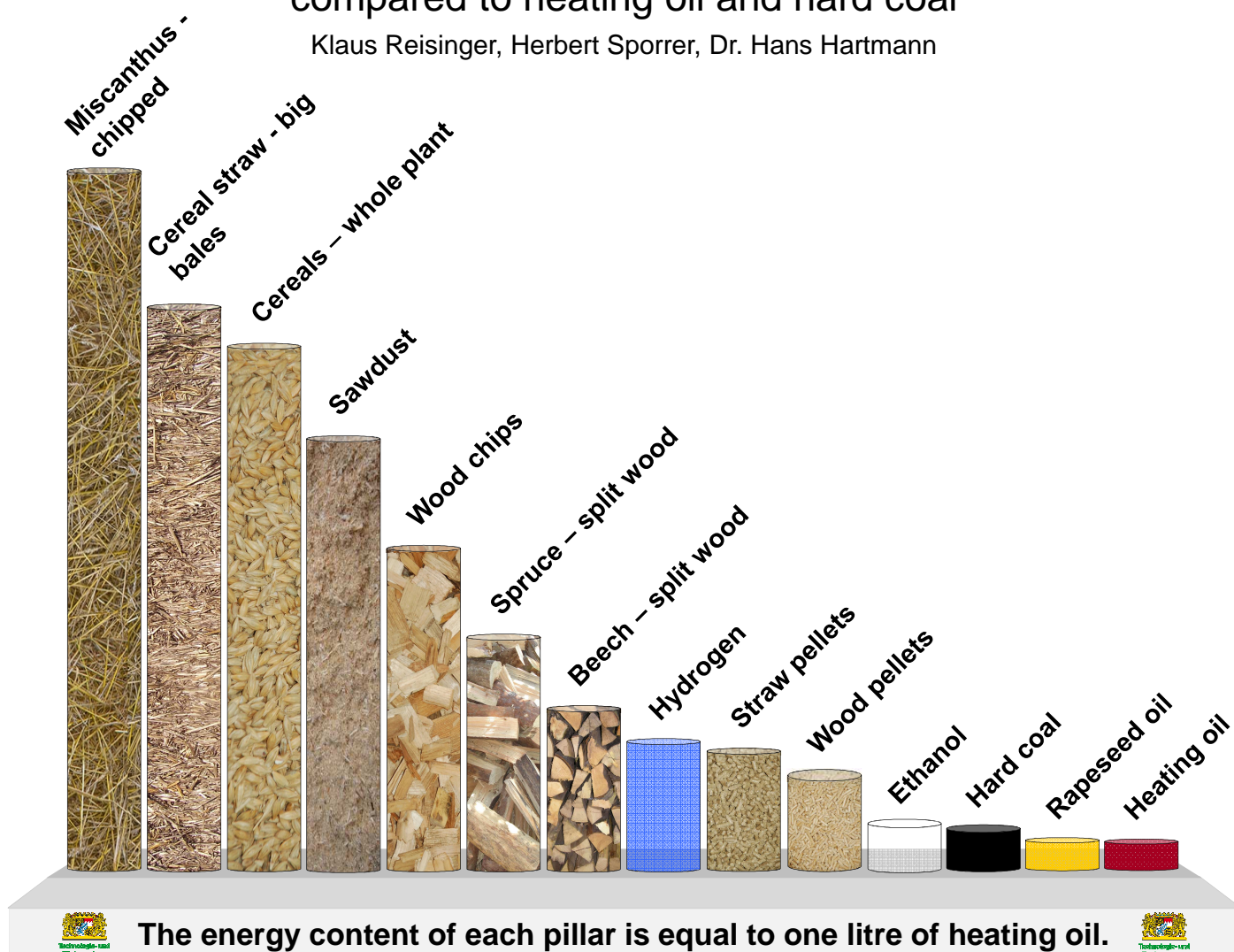




Energy Density of Solid Biofuels

compared to heating oil and hard coal

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| Fuel | Bulk density Stacking density | Oil equivalent kg/l OE | Oil equivalent l fuel/l OE |
|--|----------------------------------|---------------------------|-------------------------------|
| Heating Oil | 0,84 kg/l | 0,84 | 1,00 |
| Rapeseed Oil | 0,92 kg/l | 0,97 | 1,05 |
| Hard Coal (w = 5,1 %) | 860 kg/m ³ | 1,28 | 1,49 |
| Ethanol | 0,79 kg/l | 1,34 | 1,70 |
| Wood Pellets (EN 14961-2, w = 10 %) | 664 kg/m ³ | 2,15 | 3,24 |
| Straw Pellets (w = 10 %) | 603 kg/m ³ | 2,36 | 3,91 |
| Hydrogen (liquid at - 252,8 °C) | 0,07 kg/l | 0,30 | 4,23 |
| Beech, split wood (air-dried, 33 cm, w = 15 %) | 445 kg/Rm | 2,35 | 5,28 |
| Spruce, split wood (air-dried, 33 cm, w = 15 %) | 304 kg/Rm | 2,30 | 7,54 |
| Wood Chips (Pine, air-dried, w = 15 %) | 217 kg/m ³ | 2,25 | 10,35 |
| Sawdust (Spruce, air-dried, w = 15 %) | 160 kg/m ³ | 2,30 | 14,35 |
| Cereals, whole plant (air-dried, w = 15 %) | 150 kg/m ³ | 2,53 | 16,85 |
| Cereal straw – cubic big bales (air-dried, w = 15 %) | 140 kg/m ³ | 2,52 | 18,00 |
| Miscanthus, chipped (air-dried, w = 15 %) | 110 kg/m ³ | 2,45 | 22,30 |

Legend: w: Moisture content - OE: Oil equivalent - l: Litre – m³: 1 m³ split wood, here 33 cm logs