

Chemical Bonding FAQ 2

When two liquids are mixed, heat may be evolved if the intermolecular bonds formed are stronger than those broken, even if there is no chemical reaction occurring.

Which of the following pair of liquids, when mixed, will give out heat?

- A CHCl_3 and C_5H_{12}
- B CCl_4 and $(\text{CH}_3)_2\text{CO}$
- C CCl_4 and $\text{CH}_3\text{CH}_2\text{OH}$
- D CH_2Cl_2 and $(\text{CH}_3)_2\text{CO}$

$\text{CHCl}_3 \cdots \text{CHCl}_3$ id-id and pd-pd.

$\text{C}_5\text{H}_{12} \cdots \text{C}_5\text{H}_{12}$ id-id.

$\text{CHCl}_3 \cdots \text{C}_5\text{H}_{12}$ id-id only limited by non-polar C_5H_{12}

$\text{CCl}_4 \cdots \text{CCl}_4$ id-id

$(\text{CH}_3)_2\text{CO} \cdots (\text{CH}_3)_2\text{CO}$ id-id and pd-pd.

$\text{CCl}_4 \cdots (\text{CH}_3)_2\text{CO}$ id-id only, limited by non-polar CCl_4 .

$\text{CCl}_4 \cdots \text{CCl}_4$ id-id.

$\text{CH}_3\text{CH}_2\text{OH} \cdots \text{CH}_3\text{CH}_2\text{OH}$ H-bond.

$\text{CCl}_4 \cdots \text{CH}_3\text{CH}_2\text{OH}$ id-id limited by non-polar CCl_4 .

$\text{CH}_2\text{Cl}_2 \cdots \text{CH}_2\text{Cl}_2$ id-id and pd-pd.

$(\text{CH}_3)_2\text{CO} \cdots (\text{CH}_3)_2\text{CO}$ id-id and pd-pd.

$\text{CH}_2\text{Cl}_2 \cdots (\text{CH}_3)_2\text{CO}$ id-id and pd-pd.

\therefore Greatest chance for stronger attraction between $\text{CH}_2\text{Cl}_2 \cdots (\text{CH}_3)_2\text{CO}$ than $\text{CH}_2\text{Cl}_2 \cdots \text{CH}_2\text{Cl}_2$ and $(\text{CH}_3)_2\text{CO} \cdots (\text{CH}_3)_2\text{CO}$.

Ans (D)