

MATERIAL SAFETY DATA SHEET

Date: 14 January 2015 (First Edition)

1. Product Identification

Product: Steel Bar

Identified Use: Dowel bars (BS 13877 part 3), tie bars, reinforcement bar (BS 4449), starter bars, lifting hooks Merchant bar BS EN 10025 S275/ S355 etc.

Supplier Details: Tunley Rod & Bar (Decoilers) Ltd, Unit 22 Cobbett Rd, Zone 1 Burntwood Business Park, Burntwood, Staffordshire, UK, WS7 3GL

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2. Hazards Identification

Classification Steel bar (BS EN 10025 S275JR, BS4449) sold in a solid state is not classified as hazardous. However, further processing of the steel including welding, sawing, grinding, brazing, flame cutting, grinding, shot blasting or machining etc. can result in fumes, dust, swarf or steel shards being produced which may cause a hazard.

It is advised that full PPE should be worn at all times when handling steel products .i.e. gloves for protection against cuts and lacerations caused by burrs, sharp edges etc. toe cap boots and safety helmet to guard against impact injuries

The following information may be applicable on further processing.

Suitable eye protection should always be used when grinding, welding, cutting or similar processing of steel bar or when removing bundling wire or strapping.

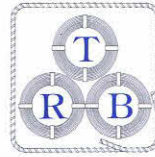
When subjected to elevated temperatures, e.g. during welding or flame cutting, fumes are produced containing mainly oxides of iron and the added residual elements. Dusts may be produced as a result of activities such as sawing and grinding. The principal mode of entry into the body is by inhalation and the potential effects on health which may result in metal fume fever, a short lasting condition with symptoms similar to influenza. However, if workplace exposure is kept below the Workplace Exposure Limit for iron oxide fumes all the residual elements will be below their respective WEL's

Fig 1.

| Current Workplace Exposure Limits: Substance | CAS Number | Workplace Exposure Limit | | | | Comment |
|--|------------|--|--------------------|--|--------------------|---------|
| | | Long-term exposure limit (8-hour TWA reference period) | | Short-term exposure limit (15 minute reference period) | | |
| | | Ppm | mg.m ⁻³ | Ppm | mg.m ⁻³ | |
| Iron oxide, fume (as Fe) | 1309-37-1 | - | 5 | - | 10 | |

Information supplied by Caparo Merchant Bar plc (Steel supplier)





3. Composition

Fig 2.

| Main Substances | Fe | C | Si | Mn | P | S |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|
| CAS No | 7439-89-6 | 7440-44-0 | 7440-21-3 | 7439-96-5 | 7723-14-0 | 7704-34-9 |
| EINICS | 231-096-4 | 231-153-3 | 231-130-8 | 231-105-1 | 231-768-7 | 231-722-6 |
| % | 97 | 0.06 | 0.5 | 1.6 | 0.05 | 0.05 |

| Alloying Substances | Nb | V | Al | Ti | N | B |
|---------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| CAS No | 7440-03-1 | 7440-62-2 | 7429-90-5 | 7440-32-6 | 7727-37-9 | 7440-42-8 |
| EINICS | 231-113-5 | 231-171-1 | 231-072-3 | 231-142-3 | 231-783-9 | 231-151-2 |
| % | 0.1 | 0.05 | 0.05 | 0.28 | 0.01 | 0.005 |

| Trace Substances | Ni | Cr | Sn | Cu | Mo | O |
|------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| CAS No | 7440-02-0 | 7440-47-3 | 7440-31-5 | 7440-50-8 | 7439-98-7 | 7782-44-7 |
| EINICS | 231-111-4 | 231-157-5 | 231-141-8 | 231-159-6 | 231-107-2 | 231-956-9 |
| % | 0.3 max | 0.3 max | .025 max | 0.3 max | .06 max | .03 max |

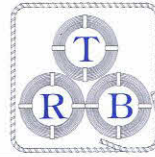
The constituents and concentrations of these elements will vary according to customer requirements. For more details reference should be made to British or other national/international standards or customer specification.

4. First Aid Measures

- Eye Contact:** Flush eyes immediately with plenty of water for 15 minutes. Consult a physician if irritation persists.
- Skin Contact:** Wash skin with soap and plenty of water. Should irritation or allergic reaction occur medical attention is advised. Any abrasions or cuts should be cleaned thoroughly and dressed to keep out contaminants. Large cuts and lacerations stem blood flow and seek medical advice immediately.
- Ingestion:** In the unlikely event of this occurring seek medical advice immediately.
- Inhalation:** If over exposed to fumes or dust remove person to fresh air. Should breathing have stopped CPR should be administered and the emergency services called.

5. Fire Fighting Measures

- Extinguishing Media:** Non Flammable product as a solid product. Do not use water on a molten metal.
- Special Hazards:** Avoid the build-up of fine dust and fumes in confined spaces when additional processes are involved.
- Advice for Fire Fighters:** N/A



6. Accidental Release Measures

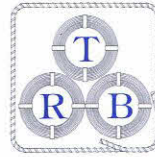
Steel bar is a solid product and as such there will be no chemical, gas or fluid release or spill and presents no explosive hazard. Good housekeeping is recommended to prevent a build-up of dust and gases from additional processing. High concentrations of very fine dust/powder particles can give rise to an explosive hazard, a free airflow is recommended. Collect scrap, swarf etc. for recycling.

7. Handling and Storage

| | |
|-----------|--|
| Storage: | Keep clean and dry! Stable under normal temperatures and pressures. Oxidization (rust) will occur on uncoated steel bar in damp or wet conditions, this condition will be accelerated by the addition of salt, such as sea water or a coastal location. |
| Handling: | <p>Steel bar in bundles <u>should never</u> be lifted using the steel strapping or bundle ties.</p> <p>Suitable gloves should be worn to prevent cuts from sharp edges and burrs, other PPE (hard hat, steel toe cap boots, eye protection) is advised to offer protection from crush injuries and flying debris during lifting and other processes.</p> <p>Care should be taken when cutting bands and ties to prevent injury. Eye protection should be worn, the release in tension can cause bands and wires to flick out resulting in skin lacerations and eye injury.</p> <p>Normal manual handling criteria apply when lifting individual or a small number of items.</p> <p>Steel bundles should be lifted by a suitable capacity crane or forklift dependant on bundle size. Lifting chains etc. should be choked to prevent slippage.</p> |

8. Exposure Controls

| | |
|------------------------|--|
| Control Parameters: | <p>Steel bar has no exposure limits in its un-processed state.</p> <p>Fumes and dust created during processing as defined in EH40 Occupational Exposure Limits See Fig.1</p> |
| Exposure Controls | Provide adequate ventilation or if necessary local fume extraction. |
| PPE Recommended | |
| Eye Protection | <p>Removal of strapping and wire ties.</p> <p>Where mill scale or oxidation is present.</p> <p>Welding, grinding, sawing, drilling, turning, etc.</p> |
| Hand Protection | Gloves suitable to guard against cuts and light crush injuries. |
| Respiratory Protection | <p>Protection against fumes and dust from processing such, grinding welding etc.</p> <p>Cutting of oxidised or flaky or heavily scaled steel.</p> |



Hard Hat General recommendation.

Boots (steel toe cap & sole) General recommendation.

9. Physical and Chemical Properties

| | |
|---|--|
| Physical Appearance | Solid metal dull battle ship grey in colour. |
| Odour | None |
| pH | N/A |
| Boiling Point | N/A |
| Melting Point | 1400 ⁰ / 1600 ⁰ C |
| Flash Point | N/A |
| Explosive Properties | None |
| Solubility | Insoluble |
| Chemical Properties | Composition of chemical properties changes depending on order specification fig 2. is a comprehensive list of the chemical components. |
| UTS BS EN 10025 S275 JR | 430/580 N/mm ² |
| Yield BS EN 10025 S275 JR | 255-275 N/mm ² minimum depending on diameter. |
| S275 JR Elongation | 23% min |
| BS 4449 B500B R _E , MPa max. | 650 |
| BS 4449 B500B R _E , MPa min. | 500 |
| B500B Elongation | 5.0 % |

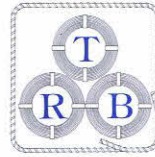
10. Stability

| | |
|-------------------------|---|
| Stability | Chemically stable |
| Conditions to avoid | N/A |
| Materials to avoid | Reacts with strong acids and oxidizers. |
| Hazardous decomposition | No |

11. Toxicology Information

There is no evidence of any short or long term toxicological effects to health from contact to the product in its solid form with no additional processing.

Processing of steel bar may give rise to toxic hazard caused by contact with dust and fumes produced depending on the process involved.



Inhalation Short term exposure to metal fumes and dust may result in discomfort and dryness of the throat. Excessive inhalation may result in metal fume fever. Symptoms include: metallic taste in mouth, cough, dizziness, weakness, fever, shortness of breath and muscle and joint pain (flu like symptoms) 4-6 hours after exposure. Long term exposure to metal fumes may contribute pulmonary irritation. Long term exposure to iron dust may produce siderosis a benign pneumoconiosis. Welding fumes may be different in composition from the original welding product. Chronic health effects including cancer have been associated with welding fumes and have been listed by IARC as a carcinogen Group 2B.

12. Ecological Information

The manufacturing steel mill has supplied no ecological information.

13. Disposal Considerations

Steel is fully recyclable and should be the first option when disposing of.

14. Transport Information

There are no specialist regulations or shipping instruction when transporting steel bar products.

Steel bar should be kept dry during transportation to prevent oxidation.

Steel bar should be securely bundled with wire ties or suitable strapping. Bundles should then be secured to a wooden pallet or chocks on the vehicle using load roads or ratchet loads straps.

15. Regulatory Information

Health and Safety at Work Act 1974.

The Management of Health and Safety at Work regulations 1992.

Provision and Use of Work Equipment Regulations 1998

L5 - Control of substances hazardous to health. The Control of Substances Hazardous to Health Regulations 2002.

Approved codes of practice and guidance.

Guidance Note EH40 – Occupational Exposure Limits (ISBN 0717621944).

L25 - Personal protective equipment at work. Guidance on Regulations.

Personal Protective Equipment at Work Regulations 1992.

L23 - Manual handling. Manual Handling Operations Regulations 1992 (as amended)

HSG 246 - Safety in the storage and handling of steel and other metal stock

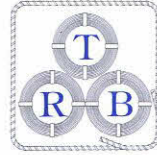
INDG 313 - Safe unloading of steel stock

EI516 - Preventing Injuries from the manual handling of sharp edges in the engineering industry

16. Other Information

This material safety data sheet should be made available to all persons involved in the use of steel bar purchased from Tunley Rod & Bar (Decoilers) Ltd or its further distribution. It is requested that all users (or distributors) of this group of products read this Materials Safety Data Sheet carefully before use or processing any of the products under the heading "steel bar".

The information contained relates only to the group of materials in section 1 and may not be valid when used in a combination with other materials or processes.



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(DECOILERS) LTD.**

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