin depending on exposure duration and concentration; moderately toxic to animals (LD50, rabbits: 270mg/kg); causes skin sensitization in humans and guinea pigs.

Eye: Severely irritating to rabbit eyes.

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Mutagenicity: Genotoxic potential was noted in a variety of in vitro systems. Results in vivo have been mixed probably due to the presence of metabolic processes for detoxifying.

Carcinogenicity: Oral-Formaldehyde was not carcinogenic in several well-conducted rodent lifetime drinking water studies. Repeated dermal-topical application on mice has not indicated carcinogenic potential. Inhalation-Rats and mice were exposed to 2.0, 5.6, or 14.3 ppm formaldehyde for 6hrs/day, 5 days/week for 24 months. In rats no treatment-related tumors were seen at 2 ppm while at 5.6 ppm 1% had nasal tumors and at 14.3 ppm 43% had nasal tumors. In mice no treatment-related tumors were observed at 2 ppm or 5.6 ppm while 1% had nasal tumors at 14.3 ppm. IARC: Group I, Carcinogenic to Humans, based on sufficient human (nasopharyngeal cancer) and experimental animal data. Formaldehyde is listed as an OSHA carcinogen. Formaldehyde is listed as an anticipated carcinogen by the NTP.

Hauptmann, et. al. (2004) have reported a statistically significant dose-related increase in the incidence of nasopharyngeal tumors in a large cohort of formaldehyde exposed workers. In another study by Hauptmann, et. al. (2003) based upon the same cohort, a statistically significant dose-related increase of leukemia mortality was observed. However, this increase was seen only for a peak exposure metric and the rate of leukemia mortality was less than that of the unexposed general population. In addition, the Hauptmann et. al. (2003) results are not consistent with the findings of Coggon et. al. (2003). Coggon et. al. found no association between formaldehyde exposure and leukemia incidence in a large cohort of U.K. workers with estimated formaldehyde exposures higher than the Hauptmann et. al. (2003) study. A recent NIOSH study (Pinkerton, et. al. 2004) based on a cohort of formaldehyde exposed garment workers reported only a marginal association with leukemia incidence. Experimental data linking formaldehyde exposure with toxicity in organs, including the bone marrow, remote from the portal of entry is lacking. Also, an established mechanism for induction of leukemia by formaldehyde is not available. Furthermore, formaldehyde inhalation by rats in several well-conducted cancer bioassays did not induce leukemia.

Reproductive/Developmental Effects: In a developmental toxicity study with mice dosed orally by gavage at 74, 148 or 185 mg/kg/day, no fetotoxic or teratogenic effects were seen. In a developmental toxicity study with rats exposed via inhalation to 2, 5 or 10ppm formaldehyde, treat-related developmental effects were not observed. In a reproduction study, dogs received the equivalent of 9.4 mg/kg/day of formaldehyde in feed during days 4-56 after mating without adverse reproductive effects.

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Repeated Exposure: Inhalation exposure (6hrs./day;5 days/week;13 weeks) of rats resulted in nasal tissue irritation at 10 or 20ppm, but not at 2ppm. Monkeys exposed for 26 weeks (22hrs./day;7 days/week) had nasal irritation at 3ppm but not at 1ppm. Oral exposure of rats to formaldehyde in the drinking water at a dose equivalent to 82-109 mg/kg/day over a lifetime resulted in stomach tissue irritation while a dose of 15-21 mg/kg/day was without effect.

12. Maklumat Ekologi

12. Ecological Information

Component Ecological Information

Komponen Component	1-Butanol N-BUTANOL
	<p> Ecotoxicity: n-Butanol exhibits low acute toxicity to aquatic species. The 24-, 48- and 96-hour LC50 values for various fish species (Medaka, Golden Orfe, creek chub, fathead minnow, goldfish and bleak) range from 500 to 2300 ppm. The 48-hour EC50 for the water flea (daphnid) is 1983 ppm; for brine shrimp the LC50 is 2950 ppm. The 48-hour EC50 for protozoa is 2466 ppm. The toxicity thresholds for the alga <i>Scenedesmus quadricauda</i> and for cyanobacteria are 95-875 ppm and 100-312 ppm, respectively. Cell multiplication was inhibited for <i>Entosiphon sulcatum</i> (euglenoid) at 55 ppm after 72 hours. The 48-hour LC50 for <i>Xenopus laevis</i> (clawed toad) is 1200 ppm. </p> <p> Environmental Fate: </p> <p> Degradation: Under aerobic conditions butanol is readily biodegradable. The BOD (5-day)/COD ratio ranges from 0.42 - 0.74. In the Zahn-Wellens Test, 93-95% biodegradation was reported in 5 days. Atmospheric photochemical degradation is expected to range from 5 hours (in a sunlit urban atmosphere) to 2.3 days. Volatilization half-lives in water are estimated to be 2.4 hours, 3.9 hours, and 125.9 days in model streams, rivers and lakes, respectively. </p> <p> Bioaccumulation: The calculated bioconcentration factor for goldfish is 0.62-0.67. The log n-octanol/water partition coefficient for n-butanol is 0.88. This suggests that butanol has low potential to bioaccumulate. </p>
Komponen Component	Formaldehid FORMALDEHYDE

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

Ecotoxicity: Formaldehyde exhibits slight acute toxicity to various fish species. The 24-, 48- and 96-hr. LC50 values (bluegill sunfish, trout, bass, salmon, catfish, carp, golden orfe) are in the range 10-1000ppm. Algae and some invertebrates appear more susceptible e.g., acute toxicity occurs in green algae at 0.3-0.5ppm and in the water flea (daphnids) at 2-52ppm (24/48-hr. EC50). Formaldehyde has bactericidal properties at low levels (EC50, E. coli=1ppm).

Environmental Fate: The short atmospheric half-life, the low n-octanol/water partition coefficient and the ability of animals & microorganisms to rapidly biodegrade formaldehyde are expected to lead to its ready removal if released into the environment.

Degradation: Formaldehyde in aqueous effluent is degraded by activated sludge and sewage in 48-72 hr. In a die-away test with lake water, degradation was complete in 30 hrs. under aerobic conditions and 48 hrs. under anaerobic conditions. Atmospheric photochemical degradation is rapid with estimated half-lives of 19hrs. or less.

Bioaccumulation: The log n-octanol/water partition coefficient is 0.35. This suggests that formaldehyde has relatively low potential to bioaccumulate.

Nama produk:	Product name:	Formcel [®] , 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS:	MSDS number:	48
Nombor bahan:	Material number:	80048
Tarikh diterbitkan:	Published date:	02/02/2006

13. Pertimbangan Pelupusan *13. Disposal Considerations*

Lupuskan bahan tumpah sejajar dengan peraturan negeri dan tempatan bagi bahan buangan yang tidak berbahaya menurut definisi Persekutuan. Harap ingat bahawa maklumat ini adalah bagi bahan sebagaimana dibuat; pemprosesan, penggunaan, atau pencemaran mungkin menjadikan maklumat ini tidak wajar, tidak tepat atau tidak lengkap.

Dispose of spilled material in accordance with state and local regulations for waste that is non-hazardous by Federal definition. Note that this information applies to the material as manufactured; processing, use, or contamination may make this information inappropriate, inaccurate, or incomplete.

Harap ingat bahawa maklumat penanganan dan pelupusan ini juga mungkin terpakai bagi bekas kosong, pelapik dan bahan bilasannya. Peraturan atau sekatan peringkat negeri atau tempatan adalah kompleks dan mungkin berbeza dengan peraturan persekutuan. Maklumat ini dimaksudkan sebagai bantuan bagi penanganan dan pelupusan yang wajar; tanggung jawab muktamad bagi penanganan dan pelupusan terletak di tangan pemilik bahan buangan berkenaan. Lihat Bahagian 9 Sifat-Sifat Fizikal dan Kimia.

Note that this handling and disposal information may also apply to empty containers, liners and rinsate. State or local regulations or restrictions are complex and may differ from federal regulations. This information is intended as an aid to proper handling and disposal; the final responsibility for handling and disposal is with the owner of the waste. See Section 9 - Physical and Chemical Properties.

14. Maklumat Pengangkutan *14. Transport Information*

US Department of Transportation:

UN/NA Number:	UN 1198
Shipping name:	FORMALDEHYDE, SOLUTIONS, FLAMMABLE
Hazard class:	3
Subsidiary hazard:	8
Packing Group:	PG III
DOT Reportable Quantity (RQ):	100 Lb./ 45.4 Kg (FORMALDEHYDE) 5000 Lb./ 2270 Kg (BUTANOL)
Emergency Response Guide:	132

ICAO/IATA:

IATA UN Number:	UN 1198
Proper Shipping Name:	FORMALDEHYDE, SOLUTIONS, FLAMMABLE

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk:	Product name:	Formcel [®] , 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS:	MSDS number:	48
Nombor bahan:	Material number:	80048
Tarikh diterbitkan:	Published date:	02/02/2006

Hazard Classification: 3
Subsidiary Hazard: 8
Packing group: III
Label: (Flammable Liquid) Corrosive

IMDG:

International Marine UN Number: UN 1198
Proper Shipping Name: FORMALDEHYDE, SOLUTIONS, FLAMMABLE
Hazard Class: 3
Subsidiary Hazard: 8
Packing Group: III
Takat kilat (kaedah ujian): 57 C (135 F) (SETA)
 Flash point (test method):

Transport Canada
Trade Information

Schedule B Code (export): 2912.11.0000
Harmonization Code (import): 29121100

15. Maklumat Kawalselia 15. Regulatory Information

Hazard labeling:

R phrases

- R 34 Menyebabkan luka terbakar.**
 R 34 Causes burns.
R40 Kemungkinan risiko kesan tak berbalik.
 R 40 Possible risks of irreversible effects.
R 41 Risiko kerosakan mata yang serius.
 R 41 Risk of serious damage to eyes.
R 43 Boleh menyebabkan pemekaan jika terkena kulit.
 R 43 May cause sensitization by skin contact.
R 67 Wap boleh menyebabkan mengantuk dan pening.
 R 67 Vapours may cause drowsiness and dizziness.

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk: Product name: Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS: MSDS number: 48
Nombor bahan: Material number: 80048
Tarikh diterbitkan: Published date: 02/02/2006

R 23/24/25 Toksik jika disedut, terkena kulit dan jika ditelan.
R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.
R 37/38 Merengsa sistem pernafasan dan kulit.
R 37/38 Irritating to respiratory system and skin.

S phrases

S 13 Jauhkan dari makanan, minuman dan bahan makanan haiwan.
S 13 Keep away from food, drink and animal feedingstuffs.
S 26 Jika terkena mata, bilas serta merta dengan air banyak dan minta nasihat doktor.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 45 Jika berlaku kemalangan atau jika merasa kurang sihat, dapatkan nasihat doktor dengan serta merta (tunjukkan label jika boleh).
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 60 Bahan ini dan bekasnya harus dilupuskan sebagai bahan buangan berbahaya.
S 60 This material and its container must be disposed of as hazardous waste.

S 36/37/39 Pakai pakaian pelindung, sarung tangan dan perlindungan mata/muka yang sesuai.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

INTERNATIONAL REGULATIONS

Inventori kimia

International chemical inventories:

Disenaraikan dalam inventori kimia negara-negara berikut atau layak dikecualikan:
Listed on the chemical inventories of the following countries or qualifies for an exemption:

AUSTRALIA, CHINA, CANADA, EUROPE, KOREA, PHILIPPINES, JAPAN

16. Maklumat Lain *16. Other Information*

Disiapkan oleh:
Prepared by:

Jabatan Penyeliaan Produk
Celanese Ltd.
Product Stewardship Department
Celanese Ltd.

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day

Nama produk:	Product name:	Formcel ®, 53% n-Butanol/ 40% Formaldehyde, solution
Nombor MSDS:	MSDS number:	48
Nombor bahan:	Material number:	80048
Tarikh diterbitkan:	Published date:	02/02/2006

Pentarafan bahaya
Hazard ratings

Maklumat ini dimaksudkan untuk digunakan hanya oleh mereka yang terlatih dalam sistem NFPA dan/atau HMIS.

This information is intended solely for the use of individuals trained in the NFPA and/or HMIS systems.

NFPA: Health: 3 Flammability: 2 Reactivity: 0

HMIS: Health: 3* Flammability: 2 Reactivity: 0

The following sections have been revised since the last issue of this MSDS.

Maklumat berikut telah disemak sejak versi terakhir MSDS ini:

The following has been revised since the last issue of this MSDS:

1. Pengenalan Produk dan Syarikat

Maklumat yang terkandung di sini adalah tepat sejauh pengetahuan kami. Kami tidak menyatakan atau menjamin bahawa mana-mana bahaya yang disenaraikan di sini adalah satu-satunya yang wujud. Celanese Ltd. tidak memberi jaminan dalam apa jua bentuk, secara nyata atau tersirat, tentang penggunaan bahan ini yang selamat dalam proses anda atau secara bergabung dengan zat lain. Kesan-kesannya boleh diburukkan oleh bahan lain dan/atau bahan ini pula boleh memburukkan atau menambah kesan-kesan bahan lain. Bahan ini boleh dibebaskan daripada bahan gas, cecair, atau pepejal yang dibuat secara langsung atau tidak langsung daripadanya. Pengguna memikul tanggungjawab tunggal untuk menentukan kesesuaian bahan-bahan bagi apa jua kegunaan dan cara penggunaan yang dirancangkan. Pengguna mesti memenuhi semua piawai keselamatan dan kesihatan yang berkenaan. Lembaran data keselamatan bahan disediakan di Internet oleh Celanese, Ltd. sebagai satu perkhidmatan untuk pelanggannya. Memiliki MSDS Internet tidak menandakan bahawa pemilik MSDS itu adalah pembeli atau pengguna produk yang berkenaan.

Note: For industrial use only. The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Celanese Ltd. makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. Effects can be aggravated by other materials and/or this material may aggravate or add to the effects of other materials. This material may be released from gas, liquid, or solid materials made directly or indirectly from it. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards. Material safety data sheets are provided on the Internet by Celanese, Ltd. as a service to its customers. Possession of an Internet MSDS does not indicate that the possessor of the MSDS was a purchaser or user of the subject product.

Kecemasan pengangkutan:

Transportation emergency: 703 527 3887 (USA) CHEMTREC, collect calls accepted, 24 hrs/day