

DIN EN 14778:2011-09 (E)

Solid biofuels - Sampling

| Contents | | Page |
|--------------------|--|-------------|
| Foreword | | 4 |
| Introduction | | 5 |
| 1 | Scope | 6 |
| 2 | Normative references | 6 |
| 3 | Terms and definitions | 6 |
| 4 | Symbols and abbreviations | 8 |
| 5 | Principle | 8 |
| 6 | Establishing a sampling scheme (sampling plan) | 9 |
| 6.1 | Principle | 9 |
| 6.2 | Full sampling plan | 9 |
| 6.3 | Brief sampling plan | 10 |
| 6.4 | Division of lots | 10 |
| 7 | Visual inspection | 11 |
| 8 | Number of increments | 11 |
| 8.1 | General | 11 |
| 8.2 | Primary increment variance (VI) | 12 |
| 8.3 | Preparation and testing variance (VPT) | 12 |
| 8.4 | Overall precision (PL) | 13 |
| 8.5 | Calculation of number of increments per (sub)-lot | 13 |
| 9 | Calculation of the size of increment | 14 |
| 10 | Combined sample - Calculation of the volume of the combined sample | 14 |
| 11 | Sampling equipment | 15 |
| 11.1 | General | 15 |
| 11.2 | Equipment for manual sampling | 15 |
| 11.3 | Equipment for mechanical sampling | 22 |
| 12 | Sampling in practice | 24 |
| 12.1 | General | 24 |
| 12.2 | Methods for sampling stationary material | 24 |
| 12.3 | Methods for sampling moving material | 27 |
| 12.4 | Sampling of roundwood | 28 |
| 13 | Sample generation | 30 |
| 13.1 | Combined samples and laboratory samples | 30 |
| 14 | Performance characteristics | 30 |
| 15 | Handling and storage of samples | 30 |
| 15.1 | Packaging, storing and transport of samples | 30 |
| 15.2 | Identification / labelling | 31 |

| | | |
|-----|---|----|
| 16 | Sampling certificates | 31 |
| | Annex A (informative) Model Sampling Plan and Sampling Certificate | 32 |
| | Annex B (informative) Sampling from large stockpiles | 35 |
| B.1 | Initial assessment of the stockpile | 35 |
| B.2 | Taking samples | 35 |
| B.3 | Marking, packaging and dispatch of samples | 35 |
| B.4 | Certificate of sampling | 35 |
| | Annex C (informative) Bulk densities of biofuels | 36 |
| | Annex D (informative) Empirical values for PL, VI and VPT | 37 |
| D.1 | Introduction | 37 |
| D.2 | Large shipment of wood pellets from different sources | 37 |
| | Annex E (informative) Guidelines for the number of increments to be taken | 41 |
| E.1 | General | 41 |
| E.2 | Estimation of the number of increments from empirical values | 41 |
| E.3 | Examples for determining VPT, VI, NSL and nmin | 46 |
| | Annex F (informative) Quality parameters for various solid biofuels in BioNorm projects and large shipments of wood pellets | 50 |
| F.1 | General | 50 |
| F.2 | Products investigated as part of the BioNorm projects | 50 |
| F.3 | Summary of results from BioNorm projects | 51 |
| F.4 | Large shipments | 57 |
| | Bibliography | 63 |