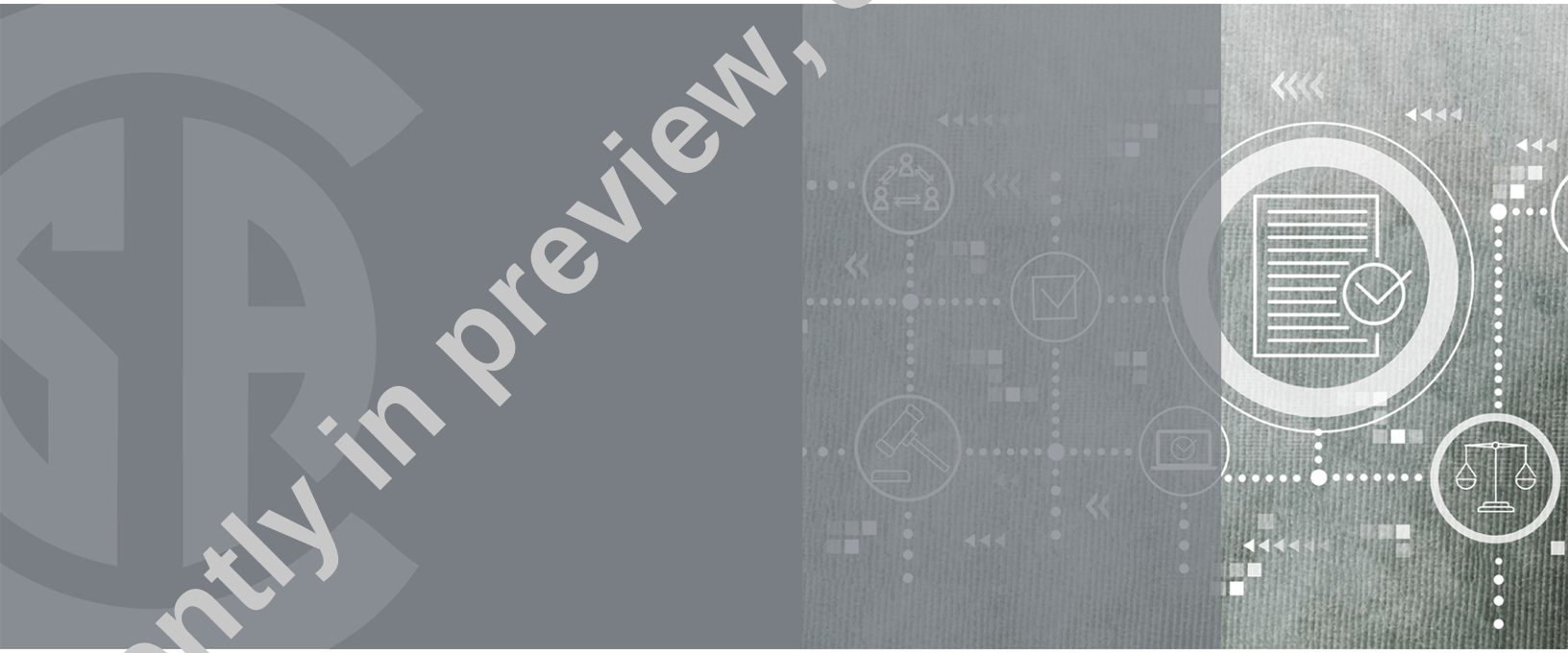
CSA SPE 2254:19

Guide to wood chip fuel: Characteristics, supply, storage, and procurement



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Preface

This is the first edition of CSA SPE 2254, *Guide to wood chip fuel: Characteristics, supply, storage, and procurement*.

CSA Group acknowledges that the development of this Guide was made possible, in part, by the financial support of the Energy Innovation Program by the Department of Natural Resources of Canada.

This Guide has been prepared by the Development Committee on Safe Handling and Storage of Wood Chips. This Guide is not a consensus product; that is, it is not a standard and it has not been formally reviewed or approved by a CSA Group Technical Committee.

Notes:

1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
2) *Although the intended primary application of this Guide is stated in its Scope, it is important to note that it remains the responsibility of the users of the Guide to judge its suitability for their particular purpose.*
3) *To submit a proposal for change, please send the following information to inquiries@csagroup.org and include "Proposal for change" in the subject line:*
   a) *designation (number);*
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   c) *wording of the proposed change; and*
   d) *rationale for the change.*

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0 Introduction

0.1

Wood chips are well suited to meet the energy needs of buildings, communities, or campuses, and as a locally produced source, it is a renewable, low carbon fuel option. Depending on the original sources of the woody biomass and the processes used in preparation, wood chips can vary greatly in quality and consistency. In 2015, CSA Group adopted a series of solid biofuels standards developed by International Organization for Standardization (ISO) for wood pellets, wood briquettes, firewood, and wood chips (CAN/CSA-ISO 17225). These are voluntary industry standards designed for residential, small commercial and public building applications. Wood chip fuel standards are essential for efficient, reliable, and safe operation of energy systems and establishing market confidence.

0.2

In Canada, the wood chip fuel supply chain begins with managed forests; sustainable forest management principles are applied to all publicly owned Canadian forests, which accounts for 94% of all Canada's forest land based on 2018 data. Supply chains for wood chips can be complex and at present are closely linked to traditional forest products, such as pulp, paper, dimensional lumber, etc. The product specifications for these industries might be different than those of wood chip fuel. Producers need to know what fuel quality specifications are expected from the wood chips so that they can modify and adjust their processes. End users need to better understand the supply chain, and fuel quality requirements so they can communicate more effectively with suppliers and procure wood chips appropriate to the specifications of their energy systems.

0.3

Storage is essential to bridge the gap between supply and demand and to facilitate adaptation to varying market conditions. During storage, decomposition and conversion processes (such as bacterial, fungal) take place which can lead to not only material and energy losses, but also to self-heating and in extreme cases, fires. Operational requirements, as well as health and safety considerations for storage piles, vary significantly along the supply chain from producer to supplier and finally, to end-user site. For example:

a) storage piles in fuel producer, wholesaler, or aggregator sites are
   i) larger in size and amount;
   ii) likely to be outdoors, either covered or uncovered; and
   iii) contain wet material and possibly a blend of different tree species, bark, and leaves, with a larger variance in particle sizes;
b) a wood chip fuel heating facility will likely have
   i) fully or partially covered storage with capacity varying from 3 to 5 days to approximately one month;
   ii) fast turnaround times; and
   iii) wood chips pile composed of uniform particle size with little to no bark or leaves.