Zu den pseudobinären Zustandssystemen Bi_2Ch_3-BiX_3 und den ternären Phasen auf diesen Schnitten (Ch = S, Se, Te; X = Cl, Br, I), I: Bismutsulfidhalogenide

The Pseudobinary Systems Bi_2Ch_3-BiX_3 and the Ternary Phases on their Boundary Lines (Ch = S, Se, Te; X = Cl, Br, I), I: Bismuth Sulfide Halides

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The phase diagrams of the systems Bi_2S_3-BiX_3 were constructed from results of DTA and total pressure measurements and x-ray analysis. The phases: BiSCl, $Bi_4S_5Cl_2$ and $Bi_{19}S_{27}Cl_3$ for X = Cl; BiSBr and $Bi_{19}S_{27}Br_3$ for X = Br; BiSI and $Bi_{19}S_{27}I_3$ for X = I exist on the boundary lines. The enthalpies of formation and standard entropies of the phases follow from the coexistence decomposition pressure functions. The data are:

$\Delta H°_B(BiSCl_{f,298})$	= −49,6 ± 1,6 kcal/mol	$S°(BiSCl_{f,298})$	= 30,3 ± 2,5 cal/K·mol
$\Delta H°_B(Bi_4S_5Cl_{2,f,298})$	= −144,4 ± 3 kcal/mol	$S°(Bi_4S_5Cl_{2,f,298})$	= 114,0 ± 4,6 cal/K·mol
$\Delta H°_B(Bi_{19}S_{27}Cl_{3,f,298})$	= −520 ± 10 kcal/mol	$S°(Bi_{19}S_{27}Cl_{3,f,298})$	= 490 ± 10 cal/K·mol
$\Delta H°_B(BiSBr_{f,298})$	= −40,2 ± 1,4 kcal/mol	$S°(BiSBr_{f,298})$	= 32,0 ± 3 cal/K·mol
$\Delta H°_B(Bi_{19}S_{27}Br_{3,f,298})$	= −493,6 ± 6,7 kcal/mol	$S°(Bi_{19}S_{27}Br_{3,f,298})$	= 499,8 ± 17 cal/K·mol
$\Delta H°_B(BiSI_{f,298})$	= −27,8 ± 1,4 kcal/mol	$S°(BiSI_{f,298})$	= 36,1 ± 2,5 cal/K·mol
$\Delta H°_B(Bi_{19}S_{27}I_{3,f,298})$	= −464,4 ± 15 kcal/mol	$S°(Bi_{19}S_{27}I_{3,f,298})$	= 502,7 ± 15 cal/K·mol

Key words: Bismuth Sulfide Halides, Phase Diagrams, Barograms, Total Pressure Measurements, Thermodynamic Data