

Foundry Charge Calculation

Foundry Charge Calculation foundry charge calculation is a critical process in the metal casting industry that determines the total cost involved in producing a cast product. Accurate calculation ensures that foundries can set competitive prices, maintain profitability, and offer clients transparent cost estimates. Understanding the various components involved in foundry charge calculation helps both industry professionals and clients grasp the intricacies behind casting costs and make informed decisions. --- Understanding Foundry Charge Calculation Foundry charge calculation encompasses the assessment of all expenses incurred during the casting process. It involves evaluating raw material costs, energy consumption, labor, overheads, and other auxiliary expenses. The goal is to establish a comprehensive cost structure that covers production expenses while ensuring quality and efficiency.

Key Components of Foundry Charge Calculation

- 1. Raw Material Cost** The raw material cost is often the largest component of the total foundry charge. It includes the expense of metals such as cast iron, aluminum, bronze, or other alloys used to produce the casting.
 - Metal Weight:** The weight of the metal required for the casting is calculated based on the volume of the mold and the density of the metal.
 - Metal Price:** The current market price per kilogram or pound of the metal influences the overall raw material cost.
 - Scrap and Reuse:** Any scrap metal recovered can be reused, reducing the net raw material cost.
- 2. Molding and Pattern Costs** Creating molds and patterns involves expenses related to materials and labor.
 - Pattern Making:** This includes the cost of designing and fabricating patterns, which can be made of wood, metal, or plastic.
 - Mold Material:** Investment in sand, ceramic, or other mold materials necessary for casting.
 - Core Making:** For complex castings requiring internal cavities, core creation adds to

the cost. 2 3. Energy and Fuel Costs Energy consumption during melting, heating, and casting significantly impacts the overall cost. Electricity or Gas: The cost varies depending on the energy source used to operate furnaces and other equipment. Fuel Consumption: For fuel-based furnaces, calculating fuel efficiency and consumption rates is essential. 4. Labor Charges Labor costs include wages for workers involved in various stages of casting. Setup and Maintenance: Preparing molds, operating machinery, and maintaining equipment. Melting and Pouring: Skilled workers handle the melting process and pouring operations. Finishing: Cleaning, grinding, and inspection of finished castings. 5. Overheads and Miscellaneous Expenses Overheads include indirect costs essential for operation, such as: Facility rent or depreciation Tools and equipment maintenance Quality control and testing Administrative expenses --- Methods of Calculating Foundry Charges Several methods are employed to determine the total foundry charges depending on the complexity and requirements of the casting project. 1. Percentage Method This approach applies a fixed percentage over the raw material cost to cover labor, overheads, and profit. Advantages: Simple and quick estimation. Limitations: Less accurate for complex or large-scale projects. 3 2. Rate per Unit Weight Calculates the cost based on the weight of the casting, multiplying the unit rate by the total weight. Formula: $\text{Total Cost} = \text{Weight of casting} \times \text{Rate per unit weight}$ Usage: Common in large-volume production where the rate per weight is standardized. 3. Itemized Costing Breaks down each component (material, labor, energy, overheads) and sums them for an accurate total. Advantages: Precise and transparent cost estimation. Disadvantages: More time-consuming and requires detailed data. --- Factors Influencing Foundry Charge Calculation Several variables can affect the overall foundry charges, making precise estimation challenging yet essential. 1. Complexity of the Casting Intricate designs with fine details or internal cavities generally increase mold-making time and material usage. 2. Size and Weight of the Casting Larger and heavier castings require more raw material, energy, and labor, leading to higher costs. 3. Material Selection High-performance or exotic alloys tend to be more expensive, directly impacting the

raw material cost. 4. Production Volume Bulk orders often benefit from economies of scale, reducing the per-unit cost. 5. Casting Method Methods such as sand casting, investment casting, or die casting have different cost 4 implications.

Example of Foundry Charge Calculation Suppose a client requests a bronze casting weighing 50 kg. The current bronze price is \$10 per kg, and the estimated costs are: Pattern making: \$200 Mold material and core: \$150 Labor: \$300 Energy: \$50 Overheads: \$100 The calculation would proceed as follows: Raw Material Cost: $50 \text{ kg} \times \$10/\text{kg} = \500 1. Pattern Cost: \$2002. Mold and Core: \$1503. Labor: \$3004. Energy: \$505. Overheads: \$1006. Total Foundry Charge = Raw Material + Pattern + Mold & Core + Labor + Energy + Overheads = $\$500 + \$200 + \$150 + \$300 + \$50 + \$100 = \$1,300$ This comprehensive estimate allows the client and foundry to understand the breakdown of costs involved in producing the casting. --- Conclusion Effective foundry charge calculation is fundamental for maintaining profitability and competitiveness in the casting industry. By understanding and accurately assessing raw materials, labor, energy, and overheads, foundries can provide precise cost estimates tailored to each project's specific requirements. Whether employing simple percentage methods or detailed itemized costing, the goal remains to balance cost efficiency with quality output. As the industry evolves with technological advancements and material innovations, so too will the methods and precision of foundry charge calculations, ensuring continuous improvement and transparency in the manufacturing process. --- Tips for Accurate Foundry Charge Calculation Keep updated with current metal prices and market trends. Maintain detailed records of all costs involved in the casting process. Use software tools for complex calculations to improve accuracy. Communicate clearly with clients about cost components and potential variations. 5 Regularly review and adjust cost calculation methods based on operational changes. By implementing these practices, foundries can ensure their charge calculations are both accurate and fair, fostering trust and long-term business relationships.

QuestionAnswer What are the key factors involved in calculating foundry charges? Foundry charges typically include mold and core making costs, metal cost, labor, overheads,

and miscellaneous expenses. These components are combined based on the weight and complexity of the casting to determine the total charge. How is the mold cost calculated in foundry charge computation? Mold cost is calculated by considering the mold material, its size, complexity, and the number of casting units. It often includes mold preparation, core making, and any finishing required, divided by the number of castings produced to determine per-unit cost. What role does the weight of the casting play in foundry charge calculation? The weight of the casting is a primary factor since many charges are based on the unit weight (per kg or per lb). Heavier castings consume more material and resources, increasing the overall foundry charge proportionally. How are overheads and labor costs incorporated into foundry charge calculations? Overheads and labor costs are added as a percentage or fixed amount to the basic material and mold costs. These cover expenses like power, supervision, maintenance, and administrative costs, ensuring all operational expenses are accounted for. Why do foundry charges vary between different foundries for the same casting? Variations occur due to differences in technology, labor rates, overheads, complexity of the casting, and volume of production. More advanced or specialized foundries may have higher charges, while bulk production can reduce per-unit costs. What is the typical process to determine the final foundry charge for a custom casting? The process involves estimating mold and core costs, calculating material costs based on weight, adding labor and overhead expenses, including any additional processing or finishing, and then applying profit margins to arrive at the final charge.

Foundry Charge Calculation: A Comprehensive Review of Principles, Methods, and Best Practices

In the realm of metal casting, the accuracy of foundry charge calculations is pivotal to ensuring quality, efficiency, and cost-effectiveness. The term foundry charge calculation encompasses the complex process of determining the precise amount and composition of raw materials—primarily metal, fluxes, and other additives—that must be introduced into a furnace to produce a desired cast metal product. As the industry advances with new alloys, sophisticated furnace technologies, and stringent quality standards, understanding the principles, methodologies,

and factors influencing charge calculations becomes more critical than ever. This article offers a detailed exploration of Foundry Charge Calculation 6 foundry charge calculation, providing insights suitable for industry professionals, researchers, and students aiming to deepen their understanding of this vital aspect of metallurgical engineering. --- Understanding the Fundamentals of Foundry Charge Calculation At its core, foundry charge calculation is about balancing the inputs—metallic and non-metallic materials—to achieve a specified alloy composition, temperature, and physical properties in the final cast product. The process considers several variables, including the initial composition of raw materials, the chemical reactions within the furnace, and the desired end properties. Key Objectives of Charge Calculation: – Achieve target chemical composition within specified tolerances. – Minimize raw material costs and waste. – Ensure consistent quality and mechanical properties. – Optimize furnace operation efficiency and reduce energy consumption. Primary Components in the Charge: – Metallic Raw Materials: Scrap, pig iron, virgin metal, or alloys. – Fluxes and Refractory Materials: Fluxes for slag control, refractories for furnace lining. – Additives: Deoxidizers, inoculants, grain refiners, and other alloying elements. --- Fundamentals and Principles Governing Charge Calculations Charge calculations hinge on a solid understanding of mass balance, chemical reactions, and thermodynamics. Mass Balance and Chemical Composition The fundamental principle involves balancing the mass of each element before and after melting and refining. The general equation:
$$\text{Total Element in Charge} = \text{Sum of Elements in Raw Materials}$$
 For a given element (e.g., carbon):
$$C_{\text{final}} \times M_{\text{final}} = \sum (C_{\text{raw},i} \times M_{\text{raw},i}) + \text{Reaction Contributions}$$
 where: – C_{final} = desired final concentration – M_{final} = total mass of melt – $C_{\text{raw},i}$, $M_{\text{raw},i}$ = concentration and mass of raw material (i) The goal is to select and proportion raw materials such that the final composition matches the target. Thermodynamics and Reaction Equilibria Chemical reactions during melting—oxidation, reduction, slag formation—are governed by thermodynamics. Accurate charge calculations require understanding: – Oxidation and reduction potentials –

Equilibrium constants – The activity of species in the slag and metal phases This knowledge helps predict how raw materials will react and what adjustments are necessary to control impurity levels, deoxidation, and alloying.

Foundry Charge Calculation 7 Heat Balance and Temperature Control Temperature influences reaction kinetics and phase transformations. Calculations must account for heat input and losses to maintain the desired temperature, often affecting charge proportions. --- Methodologies for Foundry Charge Calculation Several approaches and models are used in practice, ranging from empirical methods to sophisticated computational techniques.

Empirical and Rule-of-Thumb Methods These are based on historical data, experience, and industry standards. For example, a common practice might be to add a fixed amount of scrap per ton of cast steel, adjusted based on previous outcomes.

Advantages: – Quick and straightforward – Useful for routine operations

Limitations: – Less precise – Not adaptable to complex or new alloys

Stoichiometric Calculations Involves detailed calculations based on chemical formulas and reactions. This method considers: – Raw material compositions – Desired final composition – Reaction stoichiometry

Example: To reduce oxygen content in steel, calculations determine the amount of deoxidizer needed to consume residual oxygen via specific reactions.

Mathematical and Computational Models Advanced software tools incorporate: – Mass balance equations – Thermodynamic data – Kinetic models

Such models can simulate the entire melting process, providing optimized charge compositions tailored to specific alloys and furnace types. Examples include: – Thermo-Calc – FactSage – proprietary foundry modeling software

Advantages: – High accuracy – Can account for complex interactions

Limitations: – Require detailed input data – Need specialized expertise --- Factors Influencing Foundry Charge Calculations Numerous variables can impact the accuracy and efficiency of charge calculation methods.

Raw Material Variability – Composition differences in scrap and pig iron – Impurities such as sulfur, phosphorus, or residuals – Moisture content affecting weight and reactions

Foundry Charge Calculation 8 Alloy Specifications and Quality Standards – Precise target compositions for mechanical properties –

Tolerance limits for impurities – Specific alloying element additions Furnace Type and Operating Conditions – Electric arc, induction, cupola, or blast furnace – Temperature control and heat losses – Reaction kinetics affected by furnace atmosphere Economic and Environmental Constraints – Cost of raw materials – Recycling considerations – Emission standards influencing flux and additive choices Reaction Kinetics and Slag Chemistry – Rates of deoxidation and desulfurization – Slag-metal partitioning behavior – Effect of slag composition on metal cleanliness --- Best Practices and Modern Innovations in Foundry Charge Calculation The evolution of foundry practices emphasizes accuracy, sustainability, and automation. Standardization and Quality Control – Developing standardized recipes based on extensive data – Regular analysis of raw materials and final products – Continuous process monitoring Integration of Computer-Aided Design and Simulation – Using software to simulate melting and refining – Optimizing raw material proportions before actual melting – Reducing trial-and-error and waste Recycling and Sustainability – Incorporating recycled scrap effectively – Adjusting charges to minimize energy consumption and emissions – Lifecycle assessment to improve process sustainability Emerging Technologies – Real-time sensors for composition and temperature measurement – Machine learning algorithms for predictive charge calculations – Automated batching and feeding systems -- – Foundry Charge Calculation 9 Challenges and Future Directions Despite advances, challenges remain: – Variability in raw materials complicates precise calculations – Complex alloys with multiple alloying elements require intricate modeling – Balancing cost, quality, and environmental impact demands continuous innovation Future research is likely to focus on: – Enhanced predictive models integrating big data – Advanced sensors and automation for real-time adjustments – Development of more sustainable raw material blends --- Conclusion Foundry charge calculation is a cornerstone of efficient and high-quality metal casting. It requires a thorough understanding of metallurgy, thermodynamics, and process control, combined with practical experience. Whether employing simple empirical methods or sophisticated computational models, the ultimate goal remains the same: to

produce the desired alloy with minimal waste and maximum consistency. As the industry continues to evolve with technological innovations, mastering the art and science of charge calculation will be essential for metallurgists seeking to optimize operations, reduce costs, and meet increasingly stringent quality and environmental standards. By integrating scientific principles with modern tools and sustainable practices, foundry professionals can ensure that their charge calculations are not only accurate but also adaptable to the future challenges of metallurgical manufacturing. foundry cost estimation, metal casting expenses, mold preparation costs, pouring charge calculation, furnace operation costs, casting weight calculation, process efficiency analysis, thermal energy costs, casting material pricing, production cost optimization

Foseco Foundryman's Handbook Foseco Ferrous Foundryman's Handbook Metallurgical Technology Current Foundry Practices The Foundry Trade Journal Metal Casting Engineering Advances in Manufacturing Technology Technical Education Program Series Proceedings of MPCPE 2024 Foundry (Iron, Steel, Brass, &c.). For 1920–1921 ... Foundry Practice Fundamentals of Metal Casting Russian Castings Production Transactions of the American Foundrymen's Society Foundry Management & Technology Choice of Iron foundry Melting Plant, University of Keele, October 3–5 1972 Foundry Technology, an Overview The Foseco Foundryman's Handbook Guidelines for Establishing a Demonstration Foundry in a Developing Country Review of Metal Literature John Brown John Brown United States. Division of Vocational and Technical Education Republic Steel. Pig Iron & Coal Chemical Division Zainul Huda P.F. Mcgoldrick United States. Division of Vocational and Technical Education Nikolai Vatin Frank Foster Carl Edward Schubert Richard Aloysius Flinn American Foundrymen's Society Foseco International Limited. Information Dept United Nations Industrial Development Organization American Society for Metals Foseco Foundryman's Handbook Foseco Ferrous Foundryman's Handbook Metallurgical Technology Current Foundry Practices The Foundry Trade Journal Metal Casting Engineering Advances in Manufacturing Technology Technical Education

Program Series Proceedings of MPCPE 2024 Foundry (Iron, Steel, Brass, &c.). For 1920–1921 ... Foundry Practice
 Fundamentals of Metal Casting Russian Castings Production Transactions of the American Foundrymen's Society Foundry
 Management & Technology Choice of Ironfoundry Melting Plant, University of Keele, October 3–5 1972 Foundry Technology,
 an Overview The Foseco Foundryman's Handbook Guidelines for Establishing a Demonstration Foundry in a Developing
 Country Review of Metal Literature *John Brown John Brown United States. Division of Vocational and Technical Education*
Republic Steel. Pig Iron & Coal Chemical Division Zainul Huda P.F. Mcgoldrick United States. Division of Vocational and
Technical Education Nikolai Vatin Frank Foster Carl Edward Schubert Richard Aloysius Flinn American Foundrymen's Society
Foseco International Limited. Information Dept United Nations Industrial Development Organization American Society for
Metals

reflecting the changes that have occurred in making castings this book provides a practical reference for all those
 concerned with making castings in any of the commonly used alloys by any of the usual moulding methods international si
 units metric and imperial units are used throughout

tables and general data sands and sand bonding systems coatings for moulds and cores light alloy castings copper and
 copper alloy castings iron castings die castings steel castings feeding of castings computer modelling of solidification of
 castings the solstar system filtration of castings principal foseco products

this book covers all main aspects of metal casting processes and practices including mold gating system design melting of
 metal solidification qc qa safety economic and environmental considerations the flow and solidification of metal is
 presented with reference to bernoulli s law fick s 2nd law and chvorinov s rule with detailed mathematical analyses and

calculations foundry practices involving mold design molding sand characteristics melting furnaces testing ndt and qc are explained including both conventional casting processes and recent advances in casting technologies there are around 120 diagrammatic illustrations which have been properly labelled to enhance the understanding of readers one of the salient features of the book is the inclusion of an industrially oriented project the key solution of the project is presented with the aid of mathematical analysis and diagrams the metal casting design project cultivates managerial skills enabling the reader to work effectively as an engineer manufacturing manager in an industry

this book gathers selected contributions in the field of civil and structural engineering as presented by international researchers and engineers at the international conference on materials physics building structures and technologies in construction industrial and production engineering mpcpe held in vladimir russia on april 22 25 2024 the book covers a wide range of topics including the theory and design of capital construction facilities engineering and hydraulic structures development of innovative solutions in the field of modeling and testing of reinforced concrete metal and wooden structures as well as composite structures based on them investigation of complex dynamic effects on construction objects and many others directions intended for professional builders designers and researchers the contributions which were selected by means of a rigorous international peer review process highlight numerous exciting ideas that will spur novel research directions and foster multidisciplinary collaborations

an annotated survey of articles and technical papers appearing in the engineering scientific and industrial journals and books here and abroad

When people should go to the book stores, search initiation by shop, shelf by shelf, it is in reality problematic. This is why we allow the book compilations in this website. It will unconditionally ease you to see guide **Foundry Charge Calculation** as you such as. By searching the title, publisher, or authors of guide you in reality want, you can discover them rapidly. In the house, workplace, or perhaps in your method can be all best area within net connections. If you purpose to download and install the Foundry Charge Calculation, it is entirely easy then, since currently we extend the partner to buy and make bargains to download and install Foundry Charge Calculation so simple!

1. How do I know which eBook platform is the best for me?
2. Finding the best eBook platform depends on your reading preferences and device compatibility. Research different platforms, read user reviews, and explore their features before making a choice.
3. Are free eBooks of good quality? Yes, many reputable platforms offer high-quality free eBooks, including classics and public domain works. However, make sure to verify the source to ensure the eBook credibility.
4. Can I read eBooks without an eReader? Absolutely! Most eBook platforms offer web-based readers or mobile apps that allow you to read eBooks on your computer, tablet, or smartphone.
5. How do I avoid digital eye strain while reading eBooks? To prevent digital eye strain, take regular breaks, adjust the font size and background color, and ensure proper lighting while reading eBooks.
6. What the advantage of interactive eBooks? Interactive eBooks incorporate multimedia elements, quizzes, and activities, enhancing the reader engagement and providing a more immersive learning experience.
7. Foundry Charge Calculation is one of the best book in our library for free trial. We provide copy of Foundry Charge Calculation in digital format, so the resources that you find are reliable. There are also many Ebooks of related with Foundry Charge Calculation.
8. Where to download Foundry Charge Calculation online for free? Are you looking for Foundry Charge Calculation PDF? This is definitely going to save you time and cash in something you should think about.

Hi to news.xyno.online, your stop for a

extensive assortment of Foundry Charge Calculation PDF eBooks. We are passionate about making the world of literature accessible to all, and our platform is designed to provide you with a effortless and pleasant for title eBook obtaining experience.

At news.xyno.online, our objective is simple: to democratize knowledge and cultivate a love for literature Foundry Charge Calculation. We believe that every person should have access to Systems Analysis And Structure Elias M Awad eBooks, encompassing different genres, topics, and interests. By supplying Foundry Charge Calculation and a wide-ranging collection of PDF eBooks, we aim to enable readers to explore, learn, and

plunge themselves in the world of written works.

In the expansive realm of digital literature, uncovering Systems Analysis And Design Elias M Awad haven that delivers on both content and user experience is similar to stumbling upon a secret treasure. Step into news.xyno.online, Foundry Charge Calculation PDF eBook download haven that invites readers into a realm of literary marvels. In this Foundry Charge Calculation assessment, we will explore the intricacies of the platform, examining its features, content variety, user interface, and the overall reading experience it pledges.

At the center of news.xyno.online lies a varied collection that spans genres,

catering the voracious appetite of every reader. From classic novels that have endured the test of time to contemporary page-turners, the library throbs with vitality. The Systems Analysis And Design Elias M Awad of content is apparent, presenting a dynamic array of PDF eBooks that oscillate between profound narratives and quick literary getaways.

One of the characteristic features of Systems Analysis And Design Elias M Awad is the arrangement of genres, forming a symphony of reading choices. As you explore through the Systems Analysis And Design Elias M Awad, you will come across the complication of options □ from the structured complexity of science fiction

to the rhythmic simplicity of romance. This variety ensures that every reader, regardless of their literary taste, finds Foundry Charge Calculation within the digital shelves.

In the world of digital literature, burstiness is not just about diversity but also the joy of discovery. Foundry Charge Calculation excels in this interplay of discoveries. Regular updates ensure that the content landscape is ever-changing, presenting readers to new authors, genres, and perspectives. The unpredictable flow of literary treasures mirrors the burstiness that defines human expression.

An aesthetically attractive and user-friendly interface serves as the canvas upon which Foundry Charge Calculation

portrays its literary masterpiece. The website's design is a reflection of the thoughtful curation of content, offering an experience that is both visually appealing and functionally intuitive. The bursts of color and images blend with the intricacy of literary choices, shaping a seamless journey for every visitor.

The download process on Foundry Charge Calculation is a harmony of efficiency. The user is greeted with a simple pathway to their chosen eBook.

The burstiness in the download speed assures that the literary delight is almost instantaneous. This smooth process aligns with the human desire for fast and uncomplicated access to the treasures held within the digital library.

A critical aspect that distinguishes news.xyno.online is its devotion to responsible eBook distribution. The platform vigorously adheres to copyright laws, ensuring that every download Systems Analysis And Design Elias M Awad is a legal and ethical undertaking. This commitment contributes a layer of ethical complexity, resonating with the conscientious reader who esteems the integrity of literary creation.

news.xyno.online doesn't just offer Systems Analysis And Design Elias M Awad; it fosters a community of readers. The platform offers space for users to connect, share their literary journeys, and recommend hidden gems. This interactivity infuses a burst

of social connection to the reading experience, raising it beyond a solitary pursuit.

In the grand tapestry of digital literature, news.xyno.online stands as a dynamic thread that incorporates complexity and burstiness into the reading journey. From the nuanced dance of genres to the quick strokes of the download process, every aspect echoes with the fluid nature of human expression. It's not just a Systems Analysis And Design Elias M Awad eBook download website; it's a digital oasis where literature thrives, and readers begin on a journey filled with delightful surprises.

We take pride in choosing an extensive library of Systems Analysis And Design

Elias M Awad PDF eBooks, carefully chosen to satisfy to a broad audience. Whether you're a enthusiast of classic literature, contemporary fiction, or specialized non-fiction, you'll uncover something that captures your imagination.

Navigating our website is a piece of cake. We've crafted the user interface with you in mind, guaranteeing that you can smoothly discover Systems Analysis And Design Elias M Awad and retrieve Systems Analysis And Design Elias M Awad eBooks. Our lookup and categorization features are easy to use, making it simple for you to discover Systems Analysis And Design Elias M Awad.

news.xyno.online is devoted to

upholding legal and ethical standards in the world of digital literature. We emphasize the distribution of Foundry Charge Calculation that are either in the public domain, licensed for free distribution, or provided by authors and publishers with the right to share their work. We actively discourage the distribution of copyrighted material without proper authorization.

Quality: Each eBook in our assortment is meticulously vetted to ensure a high standard of quality. We strive for your reading experience to be enjoyable and free of formatting issues.

Variety: We continuously update our library to bring you the most recent releases, timeless classics, and hidden gems across categories. There's always

an item new to discover.

Community Engagement: We cherish our community of readers. Interact with us on social media, exchange your favorite reads, and become in a growing community dedicated about literature.

Whether or not you're a passionate reader, a student in search of study materials, or someone venturing into

the world of eBooks for the first time, news.xyno.online is here to provide to Systems Analysis And Design Elias M Awad. Follow us on this literary journey, and let the pages of our eBooks to take you to fresh realms, concepts, and experiences.

We understand the thrill of finding something new. That is the reason we regularly refresh our library, making

sure you have access to Systems Analysis And Design Elias M Awad, acclaimed authors, and hidden literary treasures. On each visit, anticipate new possibilities for your reading Foundry Charge Calculation.

Appreciation for choosing news.xyno.online as your trusted source for PDF eBook downloads. Delighted perusal of Systems Analysis And Design Elias M Awad

