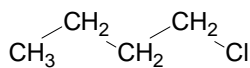


Übungsblatt 1 - Lösung

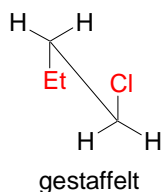
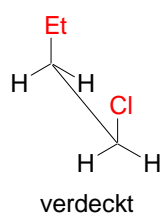
1. Zeichnen Sie die Isomere der Summenformeln C_4H_9Cl in verschiedenen Darstellungen (Keilstrich, Sägebock, Newman-Projektion).

4 mögliche Isomere:

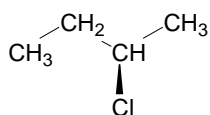
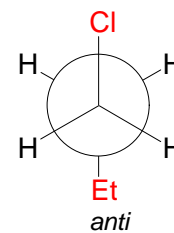
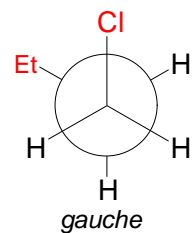
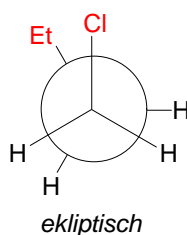


1-Chlorbutan

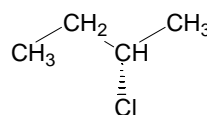
Sägebock-Projektion



Newman-Projektion

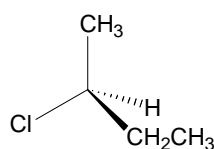
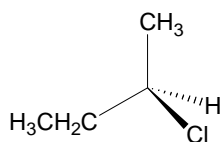


2-(R)-Chlorbutan

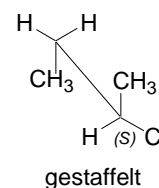
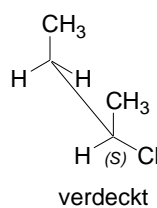
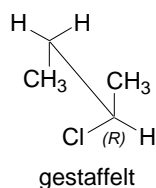
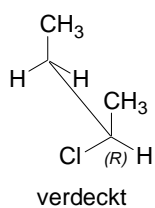


2-(S)-Chlorbutan

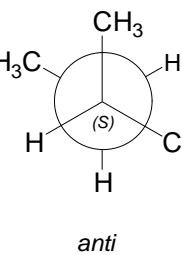
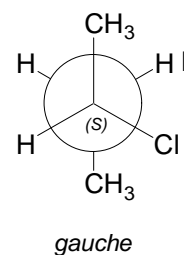
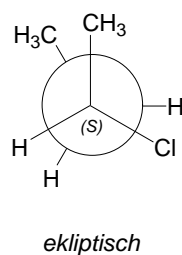
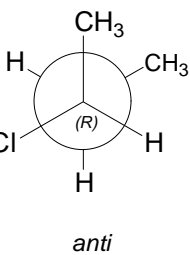
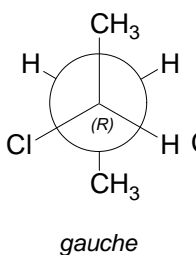
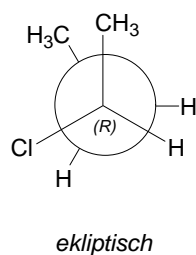
Keilstrich-Projektion

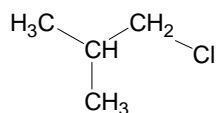


Sägebock-Projektion



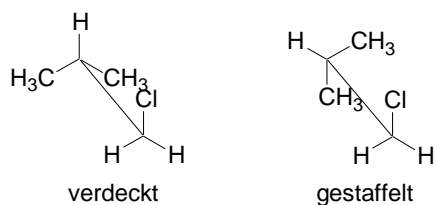
Newman-Projektion



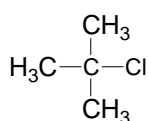
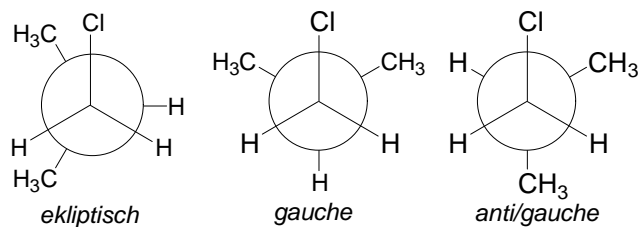


1-Chlor-2-methylpropan

Sägebock-Projektion

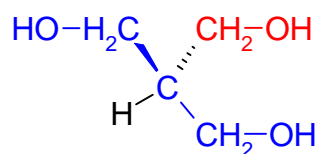
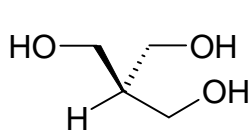


Newman-Projektion



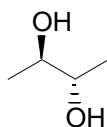
2-Chlor-2-methylpropan

2. Zeichnen Sie die abgekürzte Molekülformel mit vollständig mit allen Elementsymbolen und geben Sie die rationelle Nomenklatur an.

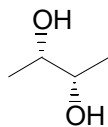


2-Hydroxymethyl-propan-1,3-diol

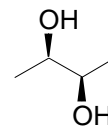
3. Zeichnen Sie alle Stereoisomere von $\text{CH}_3\text{-CH(OH)-CH(OH)-CH}_3$



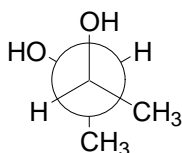
Meso-2,3-Butandiol



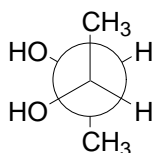
2-(S)-3-(S)-Butandiol



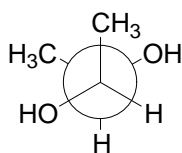
2-(R)-3-(R)-Butandiol



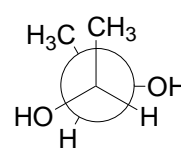
(R, R)
günstig*



günstig*



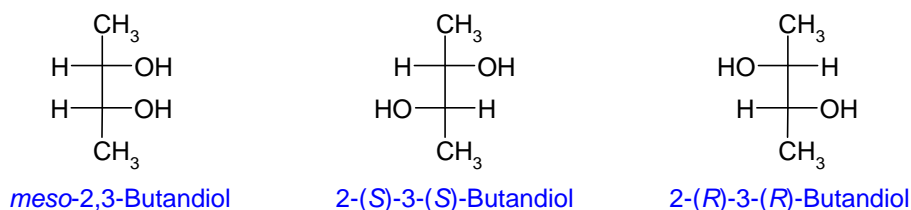
ungünstig



ungünstig (ekliptische Konformation)

(* intramolekulare Wasserstoffbrückenbindungen sind möglich)

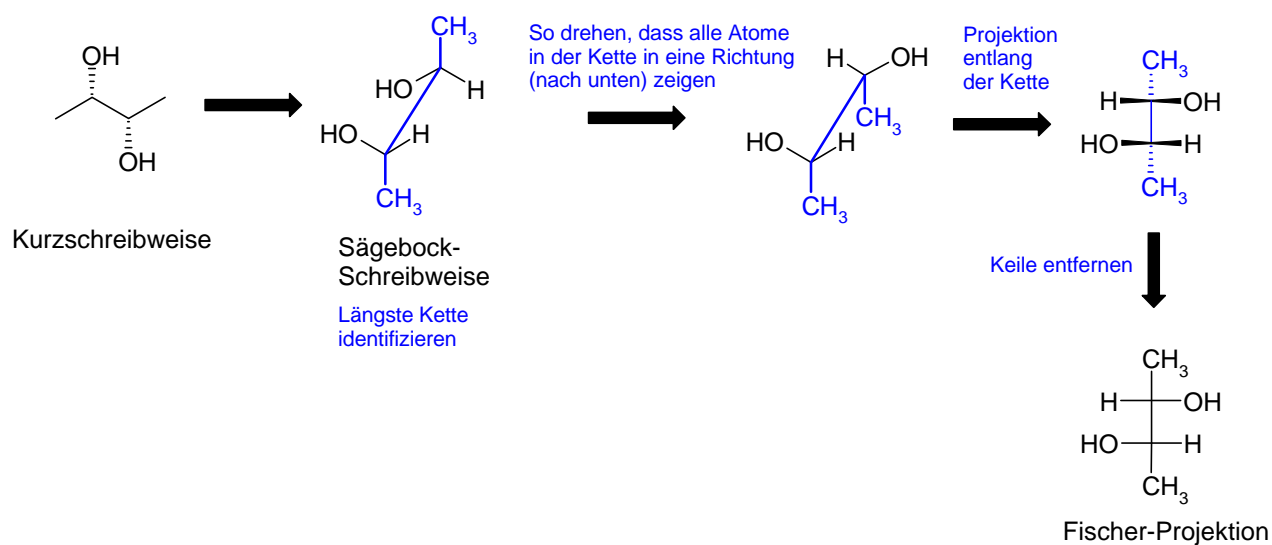
Fischer-Projektion:



Regeln für die Erstellung korrekter Fischer-Projektionen:

1. Die längste Kohlenstoff-Kette steht senkrecht
2. Das am höchsten oxidierte Ende der Kette steht oben (*entfällt hier*)
3. Die senkrechten Bindungen an jedem Atom der Hauptkette liegen in der Papierebene, die waagrechten Bindungen zeigen vor die Papierebene.

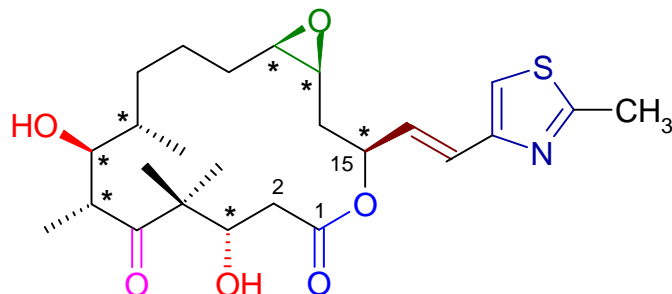
Und jetzt nochmal am Beispiel von 2-(*S*)-3-(*S*)-Butandiol:



4. Epothilon A, ein potenter Tumorhemmer

Epothilon A wurde aus dem Myxobakterium *Sorangium cellulosum*, einem Cellulose abbauenden Bakterium, gefunden im Uferschlamm des Sambesi, isoliert.

- Welche funktionelle Gruppen sind vorhanden,
- Wie viele Stereozentren sind vorhanden.



a) Funktionelle Gruppen:

- Esterfunktion im Makroring = Lacton
- Sekundäre OH-Gruppen an C3 und C7
- Ketogruppe an C5
- Epoxid an C12-C13
- Vinylgruppe an C15 transständig Makroring und Thiazin

b) 7 Stereozentren (mit * markiert).