



STOCK OFFICE  
1 CHEMN DE THIL  
01700 ST MAURICE DE BEYNOST  
Site : [www.doxanode.com](http://www.doxanode.com)

## Zinc Metal Pigment

### Fiche de Données de Sécurité

conforme au Règlement (CE) N° 1907/2006 (REACH) tel que modifié par le Règlement (UE) 2015/830  
Date d'émission: 3/29/2017 Date de révision: 8/28/2020 Remplace la fiche: 2/11/2020 Version: 6.1

## RUBRIQUE 1: Identification de la substance/du mélange et de la société/l'entreprise

### 1.1. Identificateur de produit

Forme du produit : Substance  
Nom commercial : Zinc Metal Pigment  
Code du produit : 300000003628  
Synonymes : 4P16 ; 4P32 ; 4P64 ; 4P645 ; MP20 ; EE/F ; EE/C ; EE/RS ; ZP90 ; Microfine ; GMP BZM-1 ; BZM-2 ; FMC ; MC ; MM ; ERS ; Standard 7 EP ; Standard 5 EP ; Super-fine ; Super Extra EP ; Super Fine EP ; Standard 5 EP ; Standard 7 EP ; ZMP STANDARD 7-EP-L ; ZMP STANDARD 7-EP-S ; ZP-S ; AmoGalv® TDZ-D75 ; 4P64 RP ; GMP32 ; GMP64 ; PHQ32 ; ZP100

### 1.2. Utilisations identifiées pertinentes de la substance ou du mélange et utilisations déconseillées

#### 1.2.1. Utilisations identifiées pertinentes

Utilisation de la substance/mélange : Fabrication de substances  
Peintures

Texte complet des descripteurs d'utilisation: voir rubrique 16

#### 1.2.2. Utilisations déconseillées

Pas d'informations complémentaires disponibles

### 1.3. Renseignements concernant le fournisseur de la fiche de données de sécurité

#### STOCK OFFICE

1 CHEMN DE THIL

01700 ST MAURICE DE BEYNOST

Tel : 04 37 26 00 06

### 1.4. Numéro d'appel d'urgence

Numéro d'urgence : Africa and Middle East: +44 1865 407333/ Asia Pacific: Australia: +61 2 8014 4559, China: 400 120 6011 (toll-free number), Malaysia: +60 3 6207 4347, Philippines: +63 2 8231 2149, South Korea: +82 2 3479 8401, Rest of Asia Pacific: +44 1865 407333/ Europe: +44 1235 239670/ North America: Mexico: +52 55 5004 8763, Rest of North America: +1 215 207 0061/ South America: Chile. +56 2 2582 9336, Rest of South America: +44 1865 407333  
24 heures 7 jours/semaine

Pays	Organisme/Société	Adresse	Numéro d'urgence	Commentaire
France	ORFILA		+33 1 45 42 59 59	

## RUBRIQUE 2: Identification des dangers

### 2.1. Classification de la substance ou du mélange

#### Classification selon le règlement (CE) N° 1272/2008 [CLP]

Dangereux pour le milieu aquatique — Danger aigu, catégorie 1 H400

Dangereux pour le milieu aquatique — Danger chronique, catégorie 1 H410

Texte intégral des mentions H : voir rubrique 16

#### Effets néfastes physicochimiques, pour la santé humaine et pour l'environnement

Très toxique pour les organismes aquatiques, entraîne des effets néfastes à long terme.

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### 2.2. Éléments d'étiquetage

#### Étiquetage selon le règlement (CE) N° 1272/2008 [CLP]

Pictogrammes de danger (CLP) :



GHS09

Mention d'avertissement (CLP) :

Attention

Mentions de danger (CLP) :

H410 - Très toxique pour les organismes aquatiques, entraîne des effets néfastes à long terme.

Conseils de prudence (CLP) :

P391 - Recueillir le produit répandu.  
P501 - Éliminer une installation d'élimination des déchets autorisée dans un centre de collecte de déchets dangereux ou spéciaux, conformément à la réglementation locale, régionale, nationale et/ou internationale.

### 2.3. Autres dangers

Cette substance/mélange ne remplit pas les critères PBT du règlement REACH annexe XIII

Cette substance/mélange ne remplit pas les critères vPvB du règlement REACH annexe XIII

## RUBRIQUE 3: Composition/informations sur les composants

### 3.1. Substances

Nom	Identificateur de produit	%	Classification selon le règlement (CE) N° 1272/2008 [CLP]
zinc, poudre ou poussière, stabilisé, non pyrophorique	(N° CAS) 7440-66-6 (N° CE) 231-175-3 (N° Index) 030-001-01-9 (N° REACH) 01-2119467174-37	≤ 100	Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Textes des phrases H: voir rubrique 16.

### 3.2. Mélanges

Non applicable

## RUBRIQUE 4: Premiers secours

### 4.1. Description des premiers secours

Premiers soins général : Personnel de premiers secours : attention à votre propre protection !  
Premiers soins après inhalation : Transporter la personne à l'extérieur et la maintenir dans une position où elle peut confortablement respirer.  
Premiers soins après contact avec la peau : Lavez la peau avec du savon et de l'eau.  
Premiers soins après contact oculaire : Rincer les yeux à l'eau par mesure de précaution.  
Premiers soins après ingestion : Appeler un centre antipoison ou un médecin en cas de malaise.

### 4.2. Principaux symptômes et effets, aigus et différés

Pas d'informations complémentaires disponibles

### 4.3. Indication des éventuels soins médicaux immédiats et traitements particuliers nécessaires

Traitement symptomatique.

## RUBRIQUE 5: Mesures de lutte contre l'incendie

### 5.1. Moyens d'extinction

Moyens d'extinction appropriés : Eau pulvérisée. Poudre sèche. Mousse.

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Agents d'extinction non appropriés : Ne pas utiliser un jet d'eau concentré, il pourrait disperser et répandre le feu.

### 5.2. Dangers particuliers résultant de la substance ou du mélange

Produits de décomposition dangereux en cas d'incendie : Dégagement possible de fumées toxiques.

### 5.3. Conseils aux pompiers

Protection en cas d'incendie : Ne pas intervenir sans un équipement de protection adapté. Appareil de protection respiratoire autonome isolant. Protection complète du corps.

## RUBRIQUE 6: Mesures à prendre en cas de dispersion accidentelle

### 6.1. Précautions individuelles, équipement de protection et procédures d'urgence

#### 6.1.1. Pour les non-secouristes

Procédures d'urgence : Ventiler la zone de déversement.

#### 6.1.2. Pour les secouristes

Équipement de protection : Ne pas intervenir sans un équipement de protection adapté. Pour plus d'informations, se reporter à la rubrique 8 : "Contrôle de l'exposition-protection individuelle".

### 6.2. Précautions pour la protection de l'environnement

Éviter le rejet dans l'environnement. Ne pas laisser s'écouler dans les eaux de surface ou dans les égouts.

### 6.3. Méthodes et matériel de confinement et de nettoyage

Pour la rétention : Recueillir le produit répandu.  
Procédés de nettoyage : Ramasser mécaniquement le produit.  
Autres informations : Éliminer les matières ou résidus solides dans un centre autorisé.

### 6.4. Référence à d'autres rubriques

Pour plus d'informations, se reporter à la rubrique 13.

## RUBRIQUE 7: Manipulation et stockage

### 7.1. Précautions à prendre pour une manipulation sans danger

Précautions à prendre pour une manipulation sans danger : Assurer une bonne ventilation du poste de travail. Porter un équipement de protection individuel.  
Mesures d'hygiène : Ne pas manger, boire ou fumer en manipulant ce produit. Se laver les mains après toute manipulation.

### 7.2. Conditions d'un stockage sûr, y compris d'éventuelles incompatibilités

Conditions de stockage : Stocker dans un endroit sec. Stocker dans un récipient fermé. Stocker dans un endroit bien ventilé. Tenir au frais. Protéger de la forte chaleur et du rayonnement direct du soleil.  
Matières incompatibles : Conserver à l'écart des oxydants, acides forts et bases fortes.

### 7.3. Utilisation(s) finale(s) particulière(s)

Pas d'informations complémentaires disponibles

## RUBRIQUE 8: Contrôles de l'exposition/protection individuelle

### 8.1. Paramètres de contrôle

zinc, poudre ou poussière, stabilisé, non pyrophorique (7440-66-6)

DNEL/DMEL (Travailleurs)

A long terme - effets systémiques, cutanée	83 mg/kg de poids corporel/jour
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A long terme - effets systémiques, inhalation	5 mg/m <sup>3</sup>
<b>DNEL/DMEL (Population générale)</b>	
A long terme - effets systémiques, orale	0.83 mg/kg de poids corporel/jour
A long terme - effets systémiques, inhalation	2.5 mg/m <sup>3</sup>
A long terme - effets systémiques, cutanée	83 mg/kg de poids corporel/jour
<b>PNEC (Eau)</b>	
PNEC aqua (eau douce)	0.0206 mg/l
PNEC aqua (eau de mer)	0.0061 mg/l
<b>PNEC (Sédiments)</b>	
PNEC sédiments (eau douce)	117.8 mg/kg poids sec
PNEC sédiments (eau de mer)	56.5 mg/kg poids sec
<b>PNEC (Sol)</b>	
PNEC sol	35.6 mg/kg poids sec
<b>PNEC (Orale)</b>	
PNEC orale (empoisonnement secondaire)	Pratiquement non bioaccumulable
<b>PNEC (STP)</b>	
PNEC station d'épuration	0.052 mg/l

### 8.2. Contrôles de l'exposition

#### Contrôles techniques appropriés:

Assurer une bonne ventilation du poste de travail.

#### Vêtements de protection - sélection du matériau:

Vêtements de protection obligatoires

#### Protection des mains:

Type	Matériau	Perméation	Épaisseur (mm)	Pénétration	Norme
Gants de protection	Caoutchouc butyle				

#### Protection oculaire:

Type	Utilisation	Caractéristiques	Norme
Lunettes de sécurité		avec protections latérales	EN 166

#### Protection des voies respiratoires:

En cas de ventilation insuffisante, porter un appareil respiratoire approprié

#### Contrôle de l'exposition de l'environnement:

Éviter le rejet dans l'environnement.

## RUBRIQUE 9: Propriétés physiques et chimiques

### 9.1. Informations sur les propriétés physiques et chimiques essentielles

État physique	: Solide
Apparence	: Poudre.
Couleur	: Gris(e).

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Odeur	: inodore.
Seuil olfactif	: Non applicable
pH	: Non applicable
Vitesse d'évaporation relative (acétate de butyle=1)	: Non applicable
Point de fusion	: 420 °C
Point de congélation	: Aucune donnée disponible
Point d'ébullition	: 908 °C
Point d'éclair	: Aucune donnée disponible
Température d'auto-inflammation	: Aucune donnée disponible
Température de décomposition	: Aucune donnée disponible
Inflammabilité (solide, gaz)	: Combustible
Pression de vapeur	: Non applicable
Densité relative de vapeur à 20 °C	: Non applicable
Densité relative	: Aucune donnée disponible
Masse volumique	: 7.14 g/cm <sup>3</sup>
Solubilité	: insoluble dans l'eau.
Coefficient de partage n-octanol/eau (Log Pow)	: Non applicable
Coefficient de partage n-octanol/eau (Log Kow)	: Non applicable
Viscosité, cinématique	: Aucune donnée disponible
Viscosité, dynamique	: Aucune donnée disponible
Propriétés explosives	: Aucune donnée disponible
Propriétés comburantes	: Aucune donnée disponible
Limites d'explosivité	: Aucune donnée disponible

### 9.2. Autres informations

Pas d'informations complémentaires disponibles

## RUBRIQUE 10: Stabilité et réactivité

### 10.1. Réactivité

Au contact de l'eau, dégage des gaz inflammables. Matière auto-échauffante; peut s'enflammer.

### 10.2. Stabilité chimique

Stable dans les conditions normales.

### 10.3. Possibilité de réactions dangereuses

Les poussières peuvent former un mélange explosif avec l'air. Réagit avec l'eau (humidité): libération de gaz/vapeurs facilement inflammables/vapeurs d'hydrogène. Dégage au contact de l'eau des gaz inflammables qui peuvent s'enflammer spontanément.

### 10.4. Conditions à éviter

Humidité. Chaleur. les flammes. des étincelles. Eviter toute formation de poussière. Eau, humidité.

### 10.5. Matières incompatibles

Conserver à l'écart des oxydants, acides forts et bases fortes.

### 10.6. Produits de décomposition dangereux

Aucun produit de décomposition dangereux ne devrait être généré dans les conditions normales de stockage et d'emploi.

## RUBRIQUE 11: Informations toxicologiques

### 11.1. Informations sur les effets toxicologiques

Toxicité aiguë (orale)	: Non classé
Toxicité aiguë (cutanée)	: Non classé
Toxicité aiguë (Inhalation)	: Non classé

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DL50 orale rat	> 2000 mg/kg de poids corporel (OECD 401: Acute Oral Toxicity, Rat, Male / female, Experimental value, Oral, 14 day(s))
CL50 inhalation rat (Brouillard/Poussière - mg/l/4h)	> 5.41 mg/l/4h (méthode OCDE 403)

Corrosion cutanée/irritation cutanée	: Non classé pH: Non applicable
Lésions oculaires graves/irritation oculaire	: Non classé pH: Non applicable
Sensibilisation respiratoire ou cutanée	: Non classé
Mutagénicité sur les cellules germinales	: Non classé
Cancérogénicité	: Non classé
Toxicité pour la reproduction	: Non classé
Toxicité spécifique pour certains organes cibles (exposition unique)	: Non classé
Toxicité spécifique pour certains organes cibles (exposition répétée)	: Non classé
Danger par aspiration	: Non classé

## RUBRIQUE 12: Informations écologiques

### 12.1. Toxicité

Ecologie - général	: Très toxique pour les organismes aquatiques, entraîne des effets néfastes à long terme.
Ecologie - eau	: Toxique pour les organismes aquatiques.
Dangers pour le milieu aquatique, à court terme (aiguë)	: Très toxique pour les organismes aquatiques.
Dangers pour le milieu aquatique, à long terme (chronique)	: Très toxique pour les organismes aquatiques, entraîne des effets néfastes à long terme.

### zinc, poudre ou poussière, stabilisé, non pyrophorique (7440-66-6)

CL50 poisson 1	0.169 mg/l (Other, 96 h, Oncorhynchus mykiss, Static system, Fresh water, Read-across, Zinc ion)
CE50 Daphnie 1	416 µg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Ceriodaphnia dubia, Static system, Fresh water, Experimental value)
CEr50 (algues)	0.15 mg/l

### 12.2. Persistance et dégradabilité

#### zinc, poudre ou poussière, stabilisé, non pyrophorique (7440-66-6)

Persistance et dégradabilité	Biodegradability: not applicable.
Demande chimique en oxygène (DCO)	Not applicable
DThO	Not applicable
DBO (% de DThO)	Not applicable

### 12.3. Potentiel de bioaccumulation

Coefficient de partage n-octanol/eau (Log Pow)	Non applicable
Coefficient de partage n-octanol/eau (Log Kow)	Non applicable

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### zinc, poudre ou poussière, stabilisé, non pyrophorique (7440-66-6)

FBC poissons 1	0.002 (40 day(s), Danio rerio, Semi-static system, Fresh water, Read-across)
Potentiel de bioaccumulation	Bioaccumulation: not applicable.

### 12.4. Mobilité dans le sol

### zinc, poudre ou poussière, stabilisé, non pyrophorique (7440-66-6)

Ecologie - sol	Adsorbs into the soil.
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### 12.5. Résultats des évaluations PBT et vPvB

Cette substance/mélange ne remplit pas les critères PBT du règlement REACH annexe XIII

Cette substance/mélange ne remplit pas les critères vPvB du règlement REACH annexe XIII

### Composant

zinc, poudre ou poussière, stabilisé, non pyrophorique (7440-66-6)	Cette substance/mélange ne remplit pas les critères PBT du règlement REACH annexe XIII Cette substance/mélange ne remplit pas les critères vPvB du règlement REACH annexe XIII
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### 12.6. Autres effets néfastes

Pas d'informations complémentaires disponibles

## RUBRIQUE 13: Considérations relatives à l'élimination

### 13.1. Méthodes de traitement des déchets

Méthodes de traitement des déchets : Eliminer le contenu/réceptacle conformément aux consignes de tri du collecteur agréé.

## RUBRIQUE 14: Informations relatives au transport

Conformément aux exigences de ADR / RID / IMDG / IATA / ADN






ADR	IMDG	IATA	ADN	RID
<b>14.1. Numéro ONU</b>				
UN 3077	UN 3077	UN 3077	UN 3077	UN 3077
<b>14.2. Désignation officielle de transport de l'ONU</b>				
MATIÈRE DANGEREUSE DU POINT DE VUE DE L'ENVIRONNEMENT, SOLIDE, N.S.A. (zinc ; oxyde de zinc)	MATIÈRE DANGEREUSE DU POINT DE VUE DE L'ENVIRONNEMENT, SOLIDE, N.S.A. (zinc ; oxyde de zinc)	Environmentally hazardous substance, solid, n.o.s. (zinc ; oxyde de zinc)	MATIÈRE DANGEREUSE DU POINT DE VUE DE L'ENVIRONNEMENT, SOLIDE, N.S.A. (zinc ; oxyde de zinc)	MATIÈRE DANGEREUSE DU POINT DE VUE DE L'ENVIRONNEMENT, SOLIDE, N.S.A. (zinc ; oxyde de zinc)
<b>Description document de transport</b>				
UN 3077 MATIÈRE DANGEREUSE DU POINT DE VUE DE L'ENVIRONNEMENT, SOLIDE, N.S.A. (zinc ; oxyde de zinc), 9, III, (-)	UN 3077 MATIÈRE DANGEREUSE DU POINT DE VUE DE L'ENVIRONNEMENT, SOLIDE, N.S.A. (zinc ; oxyde de zinc), 9, III, POLLUANT MARIN	UN 3077 Environmentally hazardous substance, solid, n.o.s. (zinc ; oxyde de zinc), 9, III	UN 3077 MATIÈRE DANGEREUSE DU POINT DE VUE DE L'ENVIRONNEMENT, SOLIDE, N.S.A. (zinc ; oxyde de zinc), 9, III	UN 3077 MATIÈRE DANGEREUSE DU POINT DE VUE DE L'ENVIRONNEMENT, SOLIDE, N.S.A. (zinc ; oxyde de zinc), 9, III

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### 14.3. Classe(s) de danger pour le transport

9	9	9	9	9
				

### 14.4. Groupe d'emballage

III	III	III	III	III
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### 14.5. Dangers pour l'environnement

Dangereux pour l'environnement : Oui	Dangereux pour l'environnement : Oui Polluant marin : Oui	Dangereux pour l'environnement : Oui	Dangereux pour l'environnement : Oui	Dangereux pour l'environnement : Oui
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Pas d'informations supplémentaires disponibles

### 14.6. Précautions particulières à prendre par l'utilisateur

#### Transport par voie terrestre

Code de classification (ADR)	: M7
Dispositions spéciales (ADR)	: 274, 335, 375, 601
Quantités limitées (ADR)	: 5kg
Quantités exceptées (ADR)	: E1
Instructions d'emballage (ADR)	: P002, IBC08, LP02, R001
Dispositions spéciales d'emballage (ADR)	: PP12, B3
Dispositions relatives à l'emballage en commun (ADR)	: MP10
Instructions pour citernes mobiles et conteneurs pour vrac (ADR)	: T1, BK1, BK2, BK3
Dispositions spéciales pour citernes mobiles et conteneurs pour vrac (ADR)	: TP33
Code-citerne (ADR)	: SGAV, LGBV
Véhicule pour le transport en citerne	: AT
Catégorie de transport (ADR)	: 3
Dispositions spéciales de transport - Colis (ADR)	: V13
Dispositions spéciales de transport - Vrac (ADR)	: VC1, VC2
Dispositions spéciales de transport - Chargement, déchargement et manutention (ADR)	: CV13
Numéro d'identification du danger (code Kemler)	: 90
Panneaux oranges	: 

Code de restriction en tunnels (ADR) : -

#### Transport maritime

Dispositions spéciales (IMDG)	: 274, 335, 966, 967, 969
Quantités limitées (IMDG)	: 5 kg
Quantités exceptées (IMDG)	: E1
Instructions d'emballage (IMDG)	: LP02, P002
Dispositions spéciales d'emballage (IMDG)	: PP12
Instructions d'emballages GRV (IMDG)	: IBC08
Dispositions spéciales GRV (IMDG)	: B3
Instructions pour citernes (IMDG)	: BK1, BK2, BK3, T1
Dispositions spéciales pour citernes (IMDG)	: TP33
N° FS (Feu)	: F-A
N° FS (Déversement)	: S-F
Catégorie de chargement (IMDG)	: A
Arrimage et manutention (Code IMDG)	: SW23
N° GSMU	: 171



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### Transport aérien

Quantités exceptées avion passagers et cargo (IATA)	: E1
Quantités limitées avion passagers et cargo (IATA)	: Y956
Quantité nette max. pour quantité limitée avion passagers et cargo (IATA)	: 30kgG
Instructions d'emballage avion passagers et cargo (IATA)	: 956
Quantité nette max. pour avion passagers et cargo (IATA)	: 400kg
Instructions d'emballage avion cargo seulement (IATA)	: 956
Quantité max. nette avion cargo seulement (IATA)	: 400kg
Dispositions spéciales (IATA)	: A97, A158, A179, A197
Code ERG (IATA)	: 9L

### Transport par voie fluviale

Code de classification (ADN)	: M7
Dispositions spéciales (ADN)	: 274, 335, 375, 601
Quantités limitées (ADN)	: 5 kg
Quantités exceptées (ADN)	: E1
Équipement exigé (ADN)	: PP, A
Nombre de cônes/feux bleus (ADN)	: 0
Exigences supplémentaires/Observations (ADN)	: * Uniquement à l'état fondu. ** Pour le transport en vrac, voir aussi le 7.1.4.1. *** Uniquement en cas de transport en vrac.

### Transport ferroviaire

Code de classification (RID)	: M7
Dispositions spéciales (RID)	: 274, 335, 375, 601
Quantités limitées (RID)	: 5kg
Quantités exceptées (RID)	: E1
Instructions d'emballage (RID)	: P002, IBC08, LP02, R001
Dispositions spéciales d'emballage (RID)	: PP12, B3
Dispositions particulières relatives à l'emballage en commun (RID)	: MP10
Instructions pour citernes mobiles et conteneurs pour vrac (RID)	: T1, BK1, BK2, BK3
Dispositions spéciales pour citernes mobiles et conteneurs pour vrac (RID)	: TP33
Codes-citerne pour les citernes RID (RID)	: SGAV, LGBV
Catégorie de transport (RID)	: 3
Dispositions spéciales de transport - Colis (RID)	: W13
Dispositions spéciales de transport - Vrac (RID)	: VC1, VC2
Dispositions spéciales de transport - Chargement, déchargement et manutention (RID)	: CW13, CW31
Colis express (RID)	: CE11
Numéro d'identification du danger (RID)	: 90

### 14.7. Transport en vrac conformément à l'annexe II de la convention Marpol et au recueil IBC

Non applicable

## RUBRIQUE 15: Informations relatives à la réglementation

### 15.1. Réglementations/législation particulières à la substance ou au mélange en matière de sécurité, de santé et d'environnement

#### 15.1.1. Réglementations UE

Pas de restrictions selon l'annexe XVII de REACH

Zinc Metal Pigment n'est pas soumis au règlement (UE) n° 649/2012 du Parlement européen et du Conseil du 4 juillet 2012 concernant les exportations et importations de produits chimiques dangereux

Zinc Metal Pigment n'est pas soumis au règlement (UE) n° 2019/1021 du Parlement européen et du Conseil du 20 juin 2019 concernant les polluants organiques persistants

# Zinc Metal Pigment

## Fiche de Données de Sécurité

conforme au Règlement (CE) N° 1907/2006 (REACH) tel que modifié par le Règlement (UE) 2015/830

### Directive 2012/18/EU (SEVESO III)

Seveso III Partie I (Catégories de substances dangereuses)	Quantité seuil (tonnes)	
	Seuil bas	Seuil haut
E1 Danger pour l'environnement aquatique dans la catégorie aiguë 1 ou chronique 1	100	200

#### 15.1.2. Directives nationales

Listé dans l'inventaire du TSCA (Toxic Substances Control Act) des Etats-Unis

Listé dans l'AICS (Australian Inventory of Chemical Substances)

Listé dans la LIS canadienne (Liste Intérieure des Substances)

Listé dans le NZIoC (New Zealand Inventory of Chemicals)

Non listé dans l'inventaire japonais ENCS (Existing & New Chemical Substances)

Listé dans le KECI (Korean Existing Chemicals Inventory)

Listé dans le PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Listé dans l'IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Non listé dans l'ISHL du Japon (Industrial Safety and Health Law)

#### 15.2. Évaluation de la sécurité chimique

Une évaluation de la sécurité chimique a été effectuée

### RUBRIQUE 16: Autres informations

#### Indications de changement:

Rubrique	Élément modifié	Modification	Remarques
	Instructions pour citernes mobiles et conteneurs pour vrac (ADR)	Modifié	
	Instructions pour citernes mobiles et conteneurs pour vrac (RID)	Modifié	
	Transport admis (ADN)	Enlevé	
	Dispositions spéciales d'emballage (ADR)	Ajouté	
1.1	Forme du produit	Modifié	
14.6	Code de restriction en tunnels (ADR)	Modifié	
14.6	Dispositions spéciales (ADR)	Modifié	
14.6	Exigences supplémentaires/Observations (ADN)	Ajouté	

#### Abréviations et acronymes:

ACGIH	Association américaine des hygiénistes industriels, États-Unis
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures
ADR	Accord européen relatif au transport international des marchandises Dangereuses par Route
ETA	Estimation de la toxicité aiguë
FBC	Facteur de bioconcentration
CLP	Règlement relatif à la classification, à l'étiquetage et à l'emballage; règlement (CE) n° 1272/2008
DMEL	Dose dérivée avec effet minimum
DNEL	Dose dérivée sans effet
DPD	Directive 1999/45/CE relative aux préparations dangereuses

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DSD	Directive 67/548/CEE relative aux substances dangereuses
CIRC	Centre international de recherche sur le cancer
CE50	Concentration médiane effective
IATA	Association internationale du transport aérien
IMDG	Code maritime international des marchandises dangereuses
CL50	Concentration létale pour 50 % de la population testée (concentration létale médiane)
LD50	Dose létale médiane pour 50 % de la population testée (dose létale médiane)
LOAEL	Dose minimale avec effet nocif observé
NOAEC	Concentration sans effet nocif observé
NOAEL	Dose sans effet nocif observé
NOEC	Concentration sans effet observé
OECD	Organisation de coopération et de développement économiques
OEL	Valeurs Limites d'exposition professionnelle
OSHA	Agence fédérale d'hygiène et de sécurité professionnelles du Département du travail des États-Unis
PBT	Persistant, bioaccumulable et toxique
PNEC	Concentration(s) prédite(s) sans effet
REACH	Enregistrement, évaluation, autorisation et restriction des substances chimiques. Règlement (EU) REACH No 1907/2006
RID	Règlement International concernant le transport de marchandises dangereuses par chemin de fer
FDS	Fiche de Données de Sécurité
STP	Station d'épuration
TLM	Tolérance limite médiane
TWA	Moyenne pondérée en temps
VLB	Valeur limite biologique
N° CAS	Numéro d'enregistrement auprès du Chemical Abstracts Service
N° CE	Numéro de la Communauté européenne
EN	Norme européenne
vPvB	Très persistant et très bioaccumulable
WGK	Classe de pollution des eaux

### Texte intégral des phrases H et EUH:

Aquatic Acute 1	Dangereux pour le milieu aquatique — Danger aigu, catégorie 1
Aquatic Chronic 1	Dangereux pour le milieu aquatique — Danger chronique, catégorie 1
H400	Très toxique pour les organismes aquatiques.
H410	Très toxique pour les organismes aquatiques, entraîne des effets néfastes à long terme.

### Texte complet des descripteurs d'utilisation

PROC1	Utilisation dans des processus fermés, exposition improbable
PROC10	Application au rouleau ou au pinceau
PROC11	Pulvérisation en dehors d'installations industrielles
PROC13	Traitement d'articles par trempage et versage

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PROC14	Production de préparations ou d'articles par pastillage, compression, extrusion, granulation
PROC15	Utilisation en tant que réactif de laboratoire
PROC17	Lubrification dans des conditions de haute énergie et dans des processus partiellement ouverts
PROC18	Graissage dans des conditions de haute énergie
PROC19	Mélange manuel entraînant un contact intime avec la peau; seuls des EPI sont disponibles
PROC2	Utilisation dans des processus fermés continus avec exposition momentanée maîtrisée
PROC21	Manipulation à faible énergie de substances intégrées dans des matériaux et/ou articles
PROC22	Opérations de traitement potentiellement fermées (avec des minéraux/métaux) à haute température Dans un cadre industriel
PROC23	Opérations de traitement et de transfert ouvertes (avec des minéraux/métaux) à haute température
PROC24	Traitement de haute énergie (mécanique) de substances intégrées dans des matériaux et/articles
PROC25	Autres opérations de travail à chaud avec des métaux
PROC26	Manipulation de substances solides inorganiques à température ambiante
PROC27a	Production de poudres métalliques (processus à chaud)
PROC27b	Production de poudres métalliques (processus par voie humide)
PROC3	Utilisation dans des processus fermés par lots (synthèse ou formulation)
PROC4	Utilisation dans des processus par lots et d'autres processus (synthèse) pouvant présenter des possibilités d'exposition
PROC5	Mélange dans des processus par lots pour la formulation de préparations et d'articles (contacts multiples et/ou importants)
PROC7	Pulvérisation dans des installations industrielles
PROC8a	Transfert de substance ou de préparation (chargement/déchargement) à partir de récipients ou de grands conteneurs, ou vers ces derniers, dans des installations non spécialisées
PROC8b	Transfert de substance ou de préparation (chargement/déchargement) à partir de récipients ou de grands conteneurs, ou vers ces derniers, dans des installations spécialisées
PROC9	Transfert de substance ou mélange dans de petits contenants (chaîne de remplissage spécialisée, y compris pesage)

La classification respecte : ATP 8

FDS UE (Annexe II REACH)

Ces informations sont basées sur nos connaissances actuelles et décrivent le produit pour les seuls besoins de la santé, de la sécurité et de l'environnement. Elles ne devraient donc pas être interprétées comme garantissant une quelconque propriété spécifique du produit.

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### Annexe à la fiche de données de sécurité

#### Table des matières de l'annexe

Utilisations identifiées	N° du SE	Association - Code de référence
Exposure assessment for Zinc metal (Zn)	1	Annex GES 2-9

## Exposure assessment for Zinc metal (Zn)

For assessment of exposures at local scale, several generic exposure scenarios (GES) were developed in the chemical safety report (CSR). The multitude of identified uses was assigned to the respective GES based on similarity of process, and, consequently, similarity in exposure and risk management measures. So, GES are relevant for the different identified uses that they group at the same time.

### Approaches for local exposure assessment

- Assessment of workers exposure is related to the place /process the worker is involved in. The GES group different processes; exposure assessment is done using the worst case approach by considering full shift exposure at the workplace with highest potential for exposure. Risk management measures are specified accordingly.
- Environmental emissions (notably to water) are usually integrating the totality of emissions from a given site, and cannot be distinguished for each process. Therefore assessments in the GES are done for the site as a whole.

### How to identify the GES related to a given use?

In table below, the generic exposure scenarios (GES) developed for Zn metal are presented.

**Table: Generic exposure scenarios (GES) for zinc metal (ref : CSR zinc metal, version Nov 2010)**

Number	Sector	Uses	Code
2	Formulation step: melting, alloying manufacture of powders		GES <sub>Zn</sub> 2
3	First tier applications	Manufacturing of other zinc compounds	GES <sub>Zn</sub> 3
4		Laboratory reagent	GES <sub>Zn</sub> 4
7		Use of zinc powders	GES <sub>Zn</sub> 7
8	Second tier applications	DU of massive pieces of zinc	GES <sub>Zn</sub> 8
9		DU of preparations containing zinc powder	GES <sub>Zn</sub> 9

**To facilitate the identification of the GES related to a given downstream use, the table below lists the different uses that were identified for ZnO. In this table, the downstream user can look up its use(s) and find the corresponding GES for attachment to his e-SDS.**

Table: Identified uses for Zn metal and corresponding Generic Exposure Scenario (GES) (ref: CSR zinc metal, version Nov 2010)

IU number	Identified Use (IU) name	GES code
4	Production of chemicals (pyro)	GESZn 3
5	Production of chemicals (hydro)	GESZn 3
6	Additive for production of inorganic catalysts	GESZn 2
9	Downstream use of zinc-based sacrificial anodes	GESZn 8
14	Downstream use of Zn based wire for metal spraying	GESZn 8
16	Downstream use of Zinc based brazing/soldering products	GESZn 8
19	Zinc (pure or alloyed) powder manufacturing	GESZn 2
20	Passivated zinc powder manufacturing (pure or alloyed)	GESZn 2
21	Use of active powders for batteries	GESZn 7
22	Use of Zinc powders, pure or slightly alloyed, for formulation of paints, coatings, and inks	GESZn 7
23	Use of zinc powder based paints, coatings and inks	GESZn 9
24	Use of zinc powder for mechanical plating	GESZn 7
25	Use of zinc powder as reductant reagent	GESZn 4, GESZn 7
26	Use of (alloyed) Zn powder as corrosion inhibitor for lubricants	GESZn 7
27	use of zinc powder (pure or alloyed) in the manufacture of diamond tools	GESZn 7
28	Use of zinc powder (pure or alloyed) in the manufacture of friction lining	GESZn 7
29	Use of zinc powder (pure or alloyed) in the manufacture of carbon brushes	GESZn 7
32	Use of brass containing products	GESZn 8
42	Use of galvanized goods	Generic consumer/environment

\* corresponds to "GES 10" in IUCLID

<b>GES Zn-2: industrial use of zinc, pure or alloyed, in the production of zinc powder and dust by different sputtering techniques including coating and superficial passivation steps.</b>
<ul style="list-style-type: none"> <li>• SU: 3, 8, 9, 10, 14, 0 (Nace C20.1.3.)</li> <li>• PROC: 2, 3, 5, 8b, 9, 14, 22, 26,27a, 27b</li> <li>• PC : 2, 7, 9b, 10, 14, 19, 20, 40</li> <li>• AC :-</li> <li>• ERC : 1, 2, 4, 5, 6a, 6b</li> </ul>
<p><b>Description of activities/process(es) covered in the Exposure Scenario</b></p> <ul style="list-style-type: none"> <li>• Delivering and stockpiling of the Zinc slabs or ingots.</li> <li>• The Zinc ingots are fed into the melting/alloying furnace.</li> <li>• Zinc and, optionally, alloying elements, are molten and mixed at 450-500°C</li> <li>• By gravity, injection or suction, the liquid metal is fed into the sputtering chamber</li> <li>• Further cooling, classification, blending and packaging of produced zinc dust and powder. Workers have to place and adjust the bag or drum under the discharge pipe and to set the process in motion.</li> </ul>

<ul style="list-style-type: none"> <li>Filled bags or drums are subsequently closed and carried to the storage area.</li> <li>Maintenance activities</li> </ul>
<b>Contributing scenario (1) controlling environmental exposure</b>
<b>Product characteristics:</b> see sections 3 (composition) and 9 (phys-chem properties) of SDS Zinc is produced in its pure form (typically : >99 %) or alloyed.
<b>Amounts used</b> Up to 30000 T/y
<b>Frequency and duration of use</b> Continuous production is assumed as a worst case
<b>Environment factors not influenced by risk management</b> Flow rate of receiving surface water default: 18,000 m <sup>3</sup> /d, unless specified otherwise
<b>Other given operational conditions affecting environmental exposure</b> <ul style="list-style-type: none"> <li>Air on the working place is filtered before release outside the building</li> <li>All indoor processes, in confined area.</li> </ul>
<b>Technical conditions and measures at process level (source) to prevent release:</b> see section 8.2.3. of SDS
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b> See SDS section 8.2.3.
<b>Organizational measures to prevent/limit release from site</b> See section 8.2.3 of SDS
<b>Conditions and measures related to municipal sewage treatment plant:</b> In cases where applicable: use default size of the municipal STP (2000 m <sup>3</sup> /d) unless specified otherwise.
<b>Conditions and measures related to external treatment of waste for disposal</b> <ul style="list-style-type: none"> <li>If any, all hazardous wastes are treated by certified contractors according to EU and national legislation.</li> <li>Users of Zn powders have to favour the recycling channels of the end-of-life products</li> <li>Users of Zn powders have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste legislation.</li> </ul>
<b>Conditions and measures related to external recovery of waste</b> By-products formed during the process are either recycled, internally or externally, or handled further as waste , according the waste legislation
<b>Contributing scenario (2) controlling worker exposure</b>
<b>Product characteristic:</b> see sections 3 (composition) and 9 (phys-chem properties) of SDS Zn-powders and dusts are packed in appropriate packaging (e.g. drums) and stored in enclosed buildings => High dustiness is assumed as worst case (particle size from <500µm (powders) down to 10µm (fine dusts)
<b>Amounts used</b> Up to 30 T/shift
<b>Frequency and duration of use/exposure</b> 8hrs shift (worst case), continuous exposure is assumed as default.
<b>Human factors not influenced by risk management</b> Uncovered body parts: (potentially) face exposed as a result of the nature of the activity
<b>Other given operational conditions affecting workers exposure</b> All processes are carried out indoor in confined areas.
<b>Technical conditions and measures at process level (source) to prevent release:</b> see section 8.2.1 of SDS
<b>Technical conditions and measures to control dispersion from source towards the worker:</b> See SDS section 8.2.1.
<b>Organisational measures to prevent /limit releases, dispersion and exposure:</b> See SDS section 8.2.1
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> See SDS section 8.2.2



**Exposure estimation and reference to its source: not relevant, refer to CSR.**

Risks for workers and to the environment have to be assessed considering the PNECs and DNELs mentioned under SDS sections 8.1.4.

**Guidance to DU to evaluate whether he works inside the boundaries set by the (G)ES.**

Occupational exposure/environmental emissions

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. Detailed guidance for evaluation of ES can be acquired via your supplier or from the ECHA website (guidance R14, R16). Environmental and human exposure can be measured or modelled (more information on tools available in SDS section 8.1.4.).

In addition, bioavailability corrections can be integrated in the exposure assessment, if the environmental parameters that are needed for the calculations are documented (see SDS section 8.1.4.)

<b>GES Zn-3: industrial use of zinc ingots or zinc powder in the manufacturing of other inorganic or organic zinc substances through different process routes, hydro-, pyro-, electrolytic processes</b>
<ul style="list-style-type: none"> <li>• SU: 3, 8, 9, 10, 14, 0 (Nace C23.9.9.)</li> <li>• PROC: 2, 3, 8b, 9, 22, 26</li> <li>• PC : 7, 19, 20, 21</li> <li>• AC : na</li> <li>• ERC : 1, 2, 6a</li> </ul>
<p>Description of activities/process(es) covered in the Exposure Scenario</p> <ol style="list-style-type: none"> <li>1. In case of wet processes:             <ol style="list-style-type: none"> <li>a. Reception of the Zn metal, transfer to the reaction tank</li> <li>b. Sequential addition of reagents for purification steps and filtration on press filter, when needed (ventilation is adapted).</li> <li>c. Concentration by solvent evaporation, under exhaust hood.</li> <li>d. Possible pouring on a cooling belt or feeding to a crystalliser.</li> </ol> </li> <li>2. In case of dry process             <ol style="list-style-type: none"> <li>a. Reception of zinc metal, transfer to the furnace</li> <li>b. Fuming of the zinc vapour, oxidation in an air stream, cooling and collecting of the dust</li> </ol> </li> <li>3. Discharge and packaging of produced zinc compounds. Filled bags or drums are subsequently closed and carried to the storage area.</li> <li>4. Exposure to dust can occur during packing of the powder. Solutions are packed in intermediate bulk containers (ca. 1 m<sup>3</sup> capacity); solids are packed in bags or drums.</li> <li>5. Maintenance activities</li> </ol>
<b>Contributing scenario (1) controlling environmental exposure</b>
<p><b>Product characteristics:</b> see sections 3 (composition) and 9 (phys-chem properties) of SDS</p> <p>Zn-compounds are produced in their pure form e.g; &gt; 99%, or in solution.</p>
<p><b>Amounts used</b> Up to 75 T/d of Zn is transformed to equivalent Zn compound</p>
<p><b>Frequency and duration of use</b> Continuous production is assumed as a worst case. It is possible that use is not continuous; this has to be considered when estimating exposure.</p>
<p><b>Environment factors not influenced by risk management</b></p> <p>Flow rate of receiving surface water default used: 18,000 m<sup>3</sup>/d, unless specified otherwise</p>
<p><b>Other given operational conditions affecting environmental exposure</b></p> <ul style="list-style-type: none"> <li>• Dry process (fuming, oxidation) or wet processes (leaching, filtering, purification) followed by drying</li> </ul>

(possible grinding), and packaging; <ul style="list-style-type: none"> <li>All indoor processes, in confined area.</li> </ul>
<b>Technical conditions and measures at process level (source) to prevent release:</b> see section 8.2.3 of SDS <ul style="list-style-type: none"> <li>High temperature around furnaces</li> <li>Dosing and packaging operations occur under a special ventilation hood</li> </ul>
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b> See SDS section 8.2.3.
<b>Organizational measures to prevent/limit release from site</b> See SDS section 8.2.3.
<b>Conditions and measures related to municipal sewage treatment plant</b> In cases where applicable: default size of the municipal STP (2000 m <sup>3</sup> /d) will be used unless specified otherwise.
<b>Conditions and measures related to external treatment of waste for disposal</b> <ul style="list-style-type: none"> <li>If any, all hazardous wastes are treated by certified contractors according to EU and national legislation.</li> <li>Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products</li> <li>Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste regulation.</li> </ul>
<b>Conditions and measures related to external recovery of waste</b> <ul style="list-style-type: none"> <li>All residues from the wet process are recycled.</li> <li>Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products</li> <li>Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according to the Waste regulation.</li> </ul>
<b>Contributing scenario (2) controlling worker exposure</b>
<b>Product characteristic:</b> see sections 3 (composition) and 9 (phys-chem properties) of SDS <ul style="list-style-type: none"> <li>Zinc is transformed to equivalent pure zinc compound.</li> <li>The formed zinc compound can be produced as a powder with varying particle size (worst case scenario) or can be in solution.</li> </ul>
<b>Amounts used</b> Up to maximum 25T/shift
<b>Frequency and duration of use/exposure</b> 8hrs shift (worst case)
<b>Human factors not influenced by risk management</b> Uncovered body parts: (potentially) face can be exposed as a result of the nature of the activity
<b>Other given operational conditions affecting workers exposure</b> All processes are carried out indoor in confined areas.
<b>Technical conditions and measures at process level (source) to prevent release:</b> see section 8.2.1 of SDS
<b>Technical conditions and measures to control dispersion from source towards the worker:</b> See SDS section 8.2.1.
<b>Organisational measures to prevent /limit releases, dispersion and exposure:</b> See section 8.2.1. of SDS
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see section 8.2.2 of SDS

**Exposure estimation and reference to its source: not relevant, refer to CSR.**

Risks for workers and to the environment have to be assessed considering the PNECs and DNELs mentioned under SDS sections 8.1.4.

**Guidance to DU to evaluate whether he works inside the boundaries set by the (G)ES.**

Occupational exposure/environmental emissions

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions

and implemented risk management measures are adequate. Detailed guidance for evaluation of ES can be acquired via your supplier or from the ECHA website (guidance R14, R16). Environmental and human exposure can be measured or modelled (more information on tools available in SDS section 8.1.4.).

In addition, bioavailability corrections can be integrated in the exposure assessment, if the environmental parameters that are needed for the calculations are documented (see SDS section 8.1.4.)

<b>Zn GES-4: Industrial and professional use of Zn massive or zinc powder, alloyed or not, passivated or not, as active laboratory reagent in aqueous or organic media, as reduction agent for analysis or synthesis.</b>
SU: 3, 9, 14, PROC: 5, 8b, 15, 26 PC: 7 AC: not applicable ERC: 6b
The zinc metal is used for <u>Analysis</u> : sample (solid or liquid) treatment or preparation: the substance is in the sample or in the reagents <u>Synthesis</u> : manipulations are usually under ventilation (e.g. laminar flow, ventilation hood) The substance is used at the industrial scale, in industrial installations for air control and water treatment and at the professional scale by laboratories
<b>Contributing scenario (1) controlling environmental exposure</b>
<b>Product characteristics:</b> see sections 3 (composition) and 9 (phys-chem properties) of SDS Zn is used in minimum 80% purity; higher grades (>95%) are usual
<b>Amounts used</b> <ul style="list-style-type: none"> <li>• maximum 5 T/y (industrial scale)</li> <li>• maximum 0.5 T/y (professional scale)</li> </ul>
<b>Frequency and duration of use</b> Use is usually intermittent but continuous use is assumed as a worst case. It is possible that use is not continuous; this has to be considered when estimating exposure.
<b>Environment factors not influenced by risk management</b> Flow rate of receiving surface water default value 18,000 m <sup>3</sup> /d used unless specified otherwise
<b>Other given operational conditions affecting environmental exposure</b> All processes are performed indoor in a confined area, with dedicated laboratory equipment. All solid residues containing zinc are recovered for recycling
<b>Technical conditions and measures at process level (source) to prevent release</b> <ul style="list-style-type: none"> <li>• Process enclosures and closed circuits where relevant</li> <li>• If relevant, dust capturing and removal techniques are applied on local exhaust ventilation (centralised treatment, scrubbers, filters, ...)</li> <li>• Containment of liquid volumes to collect waste streams</li> </ul>
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b> <ul style="list-style-type: none"> <li>• Industrial scale: see section 8.2.3.</li> <li>• Professional scale, the emissions are treated usually by STP. Professional services will be used for treating waste streams e.g. for the recovery of metallic solids (for recycling), and for the recovery of e.g. acid solutions containing the substance</li> </ul>
<b>Organizational measures to prevent/limit release from site</b> See SDS section 8.2.3
<b>Conditions and measures related to municipal sewage treatment plant</b> In cases where applicable: default size of the municipal STP (2000 m <sup>3</sup> /d) will be used unless specified otherwise.

<b>Conditions and measures related to external treatment of waste for disposal</b>
<ul style="list-style-type: none"> <li>• If any, all hazardous wastes are treated by certified contractors according to EU and national legislation.</li> <li>• Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products</li> <li>• Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste legislation.</li> </ul>
<b>Conditions and measures related to external recovery of waste</b>
All residues are recycled or handled and conveyed according to waste legislation
<b>Contributing scenario (2) controlling worker exposure</b>
<b>Product characteristic:</b> see sections 3 (composition) and 9 (phys-chem properties) of SDS <ul style="list-style-type: none"> <li>• Zn is used in minimum 80% purity; higher grades (&gt; 95%) are usual</li> <li>• The sample is usually solid, but regularly added to liquid samples.</li> <li>• When the preparation is in solid state, it can be characterised by high dustiness in a worst case situation.</li> </ul>
<b>Amounts used</b>
<ul style="list-style-type: none"> <li>• maximum 5 T/y (industrial scale)</li> <li>• maximum 0.5 T/y (professional scale)</li> </ul>
<b>Frequency and duration of use/exposure</b>
Use is usually intermittent but continuous use is assumed as a worst case.
<b>Human factors not influenced by risk management:</b> Uncovered body parts: (potentially) face can be exposed as a result of the nature of the activity
<b>Other given operational conditions affecting workers exposure</b>
<ul style="list-style-type: none"> <li>• high temperature steps can occur in protected zones (fume cupboards);</li> <li>• all indoor processes in confined area, including hazardous substances cabinets.</li> </ul>
<b>Technical conditions and measures at process level (source) to prevent release:</b> see section 8.2.1 of SDS
For laboratories more specifically:
<ul style="list-style-type: none"> <li>• Local exhaust ventilation on work areas with potential generation of dust or fumes, dust capturing and removal techniques (fume cupboards).</li> <li>• Containment of liquid volumes and collection in special circuits</li> <li>• Storage of Zn products in dedicated zones, e.g.: hazardous substances cabinets</li> </ul>
<b>Technical conditions and measures to control dispersion from source towards the worker:</b> see section 8.2.1 of SDS
For laboratories more specifically:
<ul style="list-style-type: none"> <li>• Cleaning of process equipment and laboratory</li> <li>• Storage of Zn products in dedicated zones, e.g.: hazardous substances cabinets</li> </ul>
<b>Organisational measures to prevent /limit releases, dispersion and exposure:</b> See section 8.2.1 of SDS
<b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see section 8.2.2 of SDS

**Exposure estimation and reference to its source: not relevant, refer to CSR.**

Risks for workers and to the environment have to be assessed considering the PNECs and DNELs mentioned under SDS sections 8.1.4.

**Guidance to DU to evaluate whether he works inside the boundaries set by the (G)ES.**

Occupational exposure/environmental emissions

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions

and implemented risk management measures are adequate. Detailed guidance for evaluation of ES can be acquired via your supplier or from the ECHA website (guidance R14, R16). Environmental and human exposure can be measured or modelled (more information on tools available in SDS section 8.1.4.).

In addition, bioavailability corrections can be integrated in the exposure assessment, if the environmental parameters that are needed for the calculations are documented (see SDS section 8.1.4.)

<b>GES Zn-7: Industrial and professional use of metallic Zn-powder, alloyed or not, passivated or not, for downstream use of zinc mixtures involving dry or wet processes.</b>
SU: 3, 9, 10, 14, 15, 16, 22, 0 (Nace C20.3./25.6.1./27.2) PROC: 1, 2, 3, 5, 8a, 8b, 9, 10, 11, 14, 17, 18, 21, 22, 24, 26 PC: 2, 7, 9a, 9b, 9c, 14, 18, 19, 20, 21, 24 AC: 1, 2,3,7 ERC: 1, 2, 3, 4, 5, 6b, 7, 10a, 10b, 11a
In the described process, the zinc powder containing preparation/mixture is: <ul style="list-style-type: none"> <li>• unpacked and possibly stored in silos</li> <li>• Extracted from the silo, and <ul style="list-style-type: none"> <li>○ in the making of basic mixtures, dosed and fed with the other reagents and/or solvents to the mixing tank, batch-wise or continuously, according the process receipt. The resulting zinc containing mixture (dispersion, paste) is directly further processed, or packed, for further treatment/use.</li> <li>○ in the mechanical plating, the zinc powder is applied to the steel surface</li> </ul> </li> </ul>
<b>Contributing scenario (1) controlling environmental exposure</b>
<b>Product characteristics:</b> see sections 3 (composition) and 9 (phys-chem properties) of SDS Zn powder in preparation can be > 25%, usually <5%
<b>Amounts used</b> maximum 5000 T/y
<b>Frequency and duration of use</b> Continuous production is assumed as a worst case.
<b>Environment factors not influenced by risk management:</b> Flow rate of receiving surface water default value 18,000 m <sup>3</sup> /d used unless specified otherwise
<b>Other given operational conditions affecting environmental exposure</b> <ul style="list-style-type: none"> <li>• Even when no process waters occur, some non-process water can be generated containing zinc (e.g. from cleaning)</li> <li>• All processes are performed indoor in a confined area.</li> <li>• All residues containing zinc are recycled.</li> </ul>
<b>Technical conditions and measures at process level (source) to prevent release</b> <ul style="list-style-type: none"> <li>• Local exhaust ventilation on mixing tanks and other work areas with potential dust generation.</li> <li>• Dust capturing and removal techniques are applied.</li> <li>• Process enclosures where relevant and possible.</li> </ul>
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b> See SDS section 8.2.3.
<b>Organizational measures to prevent/limit release from site</b> See SDS section 8.2.3.
<b>Conditions and measures related to municipal sewage treatment plant:</b> In cases where applicable: default size of the municipal STP (2000 m <sup>3</sup> /d) will be used unless specified otherwise.
<b>Conditions and measures related to external treatment of waste for disposal</b> <ul style="list-style-type: none"> <li>• If any, all hazardous wastes are treated by certified contractors according to EU and national</li> </ul>

<p>legislation.</p> <ul style="list-style-type: none"> <li>• Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products</li> <li>• Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste regulation.</li> </ul>
<p><b>Conditions and measures related to external recovery of waste</b></p> <p>All residues are recycled or handled and conveyed according to waste legislation.</p>
<p><b>Contributing scenario (2) controlling worker exposure</b></p>
<p><b>Product characteristic:</b> see sections 3 (composition) and 9 (phys-chem properties) of SDS</p> <ul style="list-style-type: none"> <li>• The concentration of Zn in the mixtures can be up to &gt;25% but is usually of the order of &lt;= 5%, depending on the application.</li> <li>• The preparation can be solid, or in the liquid state, as a paste or dispersion or other viscous or polymerized matrix, with a low level of dustiness; however, powder forms can occur, medium dustiness is therefore applied as a worst case.</li> </ul>
<p><b>Amounts used</b> Max 5000T/y = 20 T/d = 7T/shift depending of application</p>
<p><b>Frequency and duration of use/exposure</b> 8 hour shifts (default worst case) are assumed as starting point; it is emphasised that the real duration of exposure could be less. This has to be considered when estimating exposure</p>
<p><b>Human factors not influenced by risk management:</b> Uncovered body parts (potentially) face can be exposed as a result of the nature of the activity</p>
<p><b>Other given operational conditions affecting workers exposure</b></p> <ul style="list-style-type: none"> <li>• Wet or dry processes</li> <li>• All indoor processes in confined area.</li> </ul>
<p><b>Technical conditions and measures at process level (source) to prevent release:</b> see section 8.2.1 of SDS</p>
<p><b>Technical conditions and measures to control dispersion from source towards the worker</b></p> <ul style="list-style-type: none"> <li>• Local exhaust ventilation systems and process enclosures are generally applied</li> <li>• Cyclones/filters (for minimizing dust emissions): efficiency 70%-90% (cyclones); dust filters (50-80%)</li> <li>• LEV in work area: efficiency 84% (generic LEV)</li> </ul>
<p><b>Organisational measures to prevent /limit releases, dispersion and exposure:</b> see section 8.2.1 of SDS</p>
<p><b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see section 8.2.2 of SDS</p>

**Exposure estimation and reference to its source: not relevant, refer to CSR.**

Risks for workers and to the environment have to be assessed considering the PNECs and DNELs mentioned under SDS sections 8.1.4.

**Guidance to DU to evaluate whether he works inside the boundaries set by the (G)ES.**

Occupational exposure/environmental emissions

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. Detailed guidance for evaluation of ES can be acquired via your supplier or from the ECHA website (guidance R14, R16). Environmental and human exposure can be measured or modelled (more information on tools available in SDS section 8.1.4.).

In addition, bioavailability corrections can be integrated in the exposure assessment, if the environmental parameters that are needed for the calculations are documented (see SDS section 8.1.4.)

<b>GES Zn - 8: Industrial and professional downstream use of massive pieces made of -or coated with- zinc, alloyed or not.</b>
<p>SU: 3, 14, 15, 16, 17, 19, 21, 22, 0(NACEC25.9.3.)</p> <p>PROC: 4, 7, 11, 13, 15, 21, 23, 25, 26</p> <p>PC: 7, 9a, 14,38</p> <p>AC: 1, 2, 3, 7</p> <p>ERC: 5, 10a, 11a</p>
<p>This scenario covers both the industrial scale processes and professional use. In the described process, the Zn metal containing preparation/mixture is further processed, involving potentially the following steps:</p> <ul style="list-style-type: none"> <li>• Reception/unpacking of material</li> <li>• Final application, embedding, or shaping to produce the end product or article</li> </ul>
<b>Contributing scenario (1) controlling environmental exposure</b>
<p><b>Product characteristics:</b> see sections 3 (composition) and 9 (phys-chem properties) of SDS</p> <p>Zn metal in the article is &lt; 25% when located in the coating, &gt;25% when located in the mass of the article.</p>
<p><b>Amounts used</b></p> <p>Typical quantities for Industrial use are 50T/y (typical), maximum 500T/y (in industrial setting). For professional use, quantities are much lower.</p>
<p><b>Frequency and duration of use:</b> Continuous production is assumed as a worst case</p>
<p><b>Environment factors not influenced by risk management:</b></p> <p>Flow rate of receiving surface water default value 18,000 m<sup>3</sup>/d used unless specified otherwise</p>
<p><b>Other given operational conditions affecting environmental exposure</b></p> <ul style="list-style-type: none"> <li>• Solid, so in principle all dry processes throughout, no process waters. Even when no process waters occur (with dry process throughout), some non-process water can be generated containing zinc (e.g. from cleaning)</li> <li>• In industrial and professional setting, processes are performed usually indoor in a confined area. Professional use can be outdoors.</li> <li>• All residues containing zinc are recycled.</li> </ul>
<p><b>Technical conditions and measures at process level (source) to prevent release</b></p> <ul style="list-style-type: none"> <li>• In industrial and professional setting indoor, the following applies: <ul style="list-style-type: none"> <li>○ Local exhaust ventilation on furnaces and other work areas with potential dust generation.</li> <li>○ Dust capturing and removal techniques are applied.</li> <li>○ Process enclosures where relevant and possible.</li> </ul> </li> <li>• In outdoor professional use, no LEV is assumed</li> </ul>
<p><b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b></p> <ul style="list-style-type: none"> <li>• In industrial and professional setting indoor, the following applies: <ul style="list-style-type: none"> <li>○ No process waters, so possible emissions to water are limited and non-process related.</li> <li>○ If zinc emissions to water, on-site waste water treatment techniques can be applied to prevent releases to water (if applicable) e.g.: chemical precipitation, sedimentation and filtration (efficiency 90-99.98%). <ul style="list-style-type: none"> <li>⇒ By exposure modelling it is predicted that at use quantities of &gt; 200T/y, refinement of the exposure assessment to water and sediment needs to be made (exposure assessment based on real measured data and local parameters). Treatment of the emissions to water may be needed under such conditions.</li> </ul> </li> <li>○ Air emissions are controlled by use of bag-house filters and/or other air emission abatement devices e.g. fabric or bag filters, wet scrubbers. This may create a general negative pressure in the building</li> </ul> </li> </ul>
<p><b>Organizational measures to prevent/limit release from site</b> See SDS section 8.2.3</p>

<p><b>Conditions and measures related to municipal sewage treatment plant:</b> In cases where applicable: default size of the municipal STP (2000 m<sup>3</sup>/d) will be used unless specified otherwise.</p>
<p><b>Conditions and measures related to external treatment of waste for disposal</b></p> <ul style="list-style-type: none"> <li>• If any, all hazardous wastes are treated by certified contractors according to EU and national legislation.</li> <li>• Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products</li> <li>• Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according to the Waste legislation.</li> </ul>
<p><b>Conditions and measures related to external recovery of waste:</b> All residues are recycled or handled and conveyed according to waste legislation</p>
<p><b>Contributing scenario (2) controlling worker exposure</b></p>
<p><b>Product characteristic:</b> see sections 3 (composition) and 9 (phys-chem properties) of SDS Zn metal in the article is &lt; 25% when located in the coating, &gt;25% when located in the mass of the article.</p> <ul style="list-style-type: none"> <li>• The zinc containing mixture is in the solid state, usually with a low level of dustiness;</li> <li>• However, for some processes, e.g. welding (PC 38), fine powder forms can occur; for these processes, high dustiness is considered</li> </ul>
<p><b>Amounts used</b> Typical quantities for Industrial setting are 50 T/y (typical), or 0.15 T/day, 0.05 T/shift. In industrial setting, maximum use quantity is 500T/y (1.5T/d, 0.5T/shift). In professional use, quantities are much lower.</p>
<p><b>Frequency and duration of use/exposure</b> 8 hour shifts (default worst case) are assumed as starting point; it is emphasised that the real duration of exposure could be less. This has to be considered when estimating exposure.</p>
<p><b>Human factors not influenced by risk management:</b> Uncovered body parts (potentially) face can be exposed as a result of the nature of the activity</p>
<p><b>Other given operational conditions affecting workers exposure</b></p> <ul style="list-style-type: none"> <li>• Industrial / Professional: <ul style="list-style-type: none"> <li>○ Dry processes: dry operational conditions throughout the process; no process waters;</li> <li>○ Mostly indoor processes (industrial and professional) in confined area; professional use can also occur outdoors.</li> </ul> </li> </ul>
<p><b>Technical conditions and measures at process level (source) to prevent release</b></p> <ul style="list-style-type: none"> <li>• Industrial /professional indoor <ul style="list-style-type: none"> <li>○ Local exhaust ventilation on work areas with potential dust generation, dust capturing and removal techniques</li> <li>○ Process enclosures where appropriate</li> </ul> </li> <li>• Professional outdoor: no LEV assumed, only local ventilation of area</li> </ul>
<p><b>Technical conditions and measures to control dispersion from source towards the worker</b></p> <ul style="list-style-type: none"> <li>• Industrial /professional: <ul style="list-style-type: none"> <li>○ Local exhaust ventilation systems and process enclosures are generally applied</li> <li>○ Cyclones/filters (for minimizing dust emissions): efficiency 70%-90% (cyclones); dust filters (50-80%)</li> <li>○ LEV in work area: efficiency 84% (generic LEV)</li> </ul> </li> <li>• Professional outdoor: no LEV assumed, but ventilation and RPE for some PROC/PC recommended</li> </ul>
<p><b>Organisational measures to prevent /limit releases, dispersion and exposure:</b> See section 8.2.1 of SDS</p>
<p><b>Conditions and measures related to personal protection, hygiene and health evaluation:</b> see section 8.2.2 of SDS</p>



**Exposure estimation and reference to its source: not relevant, refer to CSR.**

Risks for workers and to the environment have to be assessed considering the PNECs and DNELs mentioned under SDS sections 8.1.4.

**Guidance to DU to evaluate whether he works inside the boundaries set by the (G)ES.**

Occupational exposure/environmental emissions

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. Detailed guidance for evaluation of ES can be acquired via your supplier or from the ECHA website (guidance R14, R16). Environmental and human exposure can be measured or modelled (more information on tools available in SDS section 8.1.4.).

In addition, bioavailability corrections can be integrated in the exposure assessment, if the environmental parameters that are needed for the calculations are documented (see SDS section 8.1.4.)

<b>GES Zn - 9: Industrial and professional downstream use of massive zinc powder, contained in liquid preparations.</b>
SU: 3, 14, 21, 22, 0 (NACEC20.3) PROC: 1, 2, 3, 5, 7, 8a, 8b, 9, 10, 11, 13, 19, 24 PC: 7, 9a, 9b, 9c, 18 AC: 1, 2, 7 ERC: 4, 5, 8a, 8c, 8d, 8f
This scenario covers both the industrial scale processes and professional use. In the described process, the Zn metal containing preparation/mixture is further processed, involving potentially the following steps: <ul style="list-style-type: none"> <li>• Reception/unpacking of the preparation (zinc powder in suspension)</li> <li>• Mixing, filling and/or application to produce the end product or article.</li> </ul>
<b>Contributing scenario (1) controlling environmental exposure.</b>
<b>Product characteristics:</b> see sections 3 (composition) and 9 (phys-chem properties) of SDS Zn metal is usually > 25% in classical mixtures, sometimes <25%.
<b>Amounts used</b> Typical quantities for Industrial use are 50T/y (typical), maximum 500T/y (in industrial setting). For professional use, quantities are much lower
<b>Frequency and duration of use</b> Continuous production is assumed as a worst case. Usually, use is not continuous; this has to be considered when estimating exposure
<b>Environment factors not influenced by risk management:</b> Flow rate of receiving surface water default value 18,000 m <sup>3</sup> /d used unless specified otherwise
<b>Other given operational conditions affecting environmental exposure</b> <ul style="list-style-type: none"> <li>• Liquid preparations, usually no process waters. Even when no process waters occur (with dry process throughout), some non-process water can be generated containing zinc (e.g. from cleaning)</li> <li>• In industrial and professional setting, processes are performed usually indoor in a confined area. Professional use can be outdoors.</li> <li>• All residues containing zinc are recycled.</li> </ul>
<b>Technical conditions and measures at process level (source) to prevent release</b> <ul style="list-style-type: none"> <li>• In industrial and professional setting indoor, the following applies: <ul style="list-style-type: none"> <li>○ Local exhaust ventilation on work areas with potential dust generation.</li> <li>○ Dust capturing and removal techniques are applied.</li> <li>○ Process enclosures where relevant and possible.</li> </ul> </li> </ul>

<p><b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b></p> <ul style="list-style-type: none"> <li>• In industrial and professional setting indoor, the following applies: <ul style="list-style-type: none"> <li>○ If zinc emissions to water, on-site waste water treatment techniques can be applied to prevent releases to water (if applicable) e.g.: chemical precipitation, sedimentation and filtration (efficiency 90-99.98%). <ul style="list-style-type: none"> <li>⇒ By exposure modelling it is predicted that at use quantities of &gt; 200T/y, refinement of the exposure assessment to water and sediment needs to be made (exposure assessment based on real measured data and local parameters). Treatment of the emissions to water may be needed under such conditions (see “exposure estimation and risk characterisation”).</li> </ul> </li> <li>○ Air emissions are controlled by use of bag-house filters and/or other air emission abatement devices e.g. fabric or bag filters, wet scrubbers. This may create a general negative pressure in the building.</li> </ul> </li> </ul>
<p><b>Organizational measures to prevent/limit release from site</b> See SDS section 8.2.3</p>
<p><b>Conditions and measures related to municipal sewage treatment plant:</b> In cases where applicable: default size of the municipal STP (2000 m<sup>3</sup>/d) will be used unless specified otherwise.</p>
<p><b>Conditions and measures related to external treatment of waste for disposal</b></p> <ul style="list-style-type: none"> <li>• If any, all hazardous wastes are treated by certified contractors according to EU and national legislation.</li> <li>• Users of Zn and Zn-compounds have to favour the recycling channels of the end-of-life products</li> <li>• Users of Zn and Zn-compounds have to minimize Zn-containing waste, promote recycling routes and, for the remaining, dispose the waste streams according the Waste regulation.</li> </ul>
<p><b>Conditions and measures related to external recovery of waste</b> All residues are recycled or handled and conveyed according to waste legislation.</p>
<p><b>Contributing scenario (2) controlling worker exposure</b></p>
<p><b>Product characteristic:</b> see sections 3 (composition) and 9 (phys-chem properties) of SDS Zn metal is usually &gt; 25% in classical mixtures, sometimes &lt;25%.</p> <ul style="list-style-type: none"> <li>• The zinc containing mixture is in the liquid state, usually with a low level of dustiness;</li> <li>• However, for some processes, e.g. liquid spraying, fine particles (droplets) are formed, which directly solidify to solid coating. For these processes, medium dustiness is considered as a worst case and PPE are recommended.</li> </ul>
<p><b>Amounts used</b> Typical quantities for Industrial setting are 50 T/y (typical), or 0.15 T/day, 0.05 T/shift. In industrial setting, maximum use quantity is 500T/y (1.5T/d, 0.5T/shift). In professional use, quantities are much lower.</p>
<p><b>Frequency and duration of use/exposure</b> 8 hour shifts (default worst case) are assumed as starting point; it is emphasised that the real duration of exposure could be less. This has to be considered when estimating exposure.</p>
<p><b>Human factors not influenced by risk management:</b> Uncovered body parts (potentially) face can be exposed as a result of the nature of the activity</p>
<p><b>Other given operational conditions affecting workers exposure</b></p> <ul style="list-style-type: none"> <li>• indoor processes (industrial and professional) in confined area;</li> <li>• Professional use can also occur outdoors.</li> </ul>
<p><b>Technical conditions and measures at process level (source) to prevent release</b></p> <ul style="list-style-type: none"> <li>• Industrial /professional indoor <ul style="list-style-type: none"> <li>○ Local exhaust ventilation on work areas with potential dust generation, dust capturing and removal techniques</li> <li>○ Process enclosures where appropriate</li> </ul> </li> </ul>

- Professional outdoor: no LEV assumed, only local ventilation of area

**Technical conditions and measures to control dispersion from source towards the worker**

- Industrial /professional:
  - Local exhaust ventilation systems and process enclosures are generally applied
  - Cyclones/filters (for minimizing dust emissions): efficiency 70%-90% (cyclones); dust filters (50-80%)
  - LEV in work area: efficiency 84% (generic LEV)
- Professional outdoor: no LEV assumed, but ventilation and RPE for some PROC/PC recommended

**Organisational measures to prevent /limit releases, dispersion and exposure:** see section 8.2.1 of SDS

**Conditions and measures related to personal protection, hygiene and health evaluation:** see sections 8.2.2 of SDS

**Exposure estimation and reference to its source: not relevant, refer to CSR.**

Risks for workers and to the environment have to be assessed considering the PNECs and DNELs mentioned under SDS sections 8.1.4.

**Guidance to DU to evaluate whether he works inside the boundaries set by the (G)ES.**

Occupational exposure/environmental emissions

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his operational conditions and implemented risk management measures are adequate. Detailed guidance for evaluation of ES can be acquired via your supplier or from the ECHA website (guidance R14, R16). Environmental and human exposure can be measured or modelled (more information on tools available in SDS section 8.1.4.).

In addition, bioavailability corrections can be integrated in the exposure assessment, if the environmental parameters that are needed for the calculations are documented (see SDS section 8.1.4.)